

# THE MISCALCULATIONS OF LIGHTNING GIRL BOOK CLUB

## Afterschool Literacy + STEAM — Facilitator Session Guide

10 Sessions | 60 Minutes | Mixed Grades 6–8 | Written for OST Staff

### About This Program

The Lightning Girl Club is a 10-session afterschool Literacy + STEAM program built around *The Miscalculations of Lightning Girl* by Stacy McAnulty. Each 60-minute session is organized into five blocks: a community-building Arrival Ritual, a game-based Word Play vocabulary block, a student-led Story Circle discussion, a hands-on 30-minute STEAM Lab, and a Shoutout & Send-Off closing. The program is designed for mixed grades 6–8 and written specifically for Out-of-School Time (OST) staff. Every lesson includes word-for-word facilitator scripts, student choice menus, movement cues, and plain-language educator notes.

**What educators can expect:** Each session requires 8–15 minutes of prep time before students arrive. All materials are low-cost or free, with no-print alternatives provided throughout. Three program-wide rituals, the Lightning Bolt, the Wall of Wins, and Comfort Zone Thermometers, build community across all 10 sessions. A full Vocabulary Appendix at the back of this guide contains scripted word cards for all 50 vocabulary words, organized by session.

**What students can expect:** Students will read a novel about a 12-year-old math savant learning that people are harder than pi and more interesting than she thought. They'll build circuits, map character networks, run data labs, design persuasion campaigns, decode ciphers, test their own reaction speed, and investigate optical illusions. By Session 10, they'll have 50 new vocabulary words, a Fibonacci spiral on their wall, and discoveries about how their own brains work.

### The 10 Sessions

| #  | Session Title           | STEAM Lab                    | Reading               |
|----|-------------------------|------------------------------|-----------------------|
| 1  | Lightning Strikes       | Lightning in a Bottle        | Chapters 1–4          |
| 2  | The Soft Skills Problem | Pi is Everywhere             | Chapters 5–9          |
| 3  | The Outcasts            | East Hamlin Network Lab      | Chapters 10–14        |
| 4  | Pi the Dog              | The Pet Hut Data Lab         | Chapters 15–19        |
| 5  | The Sleepover           | Reaction Time Lab            | Chapters 20–24        |
| 6  | Fair vs. Equal          | The Ramp Challenge           | Chapters 25–28        |
| 7  | The MathWhiz Reveal     | Cipher School                | Chapters 29–32        |
| 8  | The Adoption Event      | Campaign Architects          | Chapters 33–36        |
| 9  | Miscalculations         | Optical Illusion Lab         | Chapters 37–40        |
| 10 | For the Love of Pi      | Fibonacci Celebration Studio | Appendices + Full Arc |

### Program Goals & Student Objectives

By the end of the 10-session program, students will have worked toward the following goals across three areas. These are the outcomes that shape every session — they are not assessed with a grade, but they are visible in what students say, make, and do.

|  LITERACY                                                                                                                                                                                                                                                                                                                                                                                                                             |  STEAM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  CHARACTER & SOCIAL                                                                                                                                                                                                                                                                                                                                                                                           |
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| <ul style="list-style-type: none"> <li>◦ Engage with a full-length novel through sustained reading and discussion across 10 sessions</li> <li>◦ Acquire and use 50 academic vocabulary words with an understanding of etymology, connotation, and context</li> <li>◦ Cite textual evidence to support claims in student-led discussion</li> <li>◦ Analyze character motivation, author's craft, and theme in a literary text</li> <li>◦ Build fluency and confidence speaking about ideas in front of peers</li> </ul> | <ul style="list-style-type: none"> <li>◦ Apply mathematical concepts — data analysis, ratios, graphing, measurement, and probability — to real-world problems</li> <li>◦ Use the engineering design process: predict, build, test, compare, and connect</li> <li>◦ Collect, represent, and interpret data to make evidence-based arguments</li> <li>◦ Explore concepts in physics, graph theory, cryptography, reaction neuroscience, and perception science through hands-on labs</li> <li>◦ Connect STEAM thinking to ethical questions — equity, advocacy, and care</li> </ul> | <ul style="list-style-type: none"> <li>◦ Build trust and belonging within a mixed-grade peer group over time</li> <li>◦ Practice perspective-taking, active listening, and constructive disagreement</li> <li>◦ Develop self-awareness through reflection on growth, risk, and identity</li> <li>◦ Recognize personal strengths and the value of different ways of thinking and learning</li> <li>◦ Experience a learning environment built on choice, respect, and genuine curiosity</li> </ul> |

## How Each Session Works

|                                                                                                                     |                                                                                                                 |                                                                                                                    |                                                                                                                 |                                                                                                                 |
|---------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|
| <br><b>ARRIVAL RITUAL</b><br>5 min | <br><b>WORD PLAY</b><br>10 min | <br><b>STORY CIRCLE</b><br>15 min | <br><b>STEAM LAB</b><br>30 min | <br><b>SHOUTOUT</b><br>5 min |
|---------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                     |
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|  <b>More Movement &amp; Games</b><br><br>Every session includes at least two movement moments — physical debate positions, walk-the-room activities, standing to bid or answer, circle formats. Students should be out of their seats for at least 15 of the 60 minutes.<br><br><i>Look for the  marker throughout this guide.</i> |  <b>More Student Choice</b><br><br>Every block has a Student Choice moment — students vote on the format before you start. This is not just engagement: it's ownership. When students decide how the room runs, they're more invested in what happens.<br><br><i>Look for the  marker throughout this guide.</i> |  <b>Less Writing, More Making</b><br><br>No worksheets. No individual written responses during sessions. The STEAM Lab is 30 minutes of building, testing, and presenting. Story Circle is talking, debating, and moving — not writing answers. Vocabulary is games and drama, not fill-in-the-blank.<br><br><i>The making IS the learning.</i> |
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|  <b>The Lightning Bolt</b><br><br>One student earns it each session — for the most memorable moment of the day. They hold it until next time, then pass it to someone else. It's a week-to-week story of highlights.<br><br><i>How to award it: 'Who had the moment today?' Let the group nominate. You make the final call if needed.</i> |  <b>The Wall of Wins</b><br><br>One section of the room is reserved for student work. Never take it down during the program. By Session 10, students walk in and see 10 weeks of their own thinking on the wall.<br><br><i>What goes up: circuit names, Pi of Fame, East Hamlin network maps, adoption campaigns, reaction time data, optical illusion findings, Fibonacci spirals.</i> |  <b>Comfort Zone Thermometers</b><br><br>Posted Day 2. Updated Day 10. Students track their own social-emotional growth. Never force anyone to share their number — just make the wall visible and valued.<br><br><i>This is a strong program data point. Photograph the wall before and after.</i> |
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## Nebraska ELA Standards Alignment

This program is aligned to three Nebraska College and Career Ready English Language Arts Standards. All three standards span grades 6, 7, and 8 and are addressed across every session of the program.

| Standard                                                     | Description & Program Connection                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|--------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>LA.6–8.RP.1</b><br><i>Reading Prose &amp; Poetry</i>      | <p><b>Cite textual evidence to support analysis of what a literary text says explicitly and inferentially.</b></p> <p><b>Program connection:</b> Addressed in every Story Circle. Students cite specific chapters and scenes to support their discussion positions. Discussion questions explicitly ask for evidence ('What in Ch. 10–14 tells us...'), and the summary frame in Session 8 requires textual grounding.</p> <p><i>Primary sessions: 1–10 (all Story Circles)   Strongest emphasis: Sessions 3, 5, 7, 8, 9</i></p>                                                                                                                                                                                                                                                                                           |
| <b>LA.6–8.V.1</b><br><i>Vocabulary Acquisition &amp; Use</i> | <p><b>Integrate grade-level academic vocabulary for a variety of tasks and purposes, using context clues, Greek and Latin affixes and roots, and reference materials.</b></p> <p><b>Program connection:</b> The primary focus of every Word Play block. 50 Tier 2 and Tier 3 words are taught across 10 sessions using the 4-Step Routine (Say It → Define It → Connect It → Use It). Root word analysis is embedded in Sessions 3 (tele-, -path, peri-), 5 (ver-, im-), 6 (-fy, -ment), and 7 (auto-, an-). Connotation is the explicit focus of Session 5's Connotation Spectrum activity. All 50 words are available in full with scripted instruction in the Vocabulary Appendix.</p> <p><i>Primary sessions: 1–10 (all Word Play blocks)   Vocabulary Appendix: pages at the back of this guide</i></p>               |
| <b>LA.6–8.SL.2</b><br><i>Speaking &amp; Listening</i>        | <p><b>Present claims and findings in a focused, coherent manner using relevant descriptions, facts, and details; convey a perspective with clear reasoning and evidence.</b></p> <p><b>Program connection:</b> Addressed in every Story Circle (students defend discussion positions with textual evidence) and in every STEAM Lab presentation phase. The fishbowl format in Sessions 3 and 5 gives students a structured speaking context. The gallery walk and campaign presentations in Sessions 4 and 8 require students to present data-backed claims to an audience. Session 6's physical debate (stand left/right) explicitly asks students to convey a perspective with reasoning.</p> <p><i>Primary sessions: 3, 4, 5, 6, 8, 10   Daily application: all Story Circle and STEAM Lab present/share phases</i></p> |

## About Pre-Reading — How the Book Works in This Program

The Lightning Girl Club is designed as a book club program. The lessons are created with the expectation that students read the assigned chapters before each session and arrive ready to discuss them. This protocol can be modified to meet your needs. The following is an overview of different recommendations for how to structure this.

### The Standard Expectation: Students Pre-Read

#### Reading assignments by session:

Session 1 — Chapters 1–4  
 Session 2 — Chapters 5–9  
 Session 3 — Chapters 10–14  
 Session 4 — Chapters 15–19  
 Session 5 — Chapters 20–24  
 Session 6 — Chapters 25–28  
 Session 7 — Chapters 29–32  
 Session 8 — Chapters 33–36  
 Session 9 — Chapters 37–40  
 Session 10 — Appendices + full arc reflection

**What to tell students and families:** *"This is a book club, not a classroom. Reading the chapters before you come is how you show up prepared to contribute. If you don't finish, come anyway. But the discussions will be richer and more fun if everyone has read."*

### Time Extension Option: Read Chapters Together in Session

If your program cannot support independent pre-reading, due to access to books, student schedules, or program structure, you can extend the Story Circle block and read the chapters together as a group at the start of each session.

#### How to run shared reading in session:

- Arrive with a copy of the book.
- Read the assigned chapters aloud yourself to the group, or use a paired reading format where students take turns reading one page each. Paired reading emphasizes reading fluency and collaboration vs independent reading
- Move at a steady pace. Don't stop to discuss while reading — save all discussion for after.
- After reading, continue with the Story Circle discussion as written.

### Divide the Lessons: Reading Day and STEAM Day

If your student group meets multiple times per week, you can structure the program to have a reading and book discussion day and then a STEAM day.

#### Potential Structure:

##### Day 1

- Read the assigned chapters aloud yourself to the group, or use a paired reading format where students take turns reading one page each. Paired reading emphasizes reading fluency and collaboration vs independent reading
- After reading, continue with the Story Circle discussion as written.

##### Day 2

- Complete STEAM Lab

## Supply List

All materials across the full 10-session program. Most items are reusable. Free alternatives are noted — you can run every session without a printer and without spending more than ~\$10 total.

| Day | Materials needed                                                                                                                                                                    | Free / cheaper alternative                                                                                                                                     |
|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1   | Name tag stickers, markers   9V batteries (1/team), alligator clip wires or bare wire scraps, LED lights, cardboard strips                                                          | <i>Skip alligator clips — twist bare wire ends to battery terminals. Batteries ~\$2 each, reusable. No LEDs? Use a static electricity balloon demo (free).</i> |
| 2   | Sticky notes, markers, wall space   String (cut from yarn), rulers, 3 circular objects/team (cans, cups, jars), graph paper, small envelopes, calculators                           | <i>Circular objects from recycling. String from any yarn ball. Graph paper: draw grid on blank paper. Phones as calculators.</i>                               |
| 3   | Whiteboard or chart paper (for Six Degrees arrival)   Large paper (1 per team), markers in multiple colors, rulers                                                                  | <i>Any paper taped together works. Write Six Degrees chain on any whiteboard or chart paper.</i>                                                               |
| 4   | No special arrival materials   Pet Hut dataset (printed or written on board), graph paper, rulers, colored pencils, calculators, large paper for profiles, dot stickers (2/student) | <i>Write dataset on whiteboard or chart paper — no printing needed. Dot stickers = torn sticky-note squares.</i>                                               |
| 5   | No special arrival materials   Rulers (1 per pair), pencils, notebook paper for data tables                                                                                         | <i>If no ruler: fold paper into a narrow strip and drop that instead. Total cost: \$0.</i>                                                                     |

|    |                                                                                                                                                                                                             |                                                                                                                                                                     |
|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 6  | Printed equity image (or draw it)   Cardboard strips (2/team, from recycling), tape, books for elevation, coins or erasers for testing, rulers, printed user profile cards (3/team)                         | Cardboard from cereal boxes. Draw equity image on chart paper. Coins replace marbles. Write profile cards by hand.                                                  |
| 7  | Sticky notes, markers, wall space   Paper with A–Z written out (1/student), pencils, small paper slips for shift numbers                                                                                    | Write A–Z on any scrap paper — no printing needed. Paper slips = torn notebook paper.                                                                               |
| 8  | No special arrival materials   Animal profile cards (8 pre-written index cards), large paper, markers, rulers, dot stickers (3/ student)                                                                    | Write profile cards on index cards before the session (10 min). Dot stickers = torn sticky notes. Any large paper works.                                            |
| 9  | No special arrival materials   3–4 printed illusion images (Müller-Lyer, Ponzo, Rubin's vase — free online), rulers, pencils, notebook paper                                                                | Draw Müller-Lyer by hand in 30 seconds: two equal lines, one with inward arrows, one with outward arrows. Rulers from classroom. Total cost: under \$0.50 to print. |
| 10 | Thermometer wall from Day 2, markers   Graph paper (or blank paper with drawn grid), pencils, jar lids or cup rims (replace compasses), colored pencils, markers, sticky notes, Lightning Bolt Certificates | Draw grid on blank paper. Jar lid or coin traces smooth Fibonacci curves. Certificates = any card stock, handwritten.                                               |

 **ALWAYS-ON SUPPLIES (keep these in the room every session):** Markers, pencils, blank paper, sticky notes, tape, a ball of yarn, the Wall of Wins section of the room, and a designated spot for Comfort Zone Thermometers. Everything else is session-specific and listed above.

## Director's Staff Preparation Checklist

Use this checklist to prepare your frontline staff before the program begins and before each session. Staff do not need to be certified teachers — but they do need to be prepared. Fifteen minutes of preparation makes the difference between a session that works and one that doesn't.

### BEFORE THE PROGRAM BEGINS — Director tasks

|                          |                                                                                                                                                                                                                                  |
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| <input type="checkbox"/> | Obtain a copy of <i>The Miscalculations of Lightning Girl</i> by Stacy McAnulty (one copy for read-aloud; additional copies recommended for students to read independently).                                                     |
| <input type="checkbox"/> | Read the full Guide to Lessons document yourself before sharing it with staff. You cannot prepare staff for something you haven't read.                                                                                          |
| <input type="checkbox"/> | Share Document 1 (Guide to Lessons) with all frontline staff at least one week before Session 1. Ask them to read the Program Goals, Emerging/Advanced overview, Vocabulary Routine section, and Hosting a Story Circle section. |
| <input type="checkbox"/> | Read the book yourself, or read session-by-session summaries from the Educator's Guide, so you can answer staff questions about the plot.                                                                                        |
| <input type="checkbox"/> | Identify which students are likely to need Emerging support and which are likely to need Advanced challenge. Brief your staff before Session 1 so they're watching for the right signals.                                        |
| <input type="checkbox"/> | Confirm your Wall of Wins space, a wall section that stays up all 10 sessions. Brief staff not to take it down.                                                                                                                  |
| <input type="checkbox"/> | Gather always-on supplies: markers, pencils, blank paper, sticky notes, tape, a ball of yarn. Keep these in the room for every session.                                                                                          |
| <input type="checkbox"/> | Review the Master Supply List and source session-specific materials at least 3 days before each session.                                                                                                                         |
| <input type="checkbox"/> | Communicate the pre-reading expectation to students and families before Session 1 (see 'About Pre-Reading' section below).                                                                                                       |

### BEFORE EACH SESSION — Staff tasks (15 min of prep)

|                          |                                                                                                                                                                 |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <input type="checkbox"/> | Read that session's plan in Document 2 all the way through — not just the STEAM activity. Read every block.                                                     |
| <input type="checkbox"/> | Read the 5 vocabulary words for the session. Say each one aloud and read its student-friendly definition. (Full scripted cards are in the Vocabulary Appendix.) |
| <input type="checkbox"/> | Practice the Opening Script for Word Play aloud — at least once, to yourself. Scripted language sounds different out loud than it reads on a page.              |
| <input type="checkbox"/> | Prepare materials from the session's Materials box. Set them out before students arrive.                                                                        |
| <input type="checkbox"/> | Read the Pre-Session Setup checklist and complete each item.                                                                                                    |
| <input type="checkbox"/> | Read the STEAM Lab 'If Students Get Stuck' box so you know the most likely sticking point and what to say before students get there.                            |
| <input type="checkbox"/> | Identify which Story Circle questions you'll use as backups if the chosen question doesn't land. Have 2 follow-ups ready.                                       |
| <input type="checkbox"/> | Check that the Wall of Wins space is clear and ready for new additions from this session.                                                                       |

### AFTER THE PROGRAM — Director debrief tasks

|                          |                                                                                                               |
|--------------------------|---------------------------------------------------------------------------------------------------------------|
| <input type="checkbox"/> | Photograph the Wall of Wins in full before taking anything down.                                              |
| <input type="checkbox"/> | Photograph the Comfort Zone Thermometer wall — compare to the Session 2 baseline.                             |
| <input type="checkbox"/> | Collect any student artifacts designated for portfolio documentation (see Recommended Documentation section). |
| <input type="checkbox"/> | Ask staff: which sessions had the strongest engagement? Which stalled? Note this for program planning.        |
| <input type="checkbox"/> | Document which NE ELA standards were addressed for grant reporting (see Standards Alignment section).         |

### Learner Modifications: Emerging & Advanced

Every Word Play block in this program includes Emerging and Advanced modifications. These are not labels to assign to students — they are tools for facilitators to use in the moment. The same student may need Emerging support on a difficult vocabulary word and Advanced challenge on a discussion question. Watch for signals, not categories.

 **EMERGING**

 **ADVANCED**

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
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| <p><b>Who this is for:</b></p> <p>A student who is just beginning to access the content — they may struggle with a word's pronunciation, need more time to formulate a response, rely on their peers' answers before contributing, or disengage when the pace moves too fast.</p> <p><b>What you'll see:</b></p> <p>Silence or one-word answers during Connect It. Waiting to copy what others say. Difficulty completing a Use It sentence independently. Looking around the room instead of at the word card.</p> <p><b>What to do:</b></p> <p>Slow down. Break the word into syllables and have them repeat. Give a sentence starter: 'This word makes me think of ___ because ___.' Pair them with a stronger speaker for the Use It step. Accept partial answers and build on them: 'You've got the idea — let me sharpen it.'</p> <p><b>Director's note:</b> Brief staff on which students are likely to need Emerging support before Session 1. Don't wait until a student shuts down to intervene — proactive pairing is more effective than reactive rescue.</p> | <p><b>Who this is for:</b></p> <p>A student who grasps the word quickly and is ready to push further — they can define it without the card, make connections without prompting, and use it in a complex sentence without hesitation. They may grow restless if kept at the basic level.</p> <p><b>What you'll see:</b></p> <p>Fast, confident answers. Jumping ahead to the next word. Making connections unprompted. Finishing sentences before others. Adding nuance or counterarguments to the discussion without being asked.</p> <p><b>What to do:</b></p> <p>Use the Advanced prompt from the session's Word Play block. Ask them to use two vocabulary words in one sentence. Ask them to explain what's WRONG with a simple definition. Give them the Connect It question for the next word while others are still finishing. Make their thinking visible to the group: 'Say that again so everyone can hear it.'</p> <p><b>Director's note:</b> Advanced students can become disruptive when under-challenged. The Advanced modifications in each session are specifically designed to give them something harder to do within the same activity — not a different activity.</p> |
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## Vocabulary Instruction: A Guide for Facilitators

This program uses a 4-Step Vocabulary Routine in every session. You don't need to be a vocabulary expert to run it — but you do need to understand what each step is trying to accomplish and what good student participation looks like. This section is your orientation.

| Step                               | What it's doing                                                                                                                                                                                                                            | What good looks like                                                                                                                                                                                                    |
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| <b>STEP 1</b><br><b>SAY IT</b>     | Building the phonological form of the word in students' memory. You can't own a word you can't say. Saying it aloud multiple times — at different volumes and with different expression — encodes it more deeply than reading it silently. | Every student says the word aloud. No one is just watching. If anyone is silent, prompt them specifically: 'Say it with us — [word].'                                                                                   |
| <b>STEP 2</b><br><b>DEFINE IT</b>  | Giving students the meaning in plain language, connected to something familiar. This is NOT about memorizing a dictionary definition — it's about building a working understanding they can use in a sentence.                             | Students can restate the definition in their own words without looking at the card. If they can say it back differently, they understand it. If they recite the exact wording, they've memorized it but may not own it. |
| <b>STEP 3</b><br><b>CONNECT IT</b> | Linking the word to students' real lives, prior knowledge, or the text. This is the step that moves a word from 'I know what it means' to 'I can use this.' Connection is the most important step for long-term retention.                 | Students share connections that are personal and specific — not just 'it reminds me of school.' Disagreement between students about the connection is a positive sign: it means they're thinking, not just answering.   |
| <b>STEP 4</b><br><b>USE IT</b>     | Producing the word in an original sentence at the student's grade level. This is the step that confirms comprehension — a student who can use a word correctly in a new sentence has genuinely acquired it.                                | Sentences use the word in a way that demonstrates its meaning — not just 'I saw something reclusive.' Give feedback: 'Great — can you add WHY she was reclusive to make the sentence stronger?'                         |

| Common facilitator mistakes in Word Play                                                                                 | What strong vocabulary facilitation looks like                                                                                            |
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| ✗ Giving students the definition before Say It — skip the pronunciation step and students miss the phonological encoding | ✓ You say the word first with clear pronunciation, then invite the group to repeat — you model, they follow                               |
| ✗ Accepting 'I don't know' and moving on — try a sentence starter or pair the student first                              | ✓ You restate the definition in your own words immediately after reading it from the card                                                 |
| ✗ Spending more than 2 minutes on one word — keep the pace up; depth comes from the whole routine, not one step          | ✓ You give 5 full seconds of wait time after the Connect It question before calling on anyone                                             |
| ✗ Skipping Use It because you're short on time — this is the most important step; protect it                             | ✓ When a student's sentence is close but not quite right, you say 'You've got the idea — let me add one thing' rather than 'That's wrong' |
| ✗ Correcting sentences in a way that shuts students down — build on their answer, don't replace it                       | ✓ You write student-generated sentences on the board — making their language visible signals that it matters                              |

## Hosting a Story Circle: A Guide for Facilitators

The Story Circle is the discussion block at the heart of every session. Its goal is student-led conversation about the book, not a quiz, not a summary, not a teacher lecture. Your job as the facilitator is to ask the question and then get out of the way. This section tells you how.

### The core rule: you should be talking less than 20% of the time.

If you find yourself explaining the book, summarizing the plot, or filling silences with your own opinions — you've shifted from facilitating to teaching. That's not the goal. Explain the question. Ask the question. Wait. Listen. Ask a follow-up. That's the whole job.

| How to ask a question well                                                                                                                                                  | How to handle silence                                                                                                                       | How to deepen a response                                                                                                                                   |
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| Read the question aloud clearly and completely, don't paraphrase it on the fly.                                                                                             | Count to 10 in your head before doing anything. Silence feels longer to you than to students.                                               | After a student responds, resist the urge to immediately evaluate it ('Great point!'). Instead, direct it back: 'Does anyone agree or disagree with that?' |
| Then be quiet. Don't add caveats, hints, or pre-answers. Ask it and wait.                                                                                                   | If no one speaks by 10: try a lower-stakes entry. 'Let's start smaller, can anyone give me one word that connects to this question?'        | Build on what they said: 'You said Lucy is afraid of connection. Where in the text do we see that, can someone find an example?'                           |
| If students look confused: 'Let me say that another way.' Rephrase once, simply. Then wait again.                                                                           | If still nothing: ask for a show of hands or thumbs, then ask one person who responded to say more.                                         | Create productive disagreement: 'That's one perspective — who sees it differently?'                                                                        |
| The questions in the lesson are designed to be genuinely debatable, there is no single right answer. Say so: 'There's no right answer here. I want to hear what YOU think.' | Never answer the question yourself. If you answer it, students learn they can wait you out. Say: 'I want YOUR thinking on this — not mine.' | When a student goes quiet after one sentence: 'Say more about that. What makes you think so?'                                                              |

| Questions that shut discussion down                                                                                                                                                                                                                                                                                                                                                                      | Questions that open discussion up                                                                                                                                                                                                                                                                                                                                                                   |
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| <p><i>x "Did you like this part of the book?" — yes/no, no depth</i></p> <p><i>x "What happened in this chapter?" — summary, not analysis</i></p> <p><i>x "Who can tell me what reclusive means?" — recall, not thinking</i></p> <p><i>x "Does everyone agree?" — invites passive agreement, not debate</i></p> <p><i>x "What do you think the author meant?" — too abstract without scaffolding</i></p> | <p><i>✓ "What is Lucy actually afraid of in this scene — and how do you know?"</i></p> <p><i>✓ "Is what Windy did a betrayal or a mistake? Make the case."</i></p> <p><i>✓ "Where does Lucy get it wrong — and why does that matter?"</i></p> <p><i>✓ "Who sees this differently? What evidence do you have?"</i></p> <p><i>✓ "What would YOU have done — and what would it have cost you?"</i></p> |

 **Remember:** The Story Circle questions in each session are already designed to be genuinely debatable — no yes/no answers, no single right response. Your job is to ask the question clearly and then create the conditions for students to think out loud. A discussion where students disagree respectfully is better than one where everyone agrees quickly.

## What to Say If... — OST Staff Cheat Sheet

| The situation                           | Say this                                                                                                                                                                |
|-----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| A student won't participate             | <i>"No pressure — you can just watch this round. Jump in whenever you're ready." Then check in quietly after the activity.</i>                                          |
| Discussion goes completely silent       | <i>"Okay — new rule. You have to disagree with the last thing someone said. Anyone want to try?" Structured disagreement breaks silence faster than open questions.</i> |
| A student dominates every discussion    | <i>"Awesome — let's hear from someone we haven't heard from yet." Or: "Hold that thought — [name], what do you think?"</i>                                              |
| You don't know the answer to a question | <i>"Great question. I don't actually know. Who wants to find out?" Model curiosity, not expertise.</i>                                                                  |
| The STEAM activity isn't working        | <i>"Okay — something's not going right. What do you think is wrong? Let's figure it out." Troubleshooting IS the STEAM learning.</i>                                    |
| Students say the book is boring         | <i>"What WOULD be interesting about Lucy's situation? What would you change?" Don't defend the book — redirect to what students care about.</i>                         |
| Two students clash                      | <i>Pause the group. "We can disagree about ideas — that's what this program is for. Let's try that again with a different approach." Then move forward.</i>             |
| A student shares something heavy        | <i>Thank them for sharing. Don't move on too fast. Say: "That took courage to say." Check in with them privately after the session if needed.</i>                       |

## Grant & Reporting Data

This unit supports the following reporting categories for 21st CCLC and similar OST grant programs. Use this section when completing program quality reports, grant narratives, or funder check-ins.

| Reporting Category                                     | How This Program Qualifies                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|--------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>21st CCLC Program Quality — Literacy Enrichment</b> | 10-session literacy program aligned to Nebraska ELA Standards (grades 6, 7, 8) across literary text comprehension (LA.6–8.RP.1), academic vocabulary acquisition (LA.6–8.V.1), and speaking & listening (LA.6–8.SL.2). All sessions are standards-referenced and designed for mixed-grade OST settings.                                                                                                                                                                                                                                                                                  |
| <b>STEAM Integration</b>                               | Every session includes a 30-minute STEAM Lab connecting science, technology, engineering, art, and mathematics to the anchor text. Labs include: electrical circuits (physics), pi discovery (math), character network mapping (discrete mathematics), data analysis (statistics), reaction time measurement (neuroscience/biology), slope engineering (geometry), cryptography (mathematics/computer science), data-backed persuasion campaigns (applied statistics), optical illusion investigation (neuroscience/perception science), and Fibonacci spirals (mathematics/visual art). |
| <b>School-Day Alignment</b>                            | Science of Reading vocabulary instruction mirrors the Nebraska Science of Reading framework for grades 6–8. The 4-Step Vocabulary Routine (Say It → Define It → Connect It → Use It) aligns to Tier 2 and Tier 3 word instruction at each grade level. Story Circle discussions reinforce textual evidence and literary analysis skills taught during the school day. This program reinforces, not replaces, school-day instruction.                                                                                                                                                     |
| <b>Differentiated Instruction</b>                      | All 10 sessions include Emerging and Advanced modifications within the Word Play block. Vocabulary Use It prompts are differentiated by grade level (6th, 7th, 8th) with distinct sentence-level tasks. STEAM Labs include role assignments and open-ended design challenges that allow students to engage at multiple levels of complexity within the same activity.                                                                                                                                                                                                                    |
| <b>Attendance &amp; Engagement Documentation</b>       | 10-session program with structured arrival rituals, three program-wide engagement rituals (Lightning Bolt, Wall of Wins, Comfort Zone Thermometers), and session-by-session STEAM artifacts for portfolio documentation. Student-produced artifacts are available from every session.                                                                                                                                                                                                                                                                                                    |

## Recommended Documentation

If your program collects student impact data for grant reporting or program evaluation, the following are recommended per session and across the full program.

| When                            | What to Collect                                                                                                                                                                                          |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Every Session</b>            | Photograph completed STEAM Lab artifacts and Wall of Wins additions. Photograph the student Comfort Zone Thermometer wall (Session 2 and Session 10) to document social growth across the program.       |
| <b>Session 1 (Baseline)</b>     | Photograph the initial Comfort Zone Thermometers before they are posted.                                                                                                                                 |
| <b>Sessions 4 &amp; 8</b>       | Collect the Pet Hut adoption profiles (Session 4) and adoption campaign posters (Session 8) as literacy portfolio artifacts, both require students to use data and written evidence to make an argument. |
| <b>Session 9</b>                | Photograph team reaction time data tables and optical illusion finding sheets posted on the Wall of Wins. These make strong portfolio artifacts showing scientific measurement and data analysis skills. |
| <b>Session 10 (Culmination)</b> | Photograph the final Fibonacci spiral gallery and the updated Comfort Zone Thermometer wall. Capture the group photo.                                                                                    |

# FOR SCHOOL-BASED LEADERSHIP

## The Lightning Girl Club — Grades 6–8 Literacy + STEAM Program

*A program share-out for principals, superintendents, and school-based partners*

### About This Program

The Lightning Girl Club is a 10-session afterschool Literacy + STEAM program built around *The Miscalculations of Lightning Girl* by Stacy McAnulty. Each 60-minute session combines academic vocabulary instruction, student-led book discussion, and a 30-minute hands-on STEAM Lab. The program runs for 10 weeks and is designed specifically for out-of-school time settings with non-certified OST staff as facilitators.

Designed for mixed grades 6–8 • 10 Sessions, 60 Minutes Each • Written for OST Staff

### Program Outline

| Session                     | Literacy + Vocabulary Focus                                                                  | STEAM Lab + Skills                                                                     |
|-----------------------------|----------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
| 1 — Lightning Strikes       | Discussion: character motivation + textual evidence; 5 vocabulary words (novel excerpt)      | Lightning in a Bottle — electrical circuits (physics + engineering design)             |
| 2 — The Soft Skills Problem | Academic vocabulary: etymology, connotation; 5 words including Greek/Latin roots             | Pi Is Everywhere — ratio discovery, measurement, data collection (math + science)      |
| 3 — The Outcasts            | Story Circle discussion: belonging, identity; 5 vocabulary words (tele-, -path, peri- roots) | East Hamlin Network Lab — graph theory, relationship mapping (discrete math)           |
| 4 — Pi the Dog              | Textual evidence; 5 vocabulary words; written argument from data                             | The Pet Hut Data Lab — statistics, graphing, persuasive writing with data              |
| 5 — The Sleepover           | Connotation Spectrum; 5 words (ver-, im- roots); fishbowl discussion                         | Reaction Time Lab — measurement, data tables, neuroscience                             |
| 6 — Fair vs. Equal          | Physical debate; 5 vocabulary words (-fy, -ment roots); evidence-based speaking              | The Ramp Challenge — slope, engineering design, equity concepts (geometry + ethics)    |
| 7 — The MathWhiz Reveal     | 5 vocabulary words (auto-, an- roots); discussion: truth, identity, trust                    | Cipher School — cryptography, substitution ciphers (math + computer science)           |
| 8 — The Adoption Event      | 5 vocabulary words; students write data-backed persuasion campaigns                          | Campaign Architects — applied statistics, advocacy, visual argument design             |
| 9 — Miscalculations         | Textual evidence: theme + character arc; 5 vocabulary words                                  | Optical Illusion Lab — perception science, measurement, hypothesis testing             |
| 10 — For the Love of Pi     | Full novel arc reflection; vocabulary synthesis (all 50 words revisited)                     | Fibonacci Celebration Studio — mathematical sequences, visual art, spiral construction |

### Alignment to School-Day Standards

| Nebraska ELA Standard                             | How This Program Addresses It                                                                                                                                                                                                                                             |
|---------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>LA.6–8.RP.1</b><br>Reading Prose & Poetry      | Students cite textual evidence across all 10 Story Circle discussions to support analysis of character motivation, theme, and author's craft in a full-length novel. Strongest emphasis in Sessions 3, 5, 7, 8, and 9.                                                    |
| <b>LA.6–8.V.1</b><br>Vocabulary Acquisition & Use | 50 Tier 2 and Tier 3 academic vocabulary words taught across all 10 sessions using a 4-Step Routine (Say It → Define It → Connect It → Use It). Root word analysis embedded in Sessions 3, 5, 6, and 7. Mirrors the Nebraska Science of Reading framework for grades 6–8. |
| <b>LA.6–8.SL.2</b><br>Speaking & Listening        | Students present evidence-based claims in every Story Circle and STEAM Lab. Structured speaking formats (fishbowl, gallery walk, physical debate, campaign presentations) practiced in Sessions 3, 4, 5, 6, 8, and 10.                                                    |

### Grant & Reporting Category Alignment

|                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|--------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>21st CCLC Program Quality — Literacy Enrichment</b> | 10-session literacy program aligned to Nebraska ELA Standards (grades 6, 7, and 8) across literary text comprehension (LA.6–8.RP.1), academic vocabulary acquisition (LA.6–8.V.1), and speaking & listening (LA.6–8.SL.2). All sessions are standards-referenced and designed for mixed-grade OST settings.                                                                                                                                                         |
| <b>STEAM Integration</b>                               | Every session includes a 30-minute STEAM Lab connecting science, technology, engineering, art, and mathematics to the anchor text. Labs span: electrical circuits (physics), pi discovery (math), network mapping (discrete math), data analysis (statistics), reaction time (neuroscience), slope engineering (geometry), cryptography, persuasion design (applied statistics), optical illusions (perception science), and Fibonacci spirals (math + visual art). |

|                                                  |                                                                                                                                                                                                                                                                                                                                                                            |
|--------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>School-Day Alignment</b>                      | Science of Reading vocabulary instruction mirrors the Nebraska SOR framework for grades 6–8. The 4-Step Vocabulary Routine aligns to Tier 2 and Tier 3 word instruction at each grade level. Story Circle discussions reinforce textual evidence and literary analysis skills taught during the school day. This program reinforces, not replaces, school-day instruction. |
| <b>Differentiated Instruction</b>                | All 10 sessions include Emerging and Advanced modifications within the Word Play block. STEAM Labs include open-ended design challenges that allow students to engage at multiple levels of complexity within the same activity.                                                                                                                                           |
| <b>Attendance &amp; Engagement Documentation</b> | 10-session program with structured arrival rituals, three program-wide engagement trackers (Lightning Bolt Award, Wall of Wins, Comfort Zone Thermometers), and student-produced STEAM artifacts available for portfolio documentation from every session.                                                                                                                 |

**Impact & Outcomes: What to Look For**

|  Literacy Outcomes                                                                                                                                                                                                                        |  STEAM Outcomes                                                                                                                                                                                                               |  Character & Behavioral Outcomes                                                                                                                                                                                                                                                        |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"><li>◦ Students read and discussed a full novel across 10 weeks</li><li>◦ Acquired and used 50 grade-level academic vocabulary words</li><li>◦ Practiced citing textual evidence in every discussion</li><li>◦ Analyzed character, theme, and author's craft in a literary text</li></ul> | <ul style="list-style-type: none"><li>◦ Applied the engineering design process across 10 labs</li><li>◦ Collected, represented, and interpreted real data</li><li>◦ Explored physics, cryptography, neuroscience, and statistics</li><li>◦ Connected STEAM thinking to equity and advocacy questions</li></ul> | <ul style="list-style-type: none"><li>◦ Built trust and belonging in a mixed-grade peer group</li><li>◦ Practiced perspective-taking, active listening, and constructive disagreement</li><li>◦ Tracked personal growth across 10 weeks (Comfort Zone Thermometers)</li><li>◦ Experienced a learning environment built on choice, respect, and genuine curiosity</li></ul> |

**Additional Notes**

*Use this space to share student artifact photos, attendance data, or other program highlights relevant to your school partner.*

# MISCALCULATIONS OF LIGHTNING GIRL

## Family Night Guide

|                                                                                                                |                                                                                                                     |                                                                                                                |                                                                                                                            |
|----------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|
|  <b>TIME</b><br>60–90 minutes |  <b>WHO</b><br>Students + Families |  <b>GRADES</b><br>6–8 (Mixed) |  <b>FORMAT</b><br>Gallery + Build Night |
|----------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|

### About This Event

The Lightning Girl Club Family Night is a celebration and a hands-on experience. Students have spent 10 sessions reading *The Miscalculations of Lightning Girl*, exploring math, science, and identity through Lucy's story. Tonight, they get to share what they know, and build something new alongside the people they came from.

The evening is structured in three parts: a Gallery Walk where students showcase their work and thinking, a STEAM Build Challenge where families and students work together on a real engineering problem, and a Story Share where students connect Lucy's journey to their own lives

### GOALS FOR TONIGHT

|                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                    |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Students will...</b> <ul style="list-style-type: none"><li>• Share and explain their learning to family members</li><li>• Connect Lucy's story to real-world math and science</li><li>• Work collaboratively on a new STEAM challenge</li><li>• Practice explaining their thinking out loud</li></ul> | <b>Families will...</b> <ul style="list-style-type: none"><li>• See the book and program that shaped their student's last 10 sessions</li><li>• Learn about lightning, math patterns, and perseverance alongside their student</li><li>• Participate in a hands-on build challenge</li><li>• Walk away with something their student made</li></ul> |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### SUPPLY LIST

|                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                              |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Gallery Walk</b> <ul style="list-style-type: none"><li>• Student work from all 10 sessions (pre-collected)</li><li>• Printed vocabulary cards (1 set per station)</li><li>• Sticky notes + markers</li><li>• "I Notice / I Wonder" station labels</li><li>• Copy of the book for display</li></ul> | <b>STEAM Build Challenge</b> <ul style="list-style-type: none"><li>• Spaghetti — 20 pieces per group</li><li>• Tape — 1 roll per group</li><li>• String or yarn — 1 meter per group</li><li>• 1 large marshmallow per group</li><li>• Ruler or measuring tape</li><li>• Paper + pencils for planning</li></ul> | <b>Story Share + Closing</b> <ul style="list-style-type: none"><li>• Lightning Bolt cards (template in Appendix)</li><li>• Colored pencils or markers</li><li>• Display space for lightning bolts</li><li>• Optional: light snacks or refreshments</li></ul> |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### **EDUCATOR NOTE**

Collect 2–3 work samples per student at the end of Session 9 or 10.  
Aim for a mix: vocabulary work, STEAM lab notes, and a Story Circle response.  
Set up the Gallery before families arrive. Students should walk in feeling proud, not scrambling.

## ROOM SETUP

### **Zone 1 — Gallery Walk**

Set up 4–6 display stations around the room's perimeter. Label each station clearly.

- Station 1 — Who Is Lucy? (identity + OCD representation)
- Station 2 — Lightning + Math Patterns (pi, Fibonacci, statistics)
- Station 3 — STEAM Labs (student lab work + photos if available)
- Station 4 — Word Wall (vocabulary cards + student definitions)
- Station 5 — Story Circle Highlights (discussion prompts + responses)
- Station 6 — Real World Connections (optional)

### **EDUCATOR NOTE**

Label each Gallery station with a large printed header and a short 'What to look for' prompt so families can self-navigate.

### **Zone 2 — Build Tables**

Set up tables in the center. Each table seats one family group (student + 1–3 family members).  
Pre-set materials in a bag.

### **Zone 3 — Story Share Circle**

Leave open floor space or a circle of chairs at one end of the room. Set out Lightning Bolt cards and colored pencils in advance.

## RUN OF SHOW — 60 TO 90 MINUTES

| TIME      | SEGMENT                      | WHAT HAPPENS                                                                                                                                     |
|-----------|------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| 0:00–0:10 | <b>Welcome + Arrival</b>     | Families arrive and begin Gallery Walk. Staff and students greet at the door. Families explore stations at their own pace.                       |
| 0:10–0:30 | <b>Gallery Walk</b>          | Students guide families through the stations, explaining their work. Staff circulates with prompts.                                              |
| 0:30–0:55 | <b>STEAM Build Challenge</b> | The whole group gathers at build tables. Staff introduces the Marshmallow Tower challenge. Groups build for 18 min. Staff leads a 5-min debrief. |
| 0:55–1:10 | <b>Story Share Circle</b>    | Students complete their Lightning Bolt card. Volunteers share. Staff closes with a book passage.                                                 |

|           |                             |                                                                                                        |
|-----------|-----------------------------|--------------------------------------------------------------------------------------------------------|
| 1:10–1:20 | Celebration + Informal Chat | Students share their Lightning Bolt card with family. Refreshments if available. Optional group photo. |
|-----------|-----------------------------|--------------------------------------------------------------------------------------------------------|

## PART 1 — WELCOME + GALLERY WALK (0:00–0:30)

### Before Families Arrive

- Student work is displayed at each Gallery station (pre-set by staff).
- Each station has a header card and a 'What to look for' prompt.
- Vocabulary cards are arranged at Station 4.
- Sticky notes and markers are at each station for family responses.

### Opening Welcome (5 minutes)



*"Welcome to the Lightning Girl Club Family Night! We are so glad you're here."*

*For the last 10 sessions, your students have been reading *The Miscalculations of Lightning Girl* by Stacy McAnulty. They've been exploring math, science, language, and some big questions about what it means to belong.*

*Tonight is not a presentation, it's a doing night. You will get to explore what your student has been learning, work on a challenge together, and hear directly from them.*

*First, we're going to do a Gallery Walk. Six stations are set up around the room. Your student is your guide. Let them show you around. Let them explain things. Your job is to be curious.*

*One rule: every sticky note you write tonight has to include the word 'interesting' OR a question mark. We want to know what catches your eye."*

### Gallery Walk (20 minutes)

Students lead families through the stations. Staff circulate and use these prompts to spark deeper conversation:

| Prompts for Students                                                                                                                                                                                                                                                                                               | Prompts for Families                                                                                                                                                                                                                                                              |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• "Can you explain this to your family like you're the teacher?"</li> <li>• "What did you make or do here? Walk them through it."</li> <li>• "What's one thing from this station that surprised you?"</li> <li>• "Which vocabulary word was your favorite? Why?"</li> </ul> | <ul style="list-style-type: none"> <li>• "I notice... What does that mean?"</li> <li>• "Which station do you want to come back to?"</li> <li>• "Does any of this connect to something you know about or do?"</li> <li>• "What questions do you have for your student?"</li> </ul> |



### EDUCATOR NOTE

Give a 5-minute warning before calling the group to the build tables: "Find one last sticky note to write, then meet me at the center tables."

## PART 2 — STEAM BUILD CHALLENGE: MARSHMALLOW TOWER (0:30–0:55)

### Why This Challenge?

In the book, Lucy approaches every problem the same way: gather data, test, revise. The Marshmallow Tower Challenge mirrors that process. Families plan together, build together, and often fail together — just like Lucy does when she first tries to belong at middle school. The debrief connects that experience back to the book.



### STEAM BUILD CHALLENGE

Marshmallow Tower — Engineering + Teamwork + Perseverance

🕒 25 min

|                           |                                                                                                                                                                                     |
|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Materials:</b>         | 20 pieces of uncooked spaghetti, 1 meter of tape, 1 meter of string or yarn, 1 large marshmallow, paper + pencil, shared measuring tape                                             |
| <b>The Challenge:</b>     | Build the tallest freestanding tower you can using ONLY the materials provided. The marshmallow must be on top. The tower must stand on its own for 5 seconds. You have 18 minutes. |
| <b>Groups:</b>            | One family group per table (student + 1–3 family members). Open bags only after the challenge is read aloud.                                                                        |
| <b>Phase 1: Plan</b>      | Before touching materials, sketch your design on paper. Talk it through as a group.                                                                                                 |
| <b>Phase 2: Build</b>     | Open your bag and build. Staff circulate: "What's your plan? Why did you choose that structure?"                                                                                    |
| <b>Phase 3: Measure</b>   | At time, hands up. Let the tower stand. Staff measures and announces heights.                                                                                                       |
| <b>If finished early:</b> | "Can you make it taller? Can you make it stronger?" Push for iteration.                                                                                                             |

### Facilitator Script



*"Alright everyone, come find a table with your family. Each table has a bag of supplies. Don't open it yet."*

*In the book, Lucy is obsessed with patterns and problem-solving. She collects data. She tests things. She adjusts. Tonight you're going to do the same thing.*

*Here is your challenge:* Build the tallest freestanding tower you can using ONLY the materials provided. The marshmallow must be on top. The tower must stand on its own for 5 seconds. You have 18 minutes. *The only rule is that the marshmallow has to be on top, and the tower has to stand on its own for 5 seconds.*

*Before you build, spend 3 minutes planning on your paper. Sketch it. Talk about it. Then build.*

*Ready? 3... 2... 1... open your bags."*

## Debrief (5 minutes)



*"Let's talk about what just happened."*

*What did your group try that didn't work? [take 2–3 responses]*

*In the book, Lucy tries really hard to fit in at middle school, and it doesn't go the way she planned. Her first attempts kind of... collapse. Just like some of our towers might have.*

*But here's what Lucy does. She keeps trying. She uses what she knows, math, patterns, data, to figure out a new approach.*

*What did YOU use to figure out your approach tonight? [take responses]*

*That's exactly what engineers do. That's exactly what mathematicians do. And it's exactly what the lightning girl does."*

## PART 3 — STORY SHARE + CLOSING (0:55–1:20)

### Lightning Bolt Cards (10 minutes)

Hand out one Lightning Bolt card to each student. (Template in Appendix — print on cardstock if possible.)



*"Before we wrap up, I want each student to complete their Lightning Bolt card. This is yours to keep, and to share with your family tonight."*

*The card has three prompts. You have about 5 minutes to fill it in. Decorate it however you want. it's yours."*

### Lightning Bolt Card Prompts

1. One thing I learned in the Lightning Girl Club that I didn't know before:
2. One way Lucy's story connects to my life:
3. Something I want my family to know about this program:

### Sharing Circle (10 minutes)

Invite students and families to a circle (or stay at tables if space is tight).



*"Who wants to share one thing from their Lightning Bolt card? You can read it or say it in your own words. Families, your job is to listen."*

*[Take 4–6 volunteers. If students are shy, ask family members to share something they noticed at the Gallery Walk.]*

*I want to close by reading you something from the book. [Read or paraphrase a short passage — see Suggested Passage box below.]*

*Lucy spends the whole book learning that she can belong even if she doesn't fit a mold. I think you all showed that tonight. You brought your own ideas, your own designs, your own thinking to every challenge.*

*Thank you for being Lightning Girls and Lightning Kids and Lightning Families."*

### Suggested Passage from the Book

*For your closing reading, choose any moment where Lucy reflects on belonging, difference, or her love of math, particularly Chapters 1, 14, or the final chapter. Keep it to 3–5 sentences. You can also paraphrase.*

Avoid: plot-heavy moments that assume families have read the book. Aim for: a reflection on identity, persistence, or community.

## EMERGING + ADVANCED LEARNER SUPPORT

### Emerging Learners

#### Gallery Walk:

- Partner with student at 1–2 stations to model how to explain their work before they go solo.
- Pre-write a sentence starter on their displayed work: "This is a... I made this by..."

#### Build Challenge:

- Provide a simple visual instruction sheet at the table.

#### Lightning Bolt Card:

- Offer sentence frames printed on the back.
- Drawing is a valid response for any prompt.

### Advanced Learners

#### Gallery Walk:

- Challenge student to explain not just what but why: "Why did your group choose that approach?"
- Ask student to identify connections between two different stations.

#### Build Challenge:

- Ask the group to predict their final height before building and track predicted vs. actual.
- Invite advanced learners to explain their engineering decisions during group debrief.

#### Lightning Bolt Card:

- Add a fourth prompt: "One question I still have from this program."
- Invite them to share first during the circle.

## STAFF PREP CHECKLIST

### 1 Week Before

- Send invitations home to families (date, time, what to expect)
- Begin collecting student work from sessions 7–10
- Print and prep Gallery station headers and prompt cards
- Print Lightning Bolt card template — 1 per student, cardstock preferred
- Gather and bag STEAM build materials

### Day Of

- Set up Gallery stations and build tables before students arrive
- Place sticky notes + markers at each Gallery station
- Pre-bag build materials — 1 bag per group
- Set Lightning Bolt cards and colored pencils at Story Share area
- Brief all staff on the run of show and their roles

- Confirm number of attending families for table setup

- Have a copy of the book on display
- Identify your closing passage and practice it once

## APPENDIX

### A. Gallery Station Header Cards

Print and post one per station at eye level. Each includes a title and a 'What to look for' prompt for families.

#### Station 1: Who Is Lucy?

Lucy is the main character of *The Miscalculations of Lightning Girl*. She's a math genius, she has OCD, and she's starting middle school for the first time.

Look for: How do students describe Lucy? What makes her different, and what makes her belong?

#### Station 2: Lightning + Math Patterns

Lucy loves pi, Fibonacci sequences, and statistics. Students explored real math patterns in their sessions.

Look for: student work on number patterns, data collection, and real-world math connections.

#### Station 3: STEAM Labs

Students did hands-on experiments in every session.

Look for: their lab notes, sketches, and findings.

Ask your student: what did you discover?

#### Station 4: Word Wall

Students learned 50 vocabulary words from the book.

Look for: the vocabulary cards. Ask your student to pick one word and use it in a sentence right now.

#### Station 5: Story Circle Highlights

Every session included a Story Circle, a discussion about the book and big ideas.

Look for: student responses and discussion prompts. Ask your student: which question stuck with them most?

#### Station 6: Real World Connections

Students connected the book to the real world, lightning science, mental health representation, and mathematicians who changed history.

Look for: connections between Lucy's story and the world outside the book.

### B. Lightning Bolt Card Template

Print one per student on cardstock. Students complete during Part 3.

## MY LIGHTNING BOLT CARD

Name:

1. One thing I learned that I didn't know before:
2. One way Lucy's story connects to my life:
3. Something I want my family to know about this program:

*Decorate the back — this card is yours to keep.*

### C. Family Invitation Template

#### **You're Invited to Lightning Girl Club Family Night!**

DATE:

TIME:

LOCATION:

Your student has been part of The Lightning Girl Club, an afterschool program built around *The Miscalculations of Lightning Girl* by Stacy McAnulty. For 10 sessions, they've been reading, building, experimenting, and discussing big ideas. You're invited to join us to celebrate all the work your student has completed and participate in a STEM challenge.

Come ready to:

- Explore a Gallery of your student's work
- Work on a hands-on build challenge together
- Hear from your student about what they've learned

*Light refreshments will be provided. All are welcome.*

Questions? Contact:

## SESSION 1

# Lightning Strikes

Chapters 1–4 | Who is Lucy Callahan, and what do numbers have to do with it?

### Session at a Glance

|                                                                                                                            |                                                                                                                        |                                                                                                                           |                                                                                                                        |                                                                                                                        |
|----------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|
| <br><b>ARRIVAL RITUAL</b><br><i>5 min</i> | <br><b>WORD PLAY</b><br><i>10 min</i> | <br><b>STORY CIRCLE</b><br><i>15 min</i> | <br><b>STEAM LAB</b><br><i>30 min</i> | <br><b>SHOUTOUT</b><br><i>5 min</i> |
|----------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|

### MATERIALS FOR THIS SESSION

- Name tag stickers
- markers
- 9V batteries (1 per team - [Example Item](#))
- alligator clip wires (6 per team - [Example Item](#))
- LED lights ([Example Item](#))
- cardboard strips

### PRE-SESSION SETUP *(10 minutes of prep before students arrive)*

- ☐ Write one number on your own name tag, model what you want students to do
- ☐ Set name tag stickers and markers at the entrance so students grab them as they walk in
- ☐ Set up battery + wire + LED kits in a central area or under tables (one kit per team of 2–3 students)
- ☐ Write 5 vocabulary words on the board or chart paper: defibrillator, fluorescent, fractal, reclusive, immunization
- ☐ Write the session's Big STEAM Question on the board: 'How does electricity know where to go?'



### ARRIVAL RITUAL

*5 min*

### "Number Name Tags"

**Script:** When you walk in, grab a name tag and a marker.

Write ONE number that represents you, not your name. Any number. Could be your jersey number, your lucky number, how many dogs you have, anything.

We'll go around and everyone says: I'm [name] and my number is [X] because...

I'll go first." [Share yours.]

**Movement:** Students stand in a circle to share. No desks yet.



**EDUCATOR NOTE:** If someone says "I don't know," just say "Pick any number, there is genuinely no wrong answer." If silence, share your own number again and give them more time.



## WORD PLAY

10 min

### Walk the Room Reveal | 5 words, ~2 min each

**Format:** Reveal each word using the 4-Step Routine. Students say each word aloud 3 times before you define it. No writing, all talking. ~2 minutes per word.

**What the room looks like:** Students are on their feet (Walk & Peek) or leaning in toward the table (Card Flip). You hold up a word card or point to the posted word. The room is noisy, students are saying words aloud together, repeating at different volumes, laughing at the dramatic delivery you model. There is no worksheet in sight.



### STUDENT CHOICE — How do we reveal the words today?

Let students vote with a show of hands or thumbs before you start:

**Option 1:** Walk & Peek — words posted around the room, students walk to each one first

**Option 2:** Card Flip — words face-down on the table, flip one at a time as a group



### HOW THIS FORMAT WORKS — Walk & Peek or Card Flip



#### If students choose: Walk & Peek

**BEFORE:** Write all 5 words on separate pieces of paper and tape them around the room — on walls, windows, or chairs — spread out so students must move between them.

**YOU SAY:** "Before we define anything, walk around and find all 5 words. Read each one aloud when you find it. 60 seconds — go."

**STUDENTS:** Get up, move around, find each word, and say it aloud. No definition yet — just exposure and movement.

**THEN:** Call everyone back. Point to word 1. Run the 4-Step Routine from the Vocabulary Appendix. Repeat for each word.



#### If students choose: Card Flip

**BEFORE:** Write all 5 words on index cards or paper squares. Place them face-down in a line on the table.

**YOU SAY:** "All 5 words are face-down. When I flip one, say it aloud together before we do anything else."

**STUDENTS:** Gathered around the table. When a card flips, everyone reads the word aloud. The reveal builds suspense.

**THEN:** Run all 4 steps for that word from the Vocabulary Appendix before flipping the next card.



### HOW THIS RUNS — repeat for all 5 words

Session 1 words: defibrillator, fluorescent, fractal, reclusive, immunization

| STEP                             | YOU DO                                                                                                                                                                                    | STUDENTS DO                                                                                                                                                        |
|----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1<br><b>Say It</b><br>~20 sec    | Show the word (write on board, hold up card, or reveal on wall). Say it once yourself, clearly. Then say: "Say it with me — [word]. Whisper it. Now full voice. One more time."           | Repeat the word aloud three times — at different volumes or with different energy depending on your prompt. Everyone says it. No one sits this out.                |
| 2<br><b>Define It</b><br>~30 sec | Read the student-friendly definition aloud. Then immediately restate it in your own words or give a quick example. See the Vocabulary Appendix for the scripted definition for each word. | Listen. Some students will nod, look surprised, or react — that's the signal they're connecting. If a student says 'oh, like...' let them finish. That's the work. |

|                                   |                                                                                                                                                                            |                                                                                                                                                                                 |
|-----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3<br><b>Connect It</b><br>~45 sec | Ask the Connect It question (see Appendix). Give 5 full seconds of wait time before calling on anyone — silence here is thinking, not failure. Take 2–3 student responses. | Think of a real connection — to their own life, to something in the book, or to the world. Then share it aloud. Short answers are fine: one sentence is enough. No writing.     |
| 4<br><b>Use It</b><br>~25 sec     | Give the Use It prompt (see Appendix — prompts are differentiated by grade 6/7/8). Call on one student per grade level, or open it to whoever raises their hand first.     | Make a sentence using the word correctly. The sentence has to make sense — it can't just drop the word in randomly. Partners can help each other before sharing with the group. |

### **EMERGING — for students who need more support**

For any student who struggles to say a word: break it into syllables and clap as a group before moving on. de-FIB-rih-lay-tor. Count the claps — 5! No one gets left behind on pronunciation.

### **ADVANCED — for students ready for more challenge**

After all 5 words: 'Can anyone use TWO of today's words in the same sentence?' If a student manages it, write it on the board. Example: 'Lucy is reclusive because she finds fluorescent lights overwhelming.'



**EDUCATOR NOTE:** You don't need to know every word before the session. Read the definition card together with students — say 'Let me read this one with you.' Modeling that adults also encounter unfamiliar words is genuinely useful for middle schoolers.

 **WHAT SUCCESS LOOKS LIKE:** Word Play is working when: students say each word aloud without being prompted, someone uses a vocabulary word in Story Circle later without you suggesting it, the game format feels competitive or playful rather than like a quiz, and students are disagreeing about Connect It answers — that debate means they're thinking.



## **STORY CIRCLE**

15 min

### **Student voices lead. You ask — they talk.**

**Setup:** Sit in a circle — not at tables. Read Chapter 1 aloud for about 5 minutes. You don't have to be a perfect reader. Just read it like you'd tell someone a story.

**Q1:** "Lucy uses numbers to make sense of everything. Can you think of something in your life that you've tried to organize or control that actually can't be controlled that way?"

**Q2:** "If you were Nana, what would YOU say to convince Lucy that middle school was worth trying?"



### **STUDENT CHOICE DISCUSSION — Pick a question**

Let students vote with a show of hands or thumbs before you start:

**Option 1:** "Nana believes school will teach Lucy something math can't. What could that possibly be — and do you agree that's worth a whole year of 7th grade?"

**Option 2:** "Lucy describes herself as 'a reclusive genius.' What does that phrase tell us about how she sees herself — is it a brag, a defense, or something else?"

**Option 3:** "The book opens with a lightning strike that rewires Lucy's brain. What do you think changes in a person after surviving something that dramatic?"



**MOVEMENT:** If energy is low: do a quick stand-up/sit-down. "Stand if you think Nana is right. Sit if you think Lucy should go to college instead."



**EDUCATOR NOTE:** If discussion stalls: "What do you think about [specific thing from the chapter]?" Refer back to the text — it gives everyone something concrete to react to. You don't need to explain the book. Just ask genuine questions.

➡ **TRANSITION:** *You just talked about how Lucy sees the world differently. Now you're going to feel what electricity actually does, the same force that changed her brain. Let's move to the STEAM lab.*



## STEAM LAB

30 min

### "Lightning in a Bottle"

**Big Question:** How does electricity know where to go?

**The Challenge:** Build the longest possible circuit that still lights an LED.

**Phase 1: EXPLORE** — 8 min. Give teams their materials. No instructions. Just say: "Figure out how to make the light turn on." Walk around, watch, resist the urge to help right away.

**Phase 2: BUILD** — 12 min. "New challenge: your circuit has to touch at least 3 different points before reaching the LED. Talk to your team and try things."

**Phase 3: COMPARE** — 6 min. Which ones lit up? Teams that got it working explain to a team that didn't — students teach students, not you.

**Phase 4: CONNECT** — 4 min. "Lucy's brain was changed by electricity. What did today teach you about what electricity actually is?" Take 2–3 answers.

**Teams:** Mix grades deliberately — one 8th grader per team. The explore phase levels the playing field; no one has done this exact thing before.

**Celebrate:** Any team with a working 3-point circuit names their circuit. Write team names on the board: "The \_\_\_\_ Circuit."



### IF STUDENTS GET STUCK — Session 1

**Likely sticking point:** A team can't get the LED to light up at all.

**Say this #1:** *"What happens if you touch the wire directly to the battery?"* Let them discover, don't show them. If an LED burns out, just swap it — it happens.

**Say this #2:** *"What are the two things that need to be connected to complete a circuit? Try touching the wire directly to both battery terminals — does anything happen?"*

**Quick visual to draw on the board:** A complete circuit is a loop — current has to be able to travel all the way around. If any connection is broken, nothing works. Draw a quick circle on the board: battery → wire → LED → wire → back to battery.

**If you haven't pre-made anything:** You don't need to pre-build a circuit. Walk in, hand out the parts, and say 'figure out how to make the light turn on.' Discovering it through trial and error is the whole point. If you've never done this before — that's fine. Neither have they.



## SHOUTOUT & SEND-OFF

5 min

### Shoutouts and Lightning Bolt Award

**Ritual:** Lightning Round Shoutouts

**What to say:** "I'll start: I want to give a shoutout to \_\_\_\_ for \_\_\_\_\_. Now it's open — anyone can shout out anyone."

⚡ **Lightning Bolt:** Award the lightning bolt for the most memorable moment of the session. You can use a physical lightning bolt prop or simply recognize a student out loud — 'Today's lightning bolt goes to \_\_\_\_ for \_\_\_\_\_.'

**Preview:** ⚡ Next time we find out whether Lucy can actually survive her first week of middle school.

## SESSION 2

# The Soft Skills Problem

Chapters 5–9 | Can math explain people? And what even is a 'soft skill'?



### MATERIALS FOR THIS SESSION

- Sticky notes
- markers
- String
- rulers
- 3 circular objects per team (cans, cups, and jars)
- graph paper
- colored pencils
- small envelopes
- calculators



### PRE-SESSION SETUP *(10 minutes of prep before students arrive)*

- ☐ Designate one wall section for Comfort Zone Thermometers
- ☐ Write 5 vocabulary words on the board: paparazzi, condoning, savant, obsessive, assessment
- ☐ Write the Big STEAM Question on the board: 'Why does the same number show up in every circle?'
- ☐ Gather circular objects from recycling: cans, cups, jars, at least 3 different sizes per team
- ☐ Cut string into arm-length pieces, one per student (free from any ball of yarn or scrap)
- ☐ Set out rulers, graph paper, colored pencils, small envelopes, and pencils at tables



### ARRIVAL RITUAL

5 min

### "Comfort Zone Thermometer — Day 1"

**Script:** Grab a sticky note and a marker.

Draw a quick thermometer, just a rectangle is fine. Shade it in to show how comfortable you feel talking to NEW people. Empty = uncomfortable, full = totally fine.

Don't put your name on it. Stick it on this wall. Share with students that everyone will revisit these on the last day.

**Movement:** Students get up to post their thermometers on the designated wall section.



**EDUCATOR NOTE:** Post your own thermometer first. Normalize the full range, say something like "I usually land somewhere in the middle."



## WORD PLAY

10 min

### Word Auction | 5 words, ~2 min each

**Format:** Show each word with a one-sentence definition. Students bid on which word they think will show up MOST in Ch. 5–9. They must say one sentence explaining their bet before their bid counts. After reading, check who predicted correctly.

**What the room looks like:** Students are leaning forward with competitive energy. Fingers are raised or RPS is happening between pairs. You're playing auctioneer — moving fast, calling bids, keeping it loud and quick. It should feel like a game show, not a lesson.



### STUDENT CHOICE — What do we bid with?

Let students vote with a show of hands or thumbs before you start:

**Option 1:** Imaginary coins — everyone starts with 10, bid with your fingers

**Option 2:** Rock Paper Scissors — winner of each round earns a bid



### HOW THIS FORMAT WORKS — Word Auction — What bidding actually looks like

| SETUP                                                                                                                                                                     | THE AUCTION (before 4-Step)                                                                                                                                                                                                                                                                                                                                          | HOW IT CONNECTS TO 4-STEP                                                                                                                                                                                                          |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Write all 5 words on the board with a one-sentence definition beside each. Tell students: 'You have 10 imaginary coins — track them on your fingers or a scrap of paper.' | Show one word. Read its definition aloud.<br><br><i>YOU SAY: "Who thinks THIS word shows up most in today's reading? Bid — but first say one sentence explaining why." Highest finger-bid wins. OR: play RPS, winner earns the bid. Bidder must give their prediction sentence.</i><br><br>Repeat for all 5 words. After reading, revisit — who predicted correctly? | The auction IS Step 1 (Say It) + Step 2 preview (Define It). After auctioning all 5, run Step 3 (Connect It) and Step 4 (Use It) for each word in turn. The auction creates investment so Connect It feels personal, not academic. |



### HOW THIS RUNS — repeat for all 5 words

Session 2 words: *paparazzi, condoning, savant, obsessive, assessment*

| STEP                                     | YOU DO                                                                                                                                                                                    | STUDENTS DO                                                                                                                                                        |
|------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1<br><br><b>Say It</b><br><br>~20 sec    | Show the word (write on board, hold up card, or reveal on wall). Say it once yourself, clearly. Then say: "Say it with me — [word]. Whisper it. Now full voice. One more time."           | Repeat the word aloud three times — at different volumes or with different energy depending on your prompt. Everyone says it. No one sits this out.                |
| 2<br><br><b>Define It</b><br><br>~30 sec | Read the student-friendly definition aloud. Then immediately restate it in your own words or give a quick example. See the Vocabulary Appendix for the scripted definition for each word. | Listen. Some students will nod, look surprised, or react — that's the signal they're connecting. If a student says 'oh, like...' let them finish. That's the work. |

|                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                   |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>RUN AUCTION</b>                                                                                                                                                                                                                                                                                                                                                                                                   | <p><b>After Step 2 for each word:</b> Say: <i>"Who thinks THIS word shows up most in today's reading? Bid — but first give me one sentence explaining why."</i></p> <p><b>Students spend their bid from their ~10 coins. Once spent, those coins are gone. Students with no coins left cannot bid on remaining words.</b></p> | <p>All students show fingers simultaneously for their bid — no peeking at others first. The highest bid wins that word.</p> <p>If there is a tie: the two tied students play Rock Paper Scissors. Winner confirms their prediction sentence to claim the word.</p> <p>If a student is out of coins: they cannot bid but can still participate in all 4 steps.</p> |
| <b>3</b><br><br><b>Connect It</b><br><br><b>~45 sec</b>                                                                                                                                                                                                                                                                                                                                                              | <p>Ask the Connect It question (see Appendix). Give 5 full seconds of wait time before calling on anyone — silence here is thinking, not failure. Take 2–3 student responses.</p>                                                                                                                                             | <p>Think of a real connection — to their own life, to something in the book, or to the world. Then share it aloud. Short answers are fine: one sentence is enough. No writing.</p>                                                                                                                                                                                |
| <b>4</b><br><br><b>Use It</b><br><br><b>~25 sec</b>                                                                                                                                                                                                                                                                                                                                                                  | <p>Give the Use It prompt (see Appendix — prompts are differentiated by grade 6/7/8). Call on one student per grade level, or open it to whoever raises their hand first.</p>                                                                                                                                                 | <p>Make a sentence using the word correctly. The sentence has to make sense — it can't just drop the word in randomly. Partners can help each other before sharing with the group.</p>                                                                                                                                                                            |
| <p> <b>EMERGING — for students who need more support</b></p> <p>For students unsure how to bid: 'It's a prediction, there's no wrong answer. Just make your best guess and say why.'<br/>Give any student who is stuck a sentence starter: 'I think [word] will appear most because Lucy seems like someone who would be ____.'</p> |                                                                                                                                                                                                                                                                                                                               | <p> <b>ADVANCED — for students ready for more challenge</b></p> <p>After all bids are placed: 'Can anyone rank all 5 words from most likely to least likely to appear, and explain the ranking?' Strong prediction thinkers will love this challenge.</p>                        |

 **EDUCATOR NOTE:** Move fast. The auction energy dies if you pause too long between words. If bids are slow, say 'Five seconds, fingers up NOW' and just call whoever is showing the most fingers.



**STORY CIRCLE**

*15 min*

**Student voices lead. You ask — they talk.**

**Setup:** Partners read together — each person reads one paragraph at a time from the Ch. 5–6 math class scene. Choose your own partner.

**Q1:** "If soft skills are so important, why doesn't school explicitly teach them? What would a class called Soft Skills 101 actually look like?"

**Q2:** "Where do you think Lucy's math ability comes from — something that happened to her, something she chose, or both? Does the origin matter?"

 **STUDENT CHOICE DISCUSSION — Pick a question**

Let students vote with a show of hands or thumbs before you start:

**Option 1:** "Lucy deliberately fails Mr. Stoker's assessment. What is she actually trying to accomplish — and what does that tell us about what she's afraid of?"

**Option 2:** "Mr. Stoker tells her to 'grow the answer organically.' What does that mean, and why would that phrase frustrate someone who thinks like Lucy?"

**Option 3:** "What's the difference between a skill you're born with and a skill you build? Which kind matters more in real life — and where does Lucy land on that question?"



**MOVEMENT:** "Stand left if you think soft skills are harder. Stand right if you think hard skills are harder. You can move if someone convinces you."



**EDUCATOR NOTE:** The stand left/right debate is your best friend when discussion is slow. It gets bodies moving and makes it safe to have an opinion, you're not sharing feelings, you're just picking a side.

➡ **TRANSITION:** *Lucy thinks math is the most honest language there is. We're about to find out if she's right — because we're going to discover the most honest number in math. Let's move.*



## STEAM LAB

30 min

### "Pi is Everywhere"

**Big Question:** Why does the SAME number show up in every circle — no matter how big or small?

**The Challenge:** Use 3 different circles to prove (or disprove) that pi is real.

**Phase 1: PREDICT** — 3 min. "Before you measure anything, everyone write down: when I divide circumference by diameter, I think I'll get approximately \_\_\_\_." Seal predictions in a small envelope.

**Phase 2: MEASURE** — 10 min. Teams measure 3 circles each using string (circumference) and ruler (diameter). Every team member does at least one measurement.

**Phase 3: CALCULATE & REVEAL** — 8 min. Divide circumference ÷ diameter for each circle. Open prediction envelopes. Who was closest to 3.14159? That person is Team Pi Champion.

**Phase 4: CREATE** — 9 min. Pi Digit Art on graph paper: shade columns using the digits of pi (column 1 = 3 squares, column 2 = 1 square, column 3 = 4 squares, and repeat). Each person picks their own color.

**Teams:** Teams of 3. Roles: Measurer, Calculator, Recorder. Rotate each round so everyone does each role.

**Celebrate:** Team whose average is closest to 3.14159 becomes "Team Pi." Write their names on a Pi of Fame on the wall.



**EDUCATOR NOTE:** "Circumference is the distance all the way around the outside. Diameter is straight across the middle." If calculators are limited, one per team is fine.



**WHAT SUCCESS LOOKS LIKE:** Every team has written down a prediction before measuring. Students are genuinely surprised when their circumference ÷ diameter keeps coming back near 3.14. You hear 'wait, that actually works.'



## SHOUTOUT & SEND-OFF

5 min

### Pi of Fame Spotlight and Lightning Bolt Award

**Award:** Pi of Fame Spotlight to the students who predicted closest to Pi.

**What to say:** "Each team: 15 seconds to name the thing that surprised you most today. Go."

⚡ **Lightning Bolt:** Award the lightning bolt for the most memorable moment of the session. You can use a physical lightning bolt prop or simply recognize a student out loud — 'Today's lightning bolt goes to \_\_\_\_ for \_\_\_\_.'

**Preview:** ⚡ Next time: middle school gets way more complicated.



## SESSION 3

# The Outcasts

Chapters 10–14 | Finding your people — and the math of who connects to whom



### MATERIALS FOR THIS SESSION

- Whiteboard or chart paper to write the chain
- Large paper (1 per team)
- markers in multiple colors
- rulers



### PRE-SESSION SETUP *(8 minutes of prep before students arrive)*

- ☐ Write two example Six Degrees chains on the board before students arrive to model the activity: e.g. Lightning Bolt → electricity → power grids → factories → flour → Pizza
- ☐ Write vocabulary words on the board: telepathic, condescending, ostracized, discriminating, peripheral
- ☐ Write the Big STEAM Question: 'Can you map who's connected to whom — and find hidden patterns?'
- ☐ Set out large paper (1 sheet per student + 1 per team of 4–5), markers in multiple colors, rulers
- ☐ Clear floor space for the yarn web — move chairs aside if needed



### ARRIVAL RITUAL

5 min

### "Six Degrees — Can you connect anything to Lucy?"

**Script:** Here's a challenge: I'm going to name two completely unrelated things. Your job is to connect them in 6 steps or fewer — each step has to have a real logical link.

I'll start: connect a LIGHTNING BOLT to a PIZZA. Go — call out steps and follow your thinking on the board example. Call out another for the students to do (Ex: Computer to Pizza)

[After the group solves it]: That's a real math idea called Six Degrees of Separation, the theory that any two people on Earth are connected by 6 or fewer social links.

One more: connect LUCY CALLAHAN to a SOCCER BALL. You've got 60 seconds.



**EDUCATOR NOTE:** There's no wrong answer as long as the logical chain holds. If the group gets stuck, say 'What does a lightning bolt have in common with anything?' and let them branch from there. The goal is thinking about connection as a structure, not a feeling.



### WORD PLAY

### Root Word Detective Agency | 5 words, ~2 min each

**Format:** For each word: reveal, say 3x together, give the root with its meaning, then challenge students to find other words using the same root. No writing — just calling out. ~2 min per word.

10 min

**What the room looks like:** Teams are huddled, whispering brainstorm, hands shooting up. You're writing root words on the board as you go. Students who finish fast are looking at the board to spot patterns across roots. It feels like a detective agency is actually open.

### **HOW TO OPEN WORD PLAY — say this to the group first:**

These five words have something hidden inside them, a Latin or Greek root that unlocks not just this word, but dozens of others.

Our job today: find the root, understand what it means, then find as many other words that use it as we can.

I'll show you the word and the root. You find the connection. Detective Agency is open.

### **STUDENT CHOICE — How do we work?**

Let students vote with a show of hands or thumbs before you start:

**Option 1:** Team race — first team to find 3 words using the same root wins each round

**Option 2:** Whole group — figure out each root together before moving on

### **HOW THIS FORMAT WORKS — Root Word Detective Agency — Team Race or Whole Group**

#### **If students choose: Team Race**

Write the word AND its root on the board (e.g. TELEPATHIC — tele- = far, -path = feeling). Run Steps 1 and 2 from the Appendix first.

**YOU SAY:** "Teams have 45 seconds. Find as many words as you can that use the root TELE-. Go."

**STUDENTS:** Huddled by team, whispering and calling out words (telephone, telescope, television...). First team to 3 correct words wins that round.

**YOU:** Write correct answers on the board. After time, run Steps 3 and 4 from the Appendix for the original word.

#### **If students choose: Whole Group**

Write the word and root on the board. Run all 4 steps fully for each word before moving on.

**YOU SAY:** "What other words do you know that start with TELE-? Call them out."

**STUDENTS:** Call out words from their seats — no hands required. You write each one and connect it to the root meaning.

Use this option if the group is quiet or you want to go deeper on fewer words.

### **COMPLETE SAY IT - DEFINE IT - CONNECT IT - USE IT**

Session 3 words: telepathic, condescending, ostracized, discriminating, peripheral

#### **EMERGING — for students who need more support**

Write each root on the board with its meaning as you go: tele- = far, -path = feeling, peri- = around, -scend = climb, dis- = apart/not. Students who struggle with the words can still contribute to finding related words.

#### **ADVANCED — for students ready for more challenge**

After all 5 words: 'Can you find a word that uses TWO of today's roots?' (e.g., tele+path = telepathy; peri+meter = perimeter). Or build a new word from scratch using a root you learned.



**EDUCATOR NOTE:** You don't need to know every related word — the students will come up with many you didn't think of. Your job is to write them on the board and ask 'how does the root show up in that word?' Let students be the experts.



**WHAT SUCCESS LOOKS LIKE:** Word Play is working when: students say each word aloud without being prompted, someone uses a vocabulary word in Story Circle later without you suggesting it, the game format feels competitive or playful rather than like a quiz, and students are disagreeing about Connect It answers — that debate means they're thinking.



## STORY CIRCLE

15 min

### Student voices lead. You ask — they talk.

**Setup:** Popcorn summary first. Ask anyone can pop in with one plot point from Ch. 10–14. No order, no raising hands. Just call it out. You fill in gaps only if something critical is missing.

**Q1:** "What would it actually take for Lucy to stop being an outsider at East Hamlin — and would doing that require her to become someone different?"

**Q2:** "Windy is enthusiastic and warm and still gets ostracized. What does that tell us about what social acceptance is really based on?"



### STUDENT CHOICE — Pick a question

Let students vote with a show of hands or thumbs before you start:

**Option 1:** "Lucy, Windy, and Levi are outsiders for completely different reasons. What does each person's type of outsider status reveal about what East Hamlin values — and punishes?"

**Option 2:** "Is being an outsider something that happens TO you, or something you choose? Where do each of the three characters land on that question?"

**Option 3:** "Lucy says 'we live in the same world but see it very differently.' Is that a problem to be solved, or a fact to be accepted — and does the book have an answer?"



**MOVEMENT:** Physical stand-up for character identification. Partner debate gets them talking without whole-group pressure.



**EDUCATOR NOTE:** The fishbowl works really well here if you have quieter students — it gives them a structured reason to speak. Rotate frequently so no one is in the center too long.

➡ **TRANSITION:** *You just talked about who belongs and who doesn't at East Hamlin. Now you're going to use actual math to map how that works — not in this room, but in the book.*



## STEAM LAB

30 min

### "East Hamlin Network Lab"

**Big Question:** Can a map reveal why some people belong — and why some don't?

**The Challenge:** Map the social network of East Hamlin Middle School using only what the book tells you. Then figure out where the power actually lives.

30 min

**Teams or Individuals:** Teams of 3 - 4. (Roles: One person draws nodes, one calls out characters, one labels the connections.) Can also do individuals or partners.

**Phase 1: INTRODUCE** — 3 min. Explain: "In math, a network is a set of **NODES** (circles = people) connected by **EDGES** (lines = relationships). Today we're mapping East Hamlin using the book as our data."

**Phase 2: MAP IT** — 12 min. Teams get large paper. Draw a circle for each character in Ch. 10–14: Lucy, Windy, Levi, Maddie, Mr. Stoker, and 2–3 others the team finds. Draw lines between characters who have ANY relationship — positive, negative, or complicated. Label each line with one word: ignores, bullies, helps, teaches, etc. to show the relationship between the characters.

**Phase 3: ANALYZE** — 8 min. Answer on your map: Who has the most connections? Who has the fewest? Is there anyone who connects two groups that wouldn't otherwise be linked? What does the map show that the text never says out loud?

**Phase 4: SHARE** — 7 min. Each team shares one finding that surprised them. Do all teams' maps look the same — or did different teams find different connections in the same chapters?

**Celebrate:** The team that finds the most surprising or unexpected connection in the East Hamlin network earns the "Network Detective" title on the Wall of Wins.



**EDUCATOR NOTE:** Students don't need to have memorized every character. If they're unsure about a connection, say 'What do you remember about how those two characters interact? Even a small moment counts.' The analysis matters more than getting every connection exactly right. Students can revisit the text while creating.



**WHAT SUCCESS LOOKS LIKE:** Teams are debating how to draw connections between characters, not just copying a simple answer. Students are using terms like 'node,' 'connection,' and 'cluster' naturally by the end. At least one team notices something about the network that surprises them.



## SHOUTOUT & SEND-OFF

5 min

**Close the loop. Send them out wanting to come back.**

**What to say:** "Complete this sentence: 'I want to shout out \_\_\_\_ because today they connected \_\_\_\_.' Could be two ideas, two people, two anything, name what they linked together."

⚡ **Lightning Bolt:** Award the lightning bolt for the most memorable moment of the session. You can use a physical lightning bolt prop or simply recognize a student out loud — 'Today's lightning bolt goes to \_\_\_\_ for \_\_\_\_.'

**Send-off:** Leave the East Hamlin network maps on the Wall of Wins.

**Preview:** ⚡ Next up: Lucy meets a dog named Pi — and it changes everything.

## SESSION 4

# Pi the Dog

Chapters 15–19 | When math meets heart — and data can save a life



### MATERIALS FOR THIS SESSION

- None
- Printed Pet Hut datasets (Use a local animal shelter website or [this website](#) for students to research animals. You can also use [this PDF](#) of 10 animals)
- graph paper
- rulers
- colored pencils
- calculators
- construction paper for profiles
- dot stickers (2 per student - [Example Item](#))



### PRE-SESSION SETUP *(15 minutes of prep before students arrive)*

- ☐ Write or hand-draw 4–6 mock Pet Hut animal profiles on index cards (species, age, size, energy level, days in shelter) — no printer needed
- ☐ Write vocabulary words on the board: euthanize, statistical, empathy, quantify, sanctuary
- ☐ Write the Big STEAM Question: 'Can the right data actually save a life?'
- ☐ Set out graph paper, rulers, colored pencils, calculators (phones OK), and dot stickers (or torn sticky note squares) at tables
- ☐ Have large construction paper or chart paper ready for the adoption profile posters
- ☐ Clear a wall section for the gallery walk — profiles will be posted here



### ARRIVAL RITUAL

5 min

### "If You Were an Animal at a Shelter"

**Script:** Quick fire — go around the circle. What animal would you be at a shelter, and what would your adoption profile say? One sentence each.

I'll start." [Go first. Be silly. Model the energy you want.]

**Movement:** Circle format. Standing optional.



**EDUCATOR NOTE:** Allow silliness, if someone says 'I'd be a hairless cat that hates everyone,' celebrate it. Joy is the point here. This primes students to think about the data task ahead.



## WORD PLAY

10 min

### Definition Drama | 5 words, ~2 min each

**Format:** Complete the 4 Step (Say It - Define It - Connect It - Use It). After, give pairs a secret word and a couple of minutes to prepare a short scene or pitch. Group guesses the word.

**What the room looks like:** Pairs are huddled and whispering, deciding how to act out an abstract concept. The performing pair comes to the front. The class is watching and guessing.



### STUDENT CHOICE — Drama style?

Let students vote with a show of hands or thumbs before you start:

**Option 1:** Silent scene — pairs act out the word without words, group guesses

**Option 2:** One-sentence pitch — 10 seconds to convince the group your definition is right



### SAY IT - DEFINE IT - CONNECT IT - USE IT — repeat for all 5 words

Session 4 words: euthanize, statistical, empathy, quantify, sanctuary



#### EMERGING — for students who need more support

For abstract words like empathy or statistical: 'You can show the FEELING of the word — what does it look like when someone IS empathetic? You don't have to explain the full definition, just show a moment.' Give concrete scenario prompts for students who freeze.



#### ADVANCED — for students ready for more challenge

After the routine: 'Can you perform the OPPOSITE of the word? What would anti-empathy look like? What would the opposite of sanctuary feel like?' This deepens understanding by contrast.



**EDUCATOR NOTE:** Acting out euthanize might bring up real feelings — that's appropriate. If a student gets emotional, acknowledge it: 'This is a hard word because it's a hard reality. That reaction is correct.' Don't rush past it.



## STORY CIRCLE

15 min

### Student voices lead. You ask — they talk.

**Setup:** Facilitator reads the Pet Hut scene aloud, the moment Lucy meets Pi. Read slowly. Pause when it feels right. No discussion until you're done.

**Q1:** "If you were designing the perfect environment for Lucy, not just the Pet Hut, but her whole life, what would it look like? What would it need to have, and what would it need to NOT have?"

**Q2:** "What is your sanctuary? Why is it this place? Can you describe it to us using all of your senses?"

**Q3:** "Lucy uses math as a way of caring. Can you think of other ways people express care that don't look like care on the surface?"

## STUDENT CHOICE DISCUSSION — Pick a question

Let students vote with a show of hands or thumbs before you start:

**Option 1:** "Lucy connects with Pi the dog before she connects with any human in the book. What does Pi offer that people haven't been able to? What does that say about what Lucy actually needs?"

**Option 2:** "Lucy turns the Pet Hut project into a data problem. Is that a way of caring, a way of avoiding caring, or both at the same time — and does the distinction matter if the outcome is the same?"

**Option 3:** "What does the word 'sanctuary' mean to Lucy in this section — and why does she need one in the first place?"

 **MOVEMENT:** After the read-aloud: students can stay seated or move to the floor — whatever feels comfortable. Let them choose.

➡ **TRANSITION:** *Lucy uses math to try to save animals' lives. That's what you're doing right now. You are the Pet Hut team. The data is in front of you. Let's get to work.*



### STEAM LAB

30 min

#### "The Pet Hut Data Lab"

**Big Question:** Can the right data actually save a life?

**The Challenge:** You are Pet Hut analysts. Lucy needs your report. Make it count.

**Phase 1: DATA INTAKE** — 5 min. Teams get a printed mock dataset: 10 animals with species, age, size, energy level, days in shelter. Read it. Just notice, no math yet. What jumps out?

**Phase 2: CALCULATE** — 10 min. Find mean, median, and mode for "days in shelter." Make a bar graph: which animal type stays longest? Circle any animal over 30 days.

**Phase 3: DESIGN THE PROFILE** — 10 min. Choose ONE animal. Create a 1-page adoption profile using data as evidence: why should this one be adopted FIRST? Must include 2 statistics. Make it visually appealing.

**Phase 4: GALLERY WALK & VOTE** — 5 min. Post profiles. Everyone gets 2 dot stickers. Vote for the animal you'd adopt. Count dots. Who won — and why did that profile work?

**Teams:** Teams of 3. Roles: Statistician, Designer, Advocate. Rotate who presents at the gallery walk.

**Celebrate:** Team whose animal gets the most votes earns the "Lucy Award" — a hand-drawn lightning bolt for their table.

 **STUDENT CHOICE IN THE LAB:** Students choose which animal to advocate for — no two teams should pick the same one.



**EDUCATOR NOTE:** "Mean is the average — add all the numbers and divide by how many there are. Median is the middle number when they're in order. Mode is the one that shows up most." Write this on the board.

✓ **WHAT SUCCESS LOOKS LIKE:** Teams are actually calculating — not just looking at the numbers. Students are making a genuine case for their chosen animal and disagree with other teams' choices. The gallery vote produces a real spread of results, not unanimous consensus.



## SHOUTOUT & SEND-OFF

5 min

**Close the loop. Send them out wanting to come back.**

**What to say:** "Everyone finish this sentence: 'Today I also learned that \_\_\_\_' — the blank has to be something personal or social, not just a math fact."

⚡ **Lightning Bolt:** Award the lightning bolt for the most memorable moment of the session. You can use a physical lightning bolt prop or simply recognize a student out loud — 'Today's lightning bolt goes to \_\_\_\_ for \_\_\_\_.'

**Send-off:** Adoption profiles go on the Wall of Wins.

**Preview:** ⚡ Next session gets messy — a sleepover, a secret, and a betrayal.

Lesson 4 Mi



## PET HUT ADOPTION PROFILE

A-001 • Meet Biscuit!

*"The dog who sings along to literally everything."*



### Quick Stats

**Species** Dog (Beagle mix)  
**Age** 3 years  
**Weight** 22 lbs  
**Size** Medium  
**Energy Level** ●●●○ (4/5)  
**Days in Shelter** 12 days  
**Good with Kids?** ✓ YES  
**Good with Pets?** ✓ YES



### Who Am I?

Biscuit doesn't just bark — he HOWLS. At songs, at sirens, at the coffee maker. He once spent 20 minutes harmonizing with a smoke detector. If you bring him home, you're getting a roommate who has opinions about every noise ever made.



### Wild Fact

Biscuit can detect when someone is unwrapping a cheese wrapper from three rooms away. Scientists call this a 'superpower.' We call it a 'snack emergency.'



### My Perfect Home

A family who likes background noise, and maybe background music.



**THE NUMBERS:** Biscuit has been here 12 days. He arrived with his brother Gravy, who was adopted in week 1. Now Biscuit looks at the door every morning at 9am. We're not crying. You're crying.



**Your Job:** If you pick Biscuit, you'll need to convince the room, using EVIDENCE, why Biscuit deserves to be adopted first. Look at the data. What's your argument?



## PET HUT ADOPTION PROFILE

A-002 • Meet Duchess!

*"She did not ask for your opinion. She never will."*



### Quick Stats

**Species** Cat (Tortoiseshell)

**Age** 6 years

**Weight** 9 lbs

**Size** Small

**Energy Level** ●●○○○ (2/5)

**Days in Shelter** 45 days

**Good with Kids?** ✕ Ask staff

**Good with Pets?** ✕ Ask staff



### Who Am I?

Duchess has a very clear life philosophy: her chair, her window, her schedule. She will tolerate your presence — that is a gift. She is not unfriendly. She is selective. She once judged a golden retriever so hard the dog apologized.



### Wild Fact

Duchess can open cabinet doors. We don't know when she learned this. We don't know what she does in there. The staff has decided not to investigate.



### My Perfect Home

A quiet home with exactly one human. No chaos. Scheduled meals. Good wifi for staring out windows dramatically.



**THE NUMBERS:** Duchess has been here 45 days. We think she's waiting for the RIGHT person, not just any person. She may be correct.



**Your Job:** If you pick Duchess, you'll need to convince the room, using EVIDENCE, why Duchess deserves to be adopted first. Look at the data. What's your argument?



## PET HUT ADOPTION PROFILE

A-003 • Meet Pretzel!

*"He flops dramatically every time he's happy. It's called a 'binky.' It looks like a tiny explosion."*



### Quick Stats

**Species** Rabbit (Holland Lop)

**Age** 2 years

**Weight** 4 lbs

**Size** Small

**Energy Level** ●●○○ (3/5)

**Days in Shelter** 31 days

**Good with Kids?** ✓ YES

**Good with Pets?** ✗ Ask staff



### Who Am I?

Pretzel came in as a surrender, his previous family thought rabbits were boring. They were wrong. Pretzel rearranges his entire habitat every morning, has strong opinions about which vegetables are served first, and does a full sprint around the room when he's excited.



### Wild Fact

Rabbits can't vomit, which means Pretzel has to be very careful about what he eats. He is not careful about what he eats. The staff has accepted this.



### My Perfect Home

Someone who will let him out to run daily and won't laugh at his intense feelings about cilantro (he LOVES cilantro).



**THE NUMBERS:** Pretzel has been here 31 days. Many people walk past rabbits because they think they're 'starter pets.' Pretzel would like everyone to know that he is, in fact, a whole entire person.



**Your Job:** If you pick Pretzel, you'll need to convince the room, using EVIDENCE, why Pretzel deserves to be adopted first. Look at the data. What's your argument?



## PET HUT ADOPTION PROFILE

A-004 • Meet Stormy!



*"She has been here 7 days and has already eaten one leash, a bandana, and a staff member's lunch."*



### Quick Stats

**Species** Dog (Husky/Lab mix)

**Age** 1 year

**Weight** 55 lbs

**Size** Large

**Energy Level** ●●●● (5/5)

**Days in Shelter** 7 days

**Good with Kids?** ✓ YES

**Good with Pets?** ✓ YES



### Who Am I?

Stormy is one year old, which in dog terms means she is a gremlin who has recently discovered her legs. She is fast. She is loud. She is enthusiastic about EVERYTHING. She will be a calm, wonderful, loyal dog in about two years. Until then: she's a weather event.



### Wild Fact

Huskies were bred to run 100+ miles a day in the Arctic. Stormy has this energy. She is in suburban Nebraska. She would like more space.



### My Perfect Home

An active family with a big yard, ideally with another dog who can keep up. NOT a good match for apartments, cats, or fragile furniture.



**THE NUMBERS:** Stormy has only been here 7 days, she's brand new! Large, high-energy dogs can take longer to get adopted even when they're amazing. Her data is just starting.



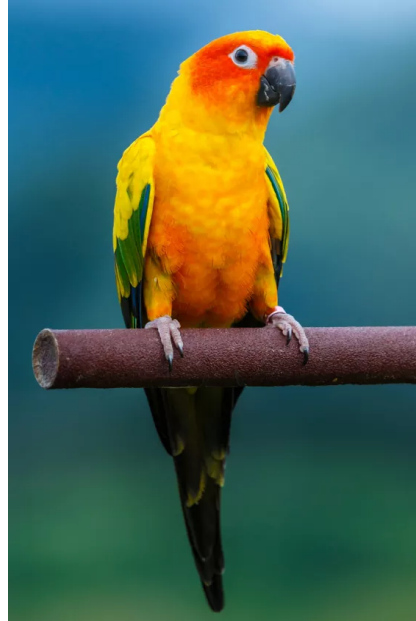
**Your Job:** If you pick Stormy, you'll need to convince the room, using EVIDENCE, why Stormy deserves to be adopted first. Look at the data. What's your argument?



## PET HUT ADOPTION PROFILE

A-005 • Meet Mango!

*"He knows 14 words and uses all of them at the wrong time."*



### Quick Stats

**Species** Parrot (Conure (Sun))

**Age** 4 years

**Weight** 3 oz

**Size** Small

**Energy Level** ●●●● (5/5)

**Days in Shelter** 52 days

**Good with Kids?** ✓ YES

**Good with Pets?** ✗ Ask staff



### Who Am I?

Mango says 'HELLO' when you leave and 'BYE BYE' when you arrive. He wolf-whistles at dogs. He screams 'PIZZA!' at random moments throughout the day. His previous owner was a chef. We think Mango misses the kitchen.



### Wild Fact

Conures can live 20–30 years. Mango is 4, which means whoever adopts him is making a very long commitment. He is aware of this. He is unbothered.



### My Perfect Home

Someone who works from home and doesn't mind narration. A quiet household will NOT work, Mango will fill the silence himself.



**THE NUMBERS:** Mango has been here 52 days. Birds are often overlooked even though they make incredible companions. Help us get Mango's story out there!



**Your Job:** If you pick Mango, you'll need to convince the room, using EVIDENCE, why Mango deserves to be adopted first. Look at the data. What's your argument?



## PET HUT ADOPTION PROFILE

A-006 • Meet Archie!

*"He makes a sound called a 'wheek' when he hears the fridge open. It is the best sound."*



### Quick Stats

**Species** Guinea Pig (American)

**Age** 1 year

**Weight** 2 lbs

**Size** Small

**Energy Level** ●●○○ (3/5)

**Days in Shelter** 18 days

**Good with Kids?** ✓ YES

**Good with Pets?** ✗ Ask staff

### Who Am I?

Archie is deeply food motivated, loudly opinionated, and social. Guinea pigs are herd animals, so Archie would LOVE a guinea pig buddy — but he's also been alone here and has adopted the staff as his herd. He 'purrrs' when you hold him. Yes, guinea pigs purr. You're welcome.

### Wild Fact

Guinea pigs can't make Vitamin C on their own, so they need it in their food — just like humans! Archie gets bell peppers every day. He treats this as his most important appointment.

### My Perfect Home

A gentle home with a kid or teen who wants a hands-on pet they can actually hold and interact with every day.



**THE NUMBERS:** Archie has been here 18 days. Small animals like guinea pigs often get overlooked for dogs and cats, but they can be amazing first pets, especially for responsible middle schoolers.



**Your Job:** If you pick Archie, you'll need to convince the room, using EVIDENCE, why Archie deserves to be adopted first. Look at the data. What's your argument?



## PET HUT ADOPTION PROFILE

A-007 • Meet Tank!

*"He has been on Earth longer than TikTok. He has thoughts about this."*



### Quick Stats

**Species** Tortoise (Russian Tortoise)

**Age** 12 years

**Weight** 3 lbs

**Size** Small

**Energy Level** ●○○○○ (1/5)

**Days in Shelter** 67 days

**Good with Kids?** ✓ YES

**Good with Pets?** ✓ YES



### Who Am I?

Tank is slow. Intentionally, philosophically slow. He doesn't rush because he doesn't have to — Russian tortoises can live to 50+ years. Tank is 12, which means he's basically a middle schooler himself. He eats dandelion greens and romaine lettuce and stares into the distance like he's calculating something important.



### Wild Fact

Tortoises can recognize their owners by smell. Tank has ranked the shelter staff from most to least interesting based on scent alone. He has not shared his rankings.



### My Perfect Home

A patient home with someone who appreciates stillness. Tank doesn't need walks or cuddling — he needs a sunny basking spot and fresh greens. He is very low maintenance. He is very high dignity.



**THE NUMBERS:** Tank has been in the shelter the longest, 67 days. Many people don't consider reptiles, but they can be wonderful pets. Tank could literally be in your family for the next 40 years. Think about that.



**Your Job:** If you pick Tank, you'll need to convince the room, using EVIDENCE, why Tank deserves to be adopted first. Look at the data. What's your argument?



## PET HUT ADOPTION PROFILE

A-008 • Meet Rosie!

*"She fits in a shoebox. She acts like she owns the building."*



### Quick Stats

**Species** Cat (Orange tabby)  
**Age** 8 months  
**Weight** 6 lbs  
**Size** Small  
**Energy Level** ●●●○ (4/5)  
**Days in Shelter** 23 days  
**Good with Kids?** ✓ YES  
**Good with Pets?** ✓ YES

### Who Am I?

Rosie is 8 months old, which means she is a kitten who has not yet been informed that she is small. She chases dogs twice her size. She has climbed every shelf in the shelter. She once got her head stuck in a paper bag and immediately decided this was fine, actually, this was her choice.

### Wild Fact

Orange tabby cats are 80% male, Rosie is part of the 20%. She defied statistics before she even arrived here.

### My Perfect Home

Someone ready for chaos. Rosie will calm down eventually. Probably. But right now she is a tiny hurricane who purrs while she's doing damage.



**THE NUMBERS:** Rosie has been here 23 days. Kittens usually get adopted faster than adult cats, but Rosie's high energy has made some people nervous. The right family will think her energy is a feature, not a bug.



**Your Job:** If you pick Rosie, you'll need to convince the room, using EVIDENCE, why Rosie deserves to be adopted first. Look at the data. What's your argument?



## PET HUT ADOPTION PROFILE

A-009 • Meet Sir Noodles!

*"He chose his own name. We offered 'Chip.' He refused."*



### Quick Stats

**Species** Dog (Dachshund)

**Age** 5 years

**Weight** 14 lbs

**Size** Small

**Energy Level** ●●○○○ (2/5)

**Days in Shelter** 12 days

**Good with Kids?** ✓ YES

**Good with Pets?** ✗ Ask staff



### Who Am I?

Sir Noodles is a 5-year-old dachshund who arrived already knowing what he wanted: a couch, a blanket, and a human who doesn't expect him to move quickly. He can, technically, run, but considers it optional. He has one speed: dignified amble.



### Wild Fact

Dachshunds were originally bred to hunt badgers. Sir Noodles is aware of this history and finds it extremely embarrassing.



### My Perfect Home

A calm home with adults or older kids. Someone who likes movie nights and isn't going to ask him to jog. He will lie across your feet like a warm living slipper.



**THE NUMBERS:** Sir Noodles has been here 12 days, same as Biscuit! Small dogs tend to get adopted faster than big dogs. Will Sir Noodles beat that trend? The data is still being collected.



**Your Job:** If you pick Sir Noodles, you'll need to convince the room, using EVIDENCE, why Sir deserves to be adopted first. Look at the data. What's your argument?



## PET HUT ADOPTION PROFILE

A-010 • Meet Pixel!

*"He is smarter than you think. Possibly smarter than you."*



### Quick Stats

**Species** Rat (Fancy Rat)  
**Age** 6 months  
**Weight** 0.8 lbs  
**Size** Small  
**Energy Level** ●●●○ (4/5)  
**Days in Shelter** 31 days  
**Good with Kids?** ✓ YES  
**Good with Pets?** ✗ Ask staff



### Who Am I?

Pixel is a dumbo rat, named for the large, round ears on the sides of his head. He came in with 6 siblings who were all adopted within a week. Pixel stayed. We think it's because he watched everyone else leave and decided he had standards. He's been auditing the staff ever since.



### Wild Fact

Rats are one of the most intelligent small mammals. They can learn their names, solve puzzles, and have even been trained to detect landmines. Pixel has been trained to sit. He does it when he feels like it.



### My Perfect Home

A curious person who wants an interactive pet. Rats bond deeply with their owners, sleep in your pocket, and will absolutely steal your earrings if you let them near your face.



**THE NUMBERS:** Pixel has been here 31 days, tied with Pretzel. Rats are the most misunderstood animals in the shelter. Most people are shocked by how social, clean, and smart they are. Could Pixel change your mind?



**Your Job:** If you pick Pixel, you'll need to convince the room, using EVIDENCE, why Pixel deserves to be adopted first. Look at the data. What's your argument?



## Pet Hut Dataset — All Animals

Use this table for your math calculations. The column highlighted in red is your main variable.

| ID    | Name        | Species    | Age    | Weight  | Size   | Energy | Days in Shelter |
|-------|-------------|------------|--------|---------|--------|--------|-----------------|
| A-001 | Biscuit     | Dog        | 3 yrs  | 22 lbs  | Medium | 4/5    | 12              |
| A-002 | Duchess     | Cat        | 6 yrs  | 9 lbs   | Small  | 2/5    | 45              |
| A-003 | Pretzel     | Rabbit     | 2 yrs  | 4 lbs   | Small  | 3/5    | 31              |
| A-004 | Stormy      | Dog        | 1 yr   | 55 lbs  | Large  | 5/5    | 7               |
| A-005 | Mango       | Parrot     | 4 yrs  | 3 oz    | Small  | 5/5    | 52              |
| A-006 | Archie      | Guinea Pig | 1 yr   | 2 lbs   | Small  | 3/5    | 18              |
| A-007 | Tank        | Tortoise   | 12 yrs | 3 lbs   | Small  | 1/5    | 67              |
| A-008 | Rosie       | Cat        | 8 mo   | 6 lbs   | Small  | 4/5    | 23              |
| A-009 | Sir Noodles | Dog        | 5 yrs  | 14 lbs  | Small  | 2/5    | 12              |
| A-010 | Pixel       | Rat        | 6 mo   | 0.8 lbs | Small  | 4/5    | 31              |



### Math Challenge

#### MEAN

Add all 'Days in Shelter' values, then divide by 10. What do you get?

#### MEDIAN

Put the values in order. Find the middle. (With 10 values, average the 5th and 6th.)

#### MODE

Which value appears most often? Careful, there might be more than one!

⚡ Now choose your animal and build your adoption profile. Your argument must include at least 2 statistics. Go!

## SESSION 5

# The Sleepover

Chapters 20–24 | Trust, secrets, and what math tells us about betrayal



### MATERIALS FOR THIS SESSION

- None
- One 30cm ruler per pair (Click [here](#) for a free online printable one)
- pencils
- notebook paper for data tables



### PRE-SESSION SETUP *(8 minutes of prep before students arrive)*

- ☐ Tear notebook paper into playing-card-sized squares — two colors per pair (or color one side with marker): green = cooperate, red = betray
- ☐ Write vocabulary words on the board: unverified, imprecise, betrayal, mesmerized, vulnerability
- ☐ Write the Big STEAM Question: 'Does math prove that cooperation beats betrayal — every single time?'
- ☐ Prepare score tracking sheets — a simple grid on notebook paper works fine, one per pair
- ☐ If doing the floor spectrum for Word Play: clear a path across the room and label ends POSITIVE and NEGATIVE with tape or paper



### ARRIVAL RITUAL

5 min

#### "Trust Barometer"

**Script:** Scale of 1 to 10: how easily do you trust new people? 1 = trust almost nobody, 10 = trust everyone until proven wrong.

Hold up your fingers. Don't explain yet, just show.

Does anyone want to say why they landed where they did? I'll go first.

**Movement:** Students hold up fingers — quick, low-pressure, everyone participates.



**EDUCATOR NOTE:** Share your own number genuinely. If you say '4 because I was burned by a friend once,' that's exactly the right level of realness. Middle schoolers can tell when adults are performing vs. being honest.



### WORD PLAY

#### Connotation Spectrum | 5 words, ~2 min each

**Format:** Reveal each word. Students physically move or vote to show where they feel the word lands on the positive/negative spectrum. One sentence explaining their position, then the 4-Step Routine.

10 min

**What the room looks like:** Students are scattered across the room at different points on the spectrum, or all showing thumbs at the same moment. Then one or two students explain their position before sitting for the definition. The room feels like a debate where you vote with your feet.

### **STUDENT CHOICE — How do we move?**

Let students vote with a show of hands or thumbs before you start:

**Option 1:** Floor spectrum — tape a line, walk to Positive end or Negative end for each word

**Option 2:** Thumbs vote — up (positive), sideways (neutral), down (negative) — all at the same time

### **HOW TO OPEN WORD PLAY — say this to the group first:**

Every word carries a charge — positive, negative, or somewhere in between. That charge is called connotation.

I'm going to show you a word. Don't think about the definition yet — just react. Where does this word FEEL like it lives?

[Floor spectrum]: Walk to the end of the room that matches your feeling. Positive if it feels good. Negative if it carries weight or danger. Middle if you're genuinely unsure.

### **HOW THIS FORMAT WORKS — Connotation Spectrum — Floor Spectrum or Thumbs Vote**

#### **If students choose: Floor Spectrum**

**BEFORE:** Put a tape strip across the floor (or use two walls). Label one end POSITIVE, the other NEGATIVE with a sticky note.

**YOU SAY:** "I'll show you a word. Don't think about the definition — just react. Walk to where this word FEELS like it lives."

**STUDENTS:** Physically move to a spot on the spectrum — the room becomes a live graph.

**YOU:** Ask 2–3 students to explain their position. Then run the 4-Step Routine. Students return to seats before the next word.

#### **If students choose: Thumbs Vote**

No floor setup needed. Students stay seated.

**YOU SAY:** "Show thumbs at the same time — up = positive, sideways = neutral, down = negative. On 3: 1, 2, 3."

**STUDENTS:** Show thumbs simultaneously — no peeking first. Simultaneous reveal prevents students from copying whoever moves first.

**YOU:** Scan the room, note disagreements. Ask someone different from the majority to explain. Then run the 4-Step Routine.

### **SAY IT- DEFINE IT - CONNECT IT - USE IT — repeat for all 5 words**

Session 5 words: *unverified, imprecise, betrayal, mesmerized, vulnerability*

#### **EMERGING — for students who need more support**

For students unsure how to position: 'Trust your gut — first instinct, not the definition.' Standing in the middle is valid and often the most interesting answer.

#### **ADVANCED — for students ready for more challenge**

After the routine: 'How would the connotation of this word change if a different person used it in a different context? Is betrayal always negative, or can it ever feel necessary?'



## STORY CIRCLE

15 min

### Student voices lead. You ask — they talk.

**Setup:** Fishbowl: 4 students in the center (volunteer or tap gently), everyone else listens. Rotate after each question.

**Q1:** "Windy had a choice in that moment. Walk us through what she was weighing — what did she think would happen, and why did she get it wrong?"

**Q2:** "If you were Lucy's friend in that moment, what would you have done differently — and what would have been the cost of doing it?"



### STUDENT CHOICE DISCUSSION — Pick a question

Let students vote with a show of hands or thumbs before you start:

**Option 1:** "Was what Windy did a betrayal, a mistake, or something more complicated than either of those words captures? You need evidence from the text to make your case."

**Option 2:** "Lucy tries to calculate the social dynamics of the sleepover like a math problem. Where exactly does her model break down — what variable is she missing?"

**Option 3:** "The party scene shows us something about how middle school social hierarchies actually work. What rules is Lucy operating by, and what rules is everyone else operating by?"



**MOVEMENT:** Students physically swap in and out of the fishbowl. Make it easy — tap someone on the shoulder, they take your seat.



**EDUCATOR NOTE:** The fishbowl is powerful because it gives quieter students a structured moment to speak. If someone in the center clams up: "You can pass back to the outer circle any time — just say 'pass.'"

⇒ **TRANSITION:** *Lucy's brain was rewired by lightning in a single second. Today you're going to measure how fast YOUR brain processes information — and figure out what changes it.*



## STEAM LAB

30 min

### "Reaction Time Lab"

**Big Question:** How fast is your brain — and can you make it faster?

**The Challenge:** Measure your reaction time across 10 trials. Find your mean, test what changes your score, and present your findings.

**Phase 1: SETUP** — 3 min. Pairs sit across from each other. One person holds a 30cm ruler vertically, zero end down. The other places thumb and finger around the zero end without touching it. When the holder drops it without warning, the catcher catches it. The distance at the catch point (cm) = reaction distance. Closer to zero = faster brain.

**Phase 2: TRIAL RUNS** — 12 min. Each student does 10 trials as catcher. Record each distance in a table. Try 3 conditions: (1) dominant hand, (2) non-dominant hand, (3) right after 20 jumping jacks. Switch roles halfway through.

**Phase 3: ANALYZE** — 8 min. Calculate the mean reaction distance for each condition. Which condition produced the fastest results? Which produced the slowest? Write one sentence explaining WHY you think that happened.

**Phase 4: PRESENT** — 7 min. Each team shares their fastest average and the condition that produced it. Class votes: which finding is most surprising? Debrief: our brains are constantly adapting — state, fatigue, and focus all change reaction speed.

**Teams:** Pairs. Each person is Dropper and Catcher. Switch roles every 5 trials.

**Celebrate:** The pair with the fastest mean reaction distance earns the "Lightning Reflexes" title on the Wall of Wins.

 **STUDENT CHOICE IN THE LAB:** Teams choose which additional variable to test in their third condition — jumping jacks, eyes closed anticipation, or their own idea.

 **EDUCATOR NOTE:** If a ruler isn't available, fold a piece of paper into a narrow strip and drop that instead — the science works the same way. The key is consistent drop height and no warning. If students try to anticipate the drop, remind them: catching it faster by guessing isn't measuring reaction time, it's cheating the experiment.

 **WHAT SUCCESS LOOKS LIKE:** Students are genuinely surprised by their data. At least two students notice their reaction time improves across trials. Teams are debating WHY the numbers changed — that discussion is the science.



## SHOUTOUT & SEND-OFF

5 min

**Close the loop. Send them out wanting to come back.**

**What to say:** "Write one appreciation for someone in this group — don't sign your name. I'll read them all aloud. You can claim yours if you want."

 **Lightning Bolt:** Award the lightning bolt for the most memorable moment of the session. You can use a physical lightning bolt prop or simply recognize a student out loud — 'Today's lightning bolt goes to \_\_\_\_ for \_\_\_\_.'

**Preview:**  Next session: what's the difference between fair and equal, and why does it matter more than you think?

## SESSION 6

# Fair vs. Equal

Chapters 25–28 | Getting the same thing isn't always fair — and getting different things isn't always unfair



### MATERIALS FOR THIS SESSION

- Printed fair vs equal image (Access [here](#), or drawn on whiteboard)
- Cardboard strips (2 per team)
- books for elevation
- tape
- marbles
- weighted blocks or erasers
- rulers
- protractors
- printed user profile cards



### PRE-SESSION SETUP *(12 minutes of prep before students arrive)*

- ☐ Print or draw the fair vs equal image (Access [here](#)), or draw it on chart paper
- ☐ Write vocabulary words on the board: differentiate, meticulous, oppressed, competence
- ☐ Write the Big STEAM Question on the board: 'Can you design one ramp that is actually fair for everyone?'
- ☐ Pre-cut cardboard strips from cereal boxes or Amazon packaging — 2 strips per team
- ☐ Set out tape, rulers, small books or blocks for elevation, and small coins or erasers (replace marbles with these)
- ☐ Write or print 3 user profile cards per team: wheelchair user, walker user, person in a hurry



### ARRIVAL RITUAL

5 min

#### "The Three Boxes"

**Script:** I'm posting an image. Look at it for 30 seconds without saying anything.

[Post the fair vs equal picture: three people of different heights, three boxes, a fence]

Which picture is equal? Which is fair? Point — don't explain yet.



Now: which box have YOU stood on in your own life? Partner share — 60 seconds.

**Movement:** Students stand to point at the image before sitting for partner share.

 **EDUCATOR NOTE:** Print this image before the session, search 'equal vs fair image' for a free printable. If you can't find it, describe it verbally and draw it quickly on a whiteboard.



**WORD PLAY**  
10 min

**Word Auction 2.0 — Personal Connections | 5 words, ~2 min each**

**Format:** Same as Session 2's auction — but students bid on words they think connect most to THEIR OWN life. When they win a word, they must share the real-world connection in one sentence.

**What the room looks like:** Energetic bidding, then quiet personal reflection when a student wins their word and has to explain the real-world connection. The room shifts between competition and genuine sharing — the contrast is the point.

 **STUDENT CHOICE — Bidding currency today?**

Let students vote with a show of hands or thumbs before you start:

**Option 1:** Shared pot — teams compete, points go on the board

**Option 2:** Individual bets — everyone plays for themselves

 **HOW TO OPEN WORD PLAY — say this to the group first:**

Auction is back — but the stakes are higher.

I'll show you a word and a quick definition. Bid on the word YOU think connects most directly to something in your own life, a situation, a person, an experience.

When you win a word, you owe us one sentence: the real-world connection. No making things up — actual stuff from your life.

Similar to the previous bidding game, you can track how often words appear in the book, but you can also focus on the student experience as the “win” for this word game.

 **HOW THIS FORMAT WORKS**  
— Word Auction — What bidding actually looks like

| SETUP | THE AUCTION (before 4-Step) | HOW IT CONNECTS TO 4-STEP |
|-------|-----------------------------|---------------------------|
|-------|-----------------------------|---------------------------|

|                                                                                                                                                                           |                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                    |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Write all 5 words on the board with a one-sentence definition beside each. Tell students: 'You have 10 imaginary coins — track them on your fingers or a scrap of paper.' | <p>Show one word. Read its definition aloud.</p> <p><i>YOU SAY: "Bid on the word that connects most to YOUR OWN life. When you win, you owe us one sentence — a real connection." Highest bid wins.</i></p> <p>Repeat for all 5 words. The personal connection IS the share-out.</p> | The auction IS Step 1 (Say It) + Step 2 preview (Define It). After auctioning all 5, run Step 3 (Connect It) and Step 4 (Use It) for each word in turn. The auction creates investment so Connect It feels personal, not academic. |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### SAY IT- DEFINE IT - CONNECT IT - USE IT — repeat for all words

Session 6 words: *differentiate, meticulous, oppressed, competence*

#### EMERGING — for students who need more support

For students who struggle to find a personal connection: 'This doesn't have to be deep — it can be something as simple as 'I once was treated unfairly and that's what oppressed makes me think of.' The connection just has to be real.

#### ADVANCED — for students ready for more challenge

After all 5 words: 'Can you use differentiate AND competence in the same sentence to describe a situation where someone was unfairly judged?' This connects to the book's central argument.



**EDUCATOR NOTE:** The personal connections students share here can be significant. If a student shares something heavy, say 'That matters. Thank you for sharing that.' and move on gently.



### STORY CIRCLE

15 min

#### Student voices lead. You ask — they talk.

**Setup:** Read Mr. Stoker's line aloud together: "It's certainly fair. It's not equal." Then: 10 seconds of silence. Let it sit.

**Q1:** "Mr. Stoker gives Lucy a harder problem without asking her first. Is that respectful of her ability or presumptuous about what she wants? How should he have handled it differently, if at all?"

**Q2:** "This chapter is called Fair vs. Equal, but by the end of it, where does Lucy land? Does she think what happened to her was fair?"

## STUDENT CHOICE DISCUSSION — Pick a question

Let students vote with a show of hands or thumbs before you start:

**Option 1:** "Mr. Stoker says 'it's certainly fair, it's not equal.' Unpack that sentence — what's the difference between fair and equal, and can you give an example from your own life where you've experienced that gap?"

**Option 2:** "The image shows three people at a fence. Who decides how high the fence is, and who decides how many boxes each person gets? What happens when the person making those decisions gets it wrong?"

**Option 3:** "Is there such a thing as a decision that's truly fair to everyone, or is fairness always a trade-off where someone gets less than someone else?"



**MOVEMENT:** Physical debate positions for the Stoker question. Movement breaks up the sitting.



**EDUCATOR NOTE:** The "looks equal but is unfair" popcorn is your safety net — if discussion dries up, just throw that one out and students will have plenty to say.

➡ **TRANSITION:** *You just debated what fair actually means. Now you're going to build it — literally. The question isn't just what angle the ramp should be. It's who it's fair for.*



### STEAM LAB

30 min

## "The Ramp Challenge"

**Big Question:** Can you design one ramp that is actually fair for everyone who needs to use it?

**The Challenge:** Three user profiles, one ramp. Build something that works for all three.

**Phase 1: MEET YOUR USERS** — 4 min. Teams get 3 profile cards: User A (wheelchair), User B (walker, needs gentle slope), User C (in a hurry, wants steep). Read them. Discuss: what does 'fair' mean when people need different things?

**Phase 2: DESIGN** — 8 min. Sketch the ramp first. Must include: slope angle (rise ÷ run), estimated travel distance, and one design choice made specifically for one user.

**Phase 3: BUILD & TEST** — 12 min. Build from cardboard and books. Test with a marble (speed test) and a heavy block (stability test). Does it serve all three users?

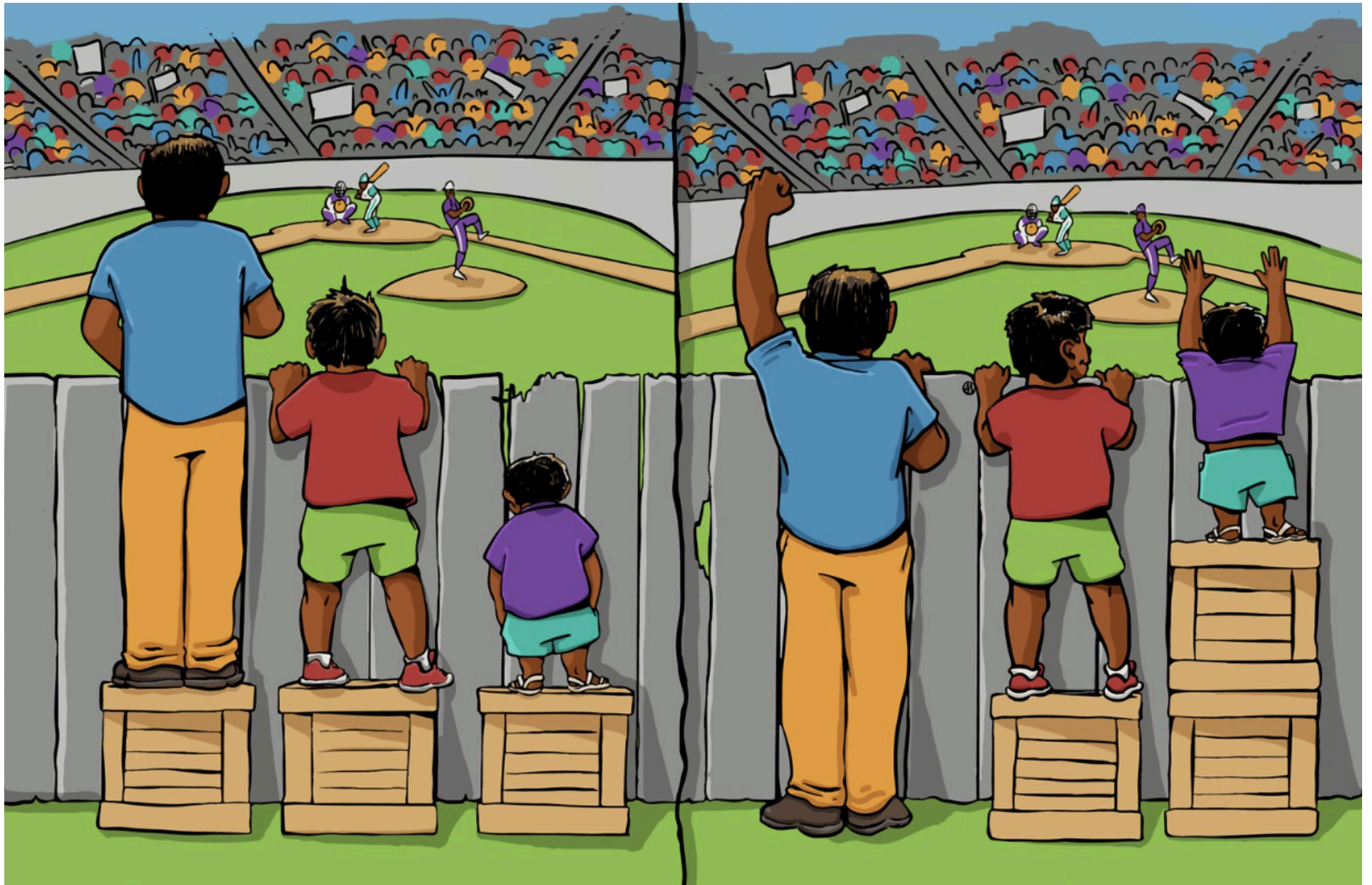
|  |                                                                                                                                                                         |
|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <b>Phase 4: PRESENT &amp; CRITIQUE</b> — 6 min. "We designed for equal by ____." Class gives one piece of feedback: "What works is ____, and what we'd change is ____." |
|  | <b>Teams:</b> Teams of 3–4. Each person advocates for one user during design.                                                                                           |
|  | <b>Celebrate:</b> Teams vote on the design that best serves ALL THREE users. That team earns the "Universal Design Award."                                              |

|                                                                                   |                                                                                                                   |
|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
|  | <b>STUDENT CHOICE IN THE LAB:</b> Teams choose what angle to try first — no two teams have to use the same slope. |
|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|

|                                                                                   |                                                                                                                                                                                                                   |
|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <b>EDUCATOR NOTE:</b> "Rise over run just means: how high does it go divided by how long it is. A steep ramp has a big rise compared to its run. A gentle ramp has a small rise." Draw this on the board quickly. |
|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                                                                                   |                                                                                                                                                                                                                                                                                      |
|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <b>IF STUDENTS GET STUCK — Session 6</b>                                                                                                                                                                                                                                             |
|                                                                                   | <b>Likely sticking point:</b> Teams' ramps collapse or the coin/eraser rolls off immediately.                                                                                                                                                                                        |
|                                                                                   | <b>Say this:</b> <i>"What's making it unstable? Look at where it's attached to the books, is there enough surface contact? Try a wider strip of cardboard at the base, or use tape to anchor it."</i>                                                                                |
|                                                                                   | <b>Quick visual to draw on the board:</b> A ramp that works has: a stable base (taped or weighted down), a consistent slope (same angle all the way up), and a smooth surface (no bumps or gaps). Sketch this on the board: triangle shape, with the hypotenuse as the ramp surface. |
|                                                                                   | <b>If you haven't pre-made anything:</b> You don't need to build the ramp yourself first. The design phase is where learning happens, failed ramps are better than pre-made ones. Walk around and ask 'what's going wrong and why?' not 'let me show you how to fix it.'             |

|                                                                                                                                |                                                                                                                                                                                                                                                                                                                       |
|--------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <br><b>SHOUTOUT &amp; SEND-OFF</b><br>5 min | <b>Close the loop. Send them out wanting to come back.</b>                                                                                                                                                                                                                                                            |
|                                                                                                                                | <b>What to say:</b> "Complete the sentence: 'I want to shout out ____ for making space for someone today.' Could be in the build, the discussion, anywhere." Focus on how students made each other seen and heard.                                                                                                    |
|                                                                                                                                |  <b>Lightning Bolt:</b> Award the lightning bolt for the most memorable moment of the session. You can use a physical lightning bolt prop or simply recognize a student out loud — 'Today's lightning bolt goes to ____ for ____.' |
|                                                                                                                                | <b>Send-off:</b> The photos of the ramp designs and post on Wall of Wins.                                                                                                                                                                                                                                             |
|                                                                                                                                | <b>Preview:</b> ⚡ Lucy has a secret online identity, and it's about to get very complicated.                                                                                                                                                                                                                          |



## SESSION 7

# The MathWhiz Reveal

Chapters 29–32 | Who are you when no one's watching?



### MATERIALS FOR THIS SESSION

- Sticky notes
- markers
- wall space
- Printed cipher (1 per student, Access a free printable [here](#) or just write A-Z on paper)
- pencils
- small slips of paper for shift numbers
- message cards



### PRE-SESSION SETUP *(10 minutes of prep before students arrive)*

- ☐ Write A–Z on chart paper or the board as a cipher reference — no printed cipher wheel needed
- ☐ Write vocabulary words on the board: inquisitive, anonymous, authentic, algorithm, revelation
- ☐ Write the Big STEAM Question: 'If you had to hide who you really are in a message — how would you do it?'
- ☐ Tear small paper slips for shift numbers (one per student) and fold them small — these are the 'sealed envelopes'
- ☐ Designate a sticky note wall section for the Anonymous Username arrival activity
- ☐ Have pencils and blank paper at every seat



### ARRIVAL RITUAL

5 min

#### "Anonymous Username Wall"

**Script:** If you had an anonymous username no one here could trace back to you — what would it be?

Write it on a sticky note. Don't put your name. Post it on the wall.

[After all are posted]: "I'll read a few aloud. What do these tell us about who people want to be?"

**Movement:** Students get up to post. Reading happens standing at the wall.



**EDUCATOR NOTE:** Don't ask anyone to reveal their username — the anonymity is the point. If a username seems concerning, have a quiet conversation with that student after the session, not in front of the group.



## WORD PLAY

10 min

### 4-Step Relay Race | 5 words

**Format:** Complete the 4 Step Process first as a whole class, then assign student or student groups a word. When a word is called, the owner has 45 seconds: say it aloud (Step 1), define in their own words (Step 2), share one connection (Step 3). Then the whole team does Use It together (Step 4). Fastest correct sentence wins the round.

**What the room looks like:** Teams are on the edge of their seats. When a word is called, the owner stands up — there's positive pressure and laughter. The Use It sentence is collaborative and fast. It should feel like a quiz bowl game, not a vocab lesson.



### SAY IT- DEFINE IT - CONNECT IT - USE IT — repeat for all 5 words

Session 7 words: *inquisitive, anonymous, authentic, algorithm, revelation*



### STUDENT CHOICE — Team size?

Let students vote with a show of hands or thumbs before you start:

**Option 1:** Teams of 5 — each person owns one word

**Option 2:** Teams of 3 — each person owns 1-2 words



### HOW TO OPEN WORD PLAY — say this to the group first:

Relay race today. Each of you owns one word. When your word is called, you have 45 seconds: say it, define it in YOUR words, share one connection.

Then your whole team has 30 seconds to produce a sentence. Fastest correct sentence wins that round.

One rule: the sentence has to actually MAKE SENSE using the word's meaning. We'll all vote on whether it



### HOW THIS FORMAT WORKS — 4-Step Relay Race — Teams of 5 or Teams of 3

**HOW IT RUNS:** Divide into teams. Each student 'owns' one word. When you call their word, they have 45 seconds to: say it aloud (Step 1), define it in their own words (Step 2), and give one connection (Step 3). Then the whole team has 30 seconds to produce a sentence using it (Step 4). Fastest correct sentence wins.

**IN THE ROOM:** Students are on the edge of their seats. When their word is called they stand up. Teams huddle and quietly coach each other while waiting. You keep score on the board.

**YOU SAY:** "Each of you owns one word. When I call it, you have 45 seconds — say it, define it in YOUR words, give one connection. Then your team has 30 seconds for a sentence. Fastest correct sentence wins the round."

**TEAMS OF 3 vs. 5:** Teams of 5 means one word per person — more accountability, less wait time. Teams of 3 means some students own 2 words — more practice per person, slightly slower. Let the group choose.

 **EMERGING — for students who need more support**

For students anxious about speed: 'You can look at the definition card if you need it — the speed is part of the fun, not the test. Your team has your back.' Teams can discuss quietly before the owner speaks.

 **ADVANCED — for students ready for more challenge**

After all rounds: 'Can anyone use algorithm and authentic in the same sentence in a way that connects to the MathWhiz storyline?' This is a high-challenge synthesis



**EDUCATOR NOTE:** If a sentence is wrong: 'Close — who can help them?' Let another team offer a correction. Competitive vocabulary games work best when the competition is friendly, not cutthroat.



**STORY CIRCLE**

15 min

**Student voices lead. You ask — they talk.**

**Setup:** 2-minute private quick-write first: "The version of me that I show online vs. in person — how different are they?" Private. No sharing required. Then open.

**Q1:** "MathWhiz gave Lucy a space where her identity was built entirely around her ability. What happens to that identity now that the separation between her online and offline selves is gone?"

**Q2:** "Mr. Stoker has been talking to Lucy as MathWhiz for months without knowing it was her. Does that change their relationship — should it?"



**STUDENT CHOICE DISCUSSION — Which question to tackle first?**

Let students vote with a show of hands or thumbs before you start:

**Option 1:** "Lucy is more fully herself as MathWhiz, anonymous online, than as Lucy Callahan at school. What does it mean that she needs to hide her identity to be authentic? Is that a problem with Lucy, or a problem with school?"

**Option 2:** "When Mr. Stoker's identity is revealed, Lucy feels horror instead of relief. Walk through exactly what she's afraid of, what does this revelation threaten?"

**Option 3:** "The book asks whether you can be fully yourself in a place that rewards fitting in. What's your answer,



**MOVEMENT:** Improv option gets two students up and moving — always offer this as a choice, never require it.



**EDUCATOR NOTE:** The quick-write is private by design. Never ask students to share what they wrote — just ask if any thoughts from their writing are sparking questions. That distinction matters.

➡ **TRANSITION:** *Lucy had a secret online identity. Today you're going to hide a truth about yourself in a coded message — and see if someone can crack it.*



## STEAM LAB

30 min

### "Cipher School"

**Big Question:** If you had to hide who you really are in a message — how would you do it?

**The Challenge:** Encode something TRUE about yourself. See if your partner can crack it.

**Phase 1:** LEARN THE CODE — 6 min. Teach Caesar cipher: shift every letter by a fixed number (shift 3: A→D, B→E, C→F). Practice encoding your first name. Hold up when done.

**Phase 2:** ENCODE YOUR TRUTH — 10 min. Write a message that reveals something real but hidden, a dream, a talent, a fear, a fact. As private or public as you want. Encode the whole message. Write your shift number on a separate slip and seal it.

**Phase 3:** SWAP & CRACK — 8 min. Exchange encoded messages with a partner. Try to decode WITHOUT the shift number first (trial and error). After 5 minutes, share shift numbers and finish decoding together.

**Phase 4:** CONNECT — 6 min. "Lucy's username was her code. What does decoding someone's hidden identity feel like — exciting? Invasive? Both?" Connect to the MathWhiz reveal.

**Teams:** Solo for encoding. Partner for decoding.

**Celebrate:** The pair who decoded each other's message fastest (and correctly) becomes "Code Breakers." They share their decoded messages only if they want to.



**STUDENT CHOICE IN THE LAB:** Students choose their own shift number — anywhere from 1 to 25.



**EDUCATOR NOTE:** "Shift 3 means every letter moves 3 places forward in the alphabet. A becomes D. B becomes E. Z wraps around and becomes C." Write a quick example on the board.

## IF STUDENTS GET STUCK — Session 7

**Likely sticking point:** Students can't figure out how to decode their partner's message even after the shift number is revealed.

**Say this:** *"Start from A. Shift every letter forward by [N] places in the alphabet. If you go past Z, wrap back to A. Try decoding just the first word together — what letter is 3 places after the first letter?"*

**Quick visual to draw on the board:** Write on the board: SHIFT 3. A→D, B→E, C→F ... X→A, Y→B, Z→C. Show one encoded word being decoded letter by letter: KHB → HAY (shift back 3). Once one word is cracked, students usually get the rest quickly.

**If you haven't pre-made anything:** You don't need a printed cipher wheel. Write A–Z in a row on the board before the session. Students can use this as their reference. The shift number slip is just a torn piece of paper — no preparation needed.

 **WHAT SUCCESS LOOKS LIKE:** Students are writing messages about something real, not just test phrases. The decoding phase produces genuine surprise and curiosity about what their partner wrote. At least one student asks what happens if you try every shift number.



### SHOUTOUT & SEND-OFF

5 min

**Close the loop. Send them out wanting to come back.**

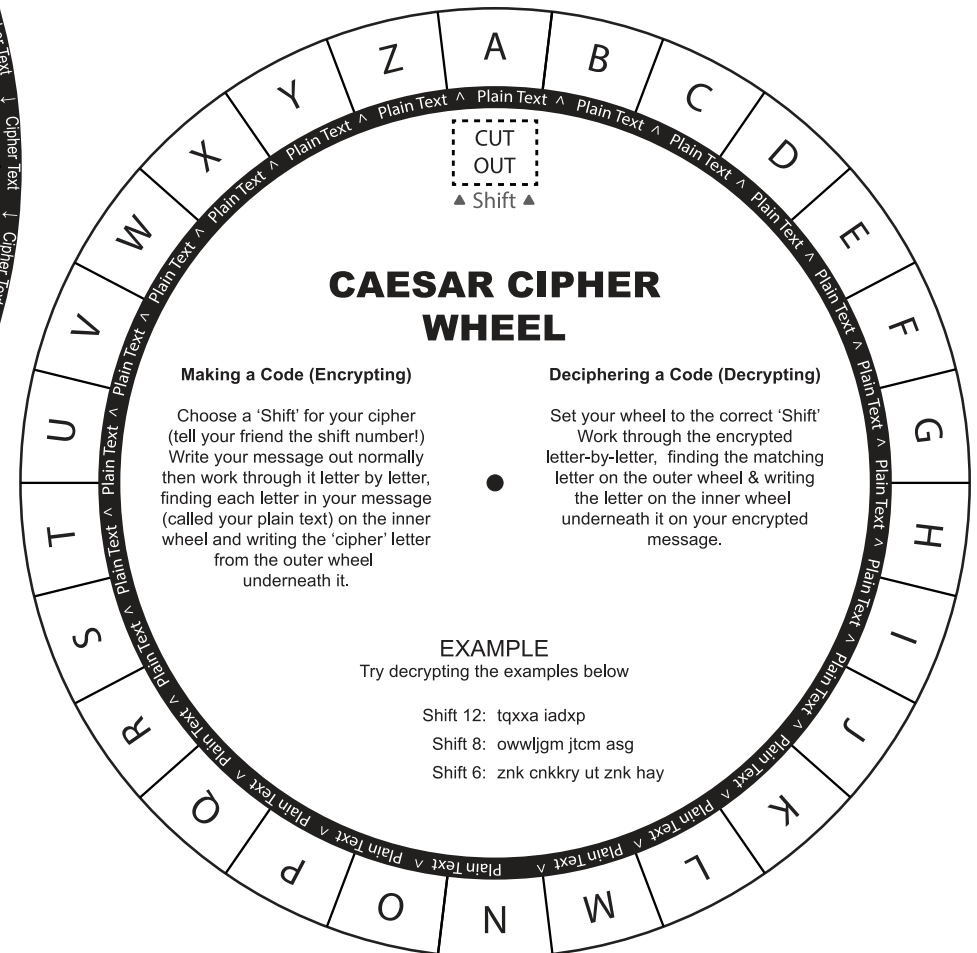
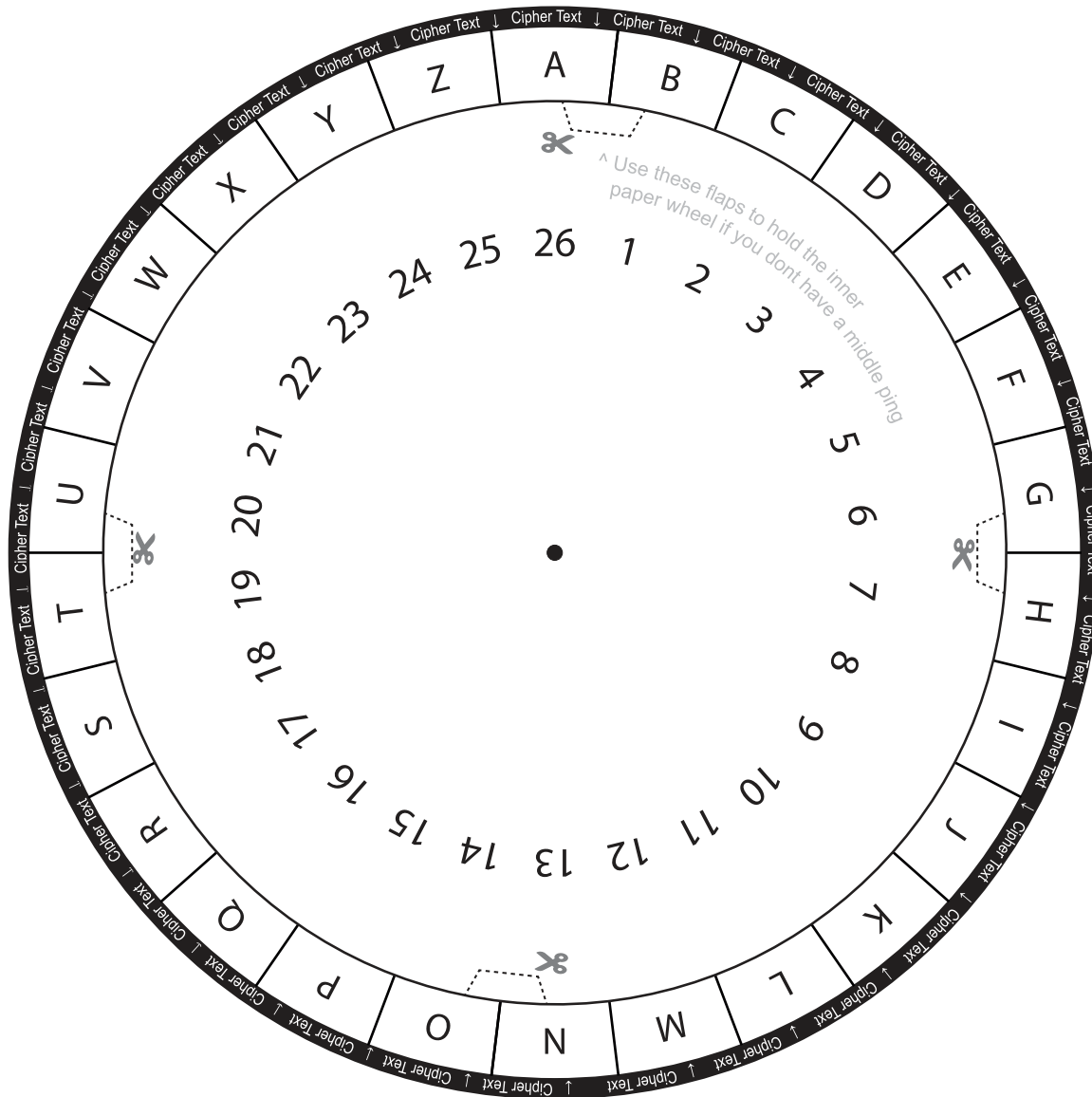
**Ritual:** Anonymous Appreciation Wall

**What to say:** "Write one appreciation for someone using their name, but you leave it unsigned. Post it. Anyone can read theirs." Option - Assign everyone in the group someone to write an appreciation for. Students can draw names.

 **Lightning Bolt:** Award the lightning bolt for the most memorable moment of the session. You can use a physical lightning bolt prop or simply recognize a student out loud — 'Today's lightning bolt goes to \_\_\_\_ for \_\_\_\_.'

**Preview:**  The Pet Hut project goes public. Lucy has to stand up in front of people.

# Caesar Cipher Wheel



## SESSION 8

# The Adoption Event

Chapters 33–36 | When data saves lives and teamwork makes it real



### MATERIALS FOR THIS SESSION

- Animal profile cards (Use a local animal shelter website or [this website](#) for students to research animals. You can also use [this PDF](#) of 10 animals)
- large construction paper
- markers
- rulers
- dot stickers (3 per student)



### PRE-SESSION SETUP *(15 minutes of prep before students arrive)*

- ☐ Write 8 animal profile cards on index cards before the session — vary species, age, size, energy, days in shelter (no printer needed)
- ☐ Write vocabulary words on the board: persuasive, collaborate, initiative, systematic, culmination
- ☐ Write the Big STEAM Question: 'Can you make someone WANT to adopt an animal using only data and design?'
- ☐ Cut large construction paper or butcher paper into poster-sized pieces — one per team
- ☐ Set out markers, rulers, and dot stickers (or torn sticky note squares) at tables



### ARRIVAL RITUAL

5 min

### "Role Call — Four Corners"

**Script:** When you're working on a group project, which role are you naturally?

Go stand in a corner: IDEA PERSON (the visionary) — BUILDER (makes it happen) — DETAIL CHECKER (catches mistakes) — PRESENTER (hypes the work).

\*Option\* Post the words around corners of the room vs point to corners.

Look at who's in your corner. Does your team always need all four? What happens when everyone is the same type?

After: "Lucy, Windy, and Levi, who's which role?" Let students debate this. Before STEAM teams, intentionally mix role types when you assign groups.

**Movement:** Everyone physically moves to a corner. Discussion happens while standing.



### 30-Second Flash — Speed Round | 5 words, ~2 min each

## WORD PLAY

10 min

**Format:** Complete the 4 Step Process for each word. Then, have a word race. Show a word. First team/person to give the correct definition and use it correctly in a sentence earns the point. Ties go to the better sentence. Move fast, game show energy.

**What the room looks like:** Students are on the edge of their seats, hands up or standing immediately. You're moving fast, keeping score, calling answers. There's noise and energy. It should feel like the room is trying to beat something, not pass something.



### SAY IT - DEFINE IT - CONNECT IT - USE IT — repeat for all 5 words

Session 8 words: *persuasive, collaborate, initiative, systematic, culmination*



### STUDENT CHOICE — Competition format?

Let students vote with a show of hands or thumbs before you start:

**Option 1:** Teams vs. teams — earn points, track on the board

**Option 2:** Whole group vs. the clock — beat a 3-minute total time



### HOW TO OPEN WORD PLAY — say this to the group first:

Speed round today. I show the word. First correct answer wins — definition AND a sentence.

'Correct' means: definition captures the actual meaning, sentence uses the word in a way that makes sense. We'll vote as a group if it's close.

Points on the board. Let's go — first word in 3... 2... 1.



### HOW THIS FORMAT WORKS — 30-Second Speed Round — Teams vs. Teams or Group vs. Clock

**HOW IT RUNS:** You hold up or call a word. First team or person to give the correct definition AND a sentence wins the point. Ties go to the better sentence.

**IN THE ROOM:** Students are on the edge of their seats, hands up or standing when they know the answer. You keep score on the board and move as fast as possible. It should feel like a game show.

**YOU SAY:** "I show the word. First correct definition AND sentence wins. Both have to be right — we vote as a group if it's close. Points on the board. First word in 3... 2... 1."

**IF IT SLOWS DOWN:** Say '5 seconds — anyone?' and call whoever stands or raises their hand first. The time pressure is the whole point — lean into it.



### EMERGING — for students who need more support

For students who struggle under time pressure: assign them specific words to 'own' so they can prepare before their word comes up. They're still in the game — they just have a bit more runway.



### ADVANCED — for students ready for more challenge

After the speed round: 'Can you use ALL FIVE words from today to describe what Lucy's team does at the Pet Hut? One paragraph, five words, makes logical sense.' That's a synthesis challenge.



## STORY CIRCLE

15 min

### Student voices lead. You ask — they talk.

**Setup:** SWBST speed round: someone fills in Somebody / Wanted / But / So / Then for Ch. 33–36 in under 60 seconds. Others add or correct. Preview the statement yourself with information from an earlier chapter. Then allow students to respond for chapters 33–36.

**Q1:** "Has Lucy completed Nana's challenge? Make the case using specific evidence, what was the challenge, what did Lucy do, and does it count?"

**Q2:** "The adoption event is a success. But success at what, exactly? What did Lucy win, and what did she have to give up or risk to get there?"



### STUDENT CHOICE DISCUSSION — Pick a question

Let students vote with a show of hands or thumbs before you start:

**Option 1:** "What actually makes Lucy's argument at the adoption event work — and why does it work in this context when her math ability hasn't helped her socially all year?"

**Option 2:** "Lucy takes the initiative here without being pushed into it by Nana. What shifted? What does this moment reveal about who Lucy is becoming versus who she was in Chapter 1?"

**Option 3:** "Windy, Lucy, and Levi each contributed something essential to the Pet Hut project. If you remove any one of them, what falls apart — and what does that tell us about what collaboration actually requires?"



**MOVEMENT:** After the SWBST: quick stand-up, 'Stand if you think the data was the most important part of the adoption event. Stay seated if it was the relationships.'



**EDUCATOR NOTE:** SWBST (Somebody Wanted But So Then) is just a summary frame — it sounds complicated but it's intuitive once you do it once. Model it yourself with Session 1 first: 'Somebody: Lucy. Wanted: to go to college. But: Nana sent her to 7th grade. So: she had to figure out middle school. Then: she met Pi the dog.'

➡ **TRANSITION:** *Lucy used data to advocate for animals at the Pet Hut. You're doing the same thing right now. Your data is on that card. Your animal is counting on you. Let's build.*



## STEAM LAB

30 min

### "Campaign Architects"

**Big Question:** Can you make someone WANT to adopt a specific animal using only data and design?

**The Challenge:** Create an adoption campaign so good that this room wants to adopt your animal today.

**Phase 1: CHOOSE YOUR ANIMAL** — 3 min. Teams draw an animal profile card (from a set of fictional profiles). Assign team roles from the Role Call arrival activity: Idea Person, Builder, Detail Checker, Presenter.

**Phase 2: BUILD THE CASE** — 12 min. Campaign poster on large paper. Required: at least 1 graph or chart, 3 data-backed claims, 1 emotional hook (a name, a story sentence, a visual element), and a headline.

**Phase 3: GALLERY WALK** — 8 min. Post all campaigns. Everyone gets 3 dot stickers. Silent walk for 3 minutes, then vote: stickers on the campaign that most makes you want to adopt that animal.

**Phase 4: DEBRIEF** — 7 min. Which campaign got the most dots? What combination of data + story + design worked? Connect to how Lucy uses stats and heart together at the real event.

**Teams:** Teams of 4 — intentionally mix role types from arrival. One of each type per team if possible.

**Celebrate:** Winning campaign team earns the "Lucy Award" ribbon — cut from orange paper — to wear during closing.

 **STUDENT CHOICE IN THE LAB:** Teams choose which animal to champion, no two teams should pick the same one. If needed, draw randomly.

 **EDUCATOR NOTE:** You don't need to pre-make the animal profile cards to be elaborate, a simple index card with species, age, size, energy level, and days in shelter is enough. Make 8 different ones before the session.

 **WHAT SUCCESS LOOKS LIKE:** Posters include at least one actual graph or data point, not just general claims. The gallery vote produces genuine disagreement about which campaign is most persuasive — and students can articulate why.



## SHOUTOUT & SEND-OFF

5 min

**Close the loop. Send them out wanting to come back.**

**What to say:** "Each person: shout out a teammate by their ROLE. 'I shout out \_\_\_\_ for being the team's [Builder / Detail Checker / etc.] and specifically for \_\_\_\_.'"

 **Lightning Bolt:** Award the lightning bolt for the most memorable moment of the session. You can use a physical lightning bolt prop or simply recognize a student out loud — 'Today's lightning bolt goes to \_\_\_\_ for \_\_\_\_.'

**Preview:**  Two sessions left, is Lucy the same person she was on page 1?

## SESSION 9

# Miscalculations

Chapters 37–40 | Every mistake was a step — including Lucy's



### MATERIALS FOR THIS SESSION

- Index cards
- markers
- 3–4 printed illusion images (Müller-Lyer, Ponzo, and Rubin vase — all free to print online)
- rulers
- pencils
- notebook paper for recording



### PRE-SESSION SETUP *(10 minutes of prep before students arrive)*

- ☐ Write vocabulary words on the board: resilience, recalculate, profound, neuroplasticity, miscalculation
- ☐ Write the Big STEAM Question: 'How do our brains take in information?' '
- ☐ Hand-write the Growth Equation formula on the board or chart paper: [Mistake or Challenge] + [Effort or Help] + [Time] = [Growth]
- ☐ Set out colored pencils, markers, and sticky notes at tables
- ☐ Update the Comfort Zone Thermometer wall reference from Session 2 — students will revisit these today



### ARRIVAL RITUAL

5 min

#### "Before & After Cards"

**Script:** Grab an index card. On one side: draw or write 'Lucy on Day 1.' On the other: 'Lucy on Day Last.'

You've got 2 minutes. Compare with a partner.

Now flip it: how are YOU different from Session 1? You don't have to share.

**Movement:** Students find the Comfort Zone Thermometers from Session 2. Ask them to think, how comfortable the students are now talking to new people. Can they update them? They choose.



### WORD PLAY

10 min

#### Word Story Chain | 5 words, ~2 min each

**Format:** Teams build one oral story — no writing. Each person adds one sentence correctly using the next word. The story must be coherent AND match the chosen style. Run it twice.

**What the room looks like:** Students are leaning in, grinning or dramatically serious. When someone's sentence doesn't use the word correctly, the group calls it out and they try again. There's laughter, negotiation, and creativity — all while genuinely using complex vocabulary.



## SAY IT- DEFINE IT - CONNECT IT - USE IT — repeat for all 5 words

Session 9 words: resilience, recalculate, profound, neuroplasticity, miscalculation



## STUDENT CHOICE — Story style?

Let students vote with a show of hands or thumbs before you start:

**Option 1:** Silly — as funny as possible while still using the words correctly

**Option 2:** Dramatic — tell the story like it's a movie trailer



## HOW TO OPEN WORD PLAY — say this to the group first:

We're building a story together — one sentence at a time. Each sentence has to include the next word on the list, using the word's actual meaning.

Here's the catch: the story has to make sense. And it has to match the style you voted for.

I'll model the first sentence. Then we go around. If your sentence doesn't use the word right, we try again together. Let's go.



## HOW THIS FORMAT WORKS — Word Story Chain — Silly or Dramatic

**HOW IT RUNS:** The group builds one oral story together, one sentence at a time. Each person adds a sentence that uses the next word on the list correctly. The story must make sense and match the chosen style.

**IN THE ROOM:** Students lean in, grinning (silly) or dramatically serious (dramatic). When someone's sentence doesn't use the word correctly, the group calls it out and they try again. Run it twice.

**YOU SAY:** "We're building a story one sentence at a time. Each sentence has to include the next word on the list — used correctly. The story has to make sense AND match the style we voted for. I'll model the first sentence."

**IF SOMEONE FREEZES:** Say 'Describe what's happening in the story so far, then drop your word in.' One sentence is enough, they don't have to be clever, just keep the story moving.



### EMERGING — for students who need more support

For students who freeze: 'You can always describe what's happening in the story so far, then add your word. Like: 'So Lucy was still dealing with all that — and her resilience was what kept her going.' You don't have to be brilliant, just move the story forward.'



### ADVANCED — for students ready for more challenge

After both rounds: 'Can you write a single sentence that uses ALL FIVE words from today correctly? One sentence. It can be as long as it needs to be.' This is a genuine synthesis challenge.



## EDUCATOR NOTE: The story chain tends toward absurdity, that's fine. If a word is being used wrong:

'Close, but resilience means bouncing BACK from something. Try again.' Keep it gentle and fast.



Student voices lead. You ask — they talk.

## STORY CIRCLE

15 min

**Setup:** Silent read of one key passage from Ch. 37–40. Students mark one line that hits them and sticks with them. It can be for any reason at all. Ask for a few students to share.

**Q1:** "If Lucy could go back to the first day of 7th grade knowing what she knows now, what would she do differently? What would she refuse to change?"

**Q2:** Review the Growth Formula: [Mistake or Challenge] + [Effort or Help] + [Time] = [Growth]. Complete the growth formula for Lucy.

**Q3:** "The novel is ending. What question does it leave unanswered, and do you think that's intentional?"

## STUDENT CHOICE DISCUSSION — Pick a question

Let students vote with a show of hands or thumbs before you start:

**Option 1:** "What is Lucy's biggest miscalculation in this book, not a math error, but a fundamental misunderstanding about how people or the world works? How did she figure out she was wrong?"

**Option 2:** "The title is *The Miscalculations of Lightning Girl*. By the end, has Lucy stopped making miscalculations, or has she just gotten better at living with the uncertainty they create?"

**Option 3:** "Neuroplasticity means the brain physically changes in response to experience. In what specific ways has Lucy's brain been rewired by this year, and what was the experience that rewired each part? How has your brain been rewired over a year?"

 **EDUCATOR NOTE:** "Neuroplasticity just means the brain can change and grow throughout your whole life — not just when you're young. Every time you figure something new out, your brain literally builds a new connection." That's all you need.

➡ **TRANSITION:** *Lucy's brain sees patterns in numbers that most people can't see at all. Today you're going to test how YOUR brain constructs reality — and discover it doesn't always get it right.*



## STEAM LAB

30 min

### "Optical Illusion Lab"

**Big Question:** Can you trust what your brain tells you, and what does that have to do with how you understand other people?

**The Challenge:** Run 3 experiments on your own brain. Figure out WHY each illusion works — then connect it to the book.

**Phase 1: ILLUSION STATIONS** — 14 min. Teams rotate through 3 printed illusion cards: 1) Müller-Lyer (two lines with arrows — which line is longer?), 2) Ponzo (two identical bars on railroad tracks — which looks bigger?), 3) Rubin's vase (do you see a vase or two faces?). At each station: write your first perception, then for Müller-Lyer and Ponzo, measure how long the lines are. Write: "I first saw \_\_\_, I thought \_\_\_ was longer/bigger, but the truth is \_\_\_."

**Phase 2: EXPLAIN THE SCIENCE** — 8 min. Say: "Your brain takes shortcuts. It uses context clues, past experience, and assumptions to fill in gaps faster than you can think consciously. The shortcuts usually work. Sometimes they don't." Students: which illusion fooled you most, and why do you think it worked?

**Phase 3: CONNECT** — 8 min. Ask: "Lucy's classmates make assumptions about her the same way your brain made assumptions about the lines. What shortcut are they taking? What would they see if they measured instead of just perceived?" Take 3–4 student responses and write key ideas on the board.

**Teams:** Teams of 3. Rotate stations together. One person records first perceptions, one measures, one reports findings.

**Celebrate:** The team that most clearly explains the science behind their trickiest illusion earns the "Top-Down Thinker" title on the Wall of Wins.

 **STUDENT CHOICE IN THE LAB:** In the Connect phase, teams choose which illusion they think best represents how Lucy is misread at East Hamlin — and explain why they chose it.

 **WHAT SUCCESS LOOKS LIKE:** Students are genuinely arguing about what they see in at least two illusions. The measurement phase produces real surprise, the lines ARE the same length. At least one team connects the idea of perception to how characters in the book are misread.



## SHOUTOUT & SEND-OFF

5 min

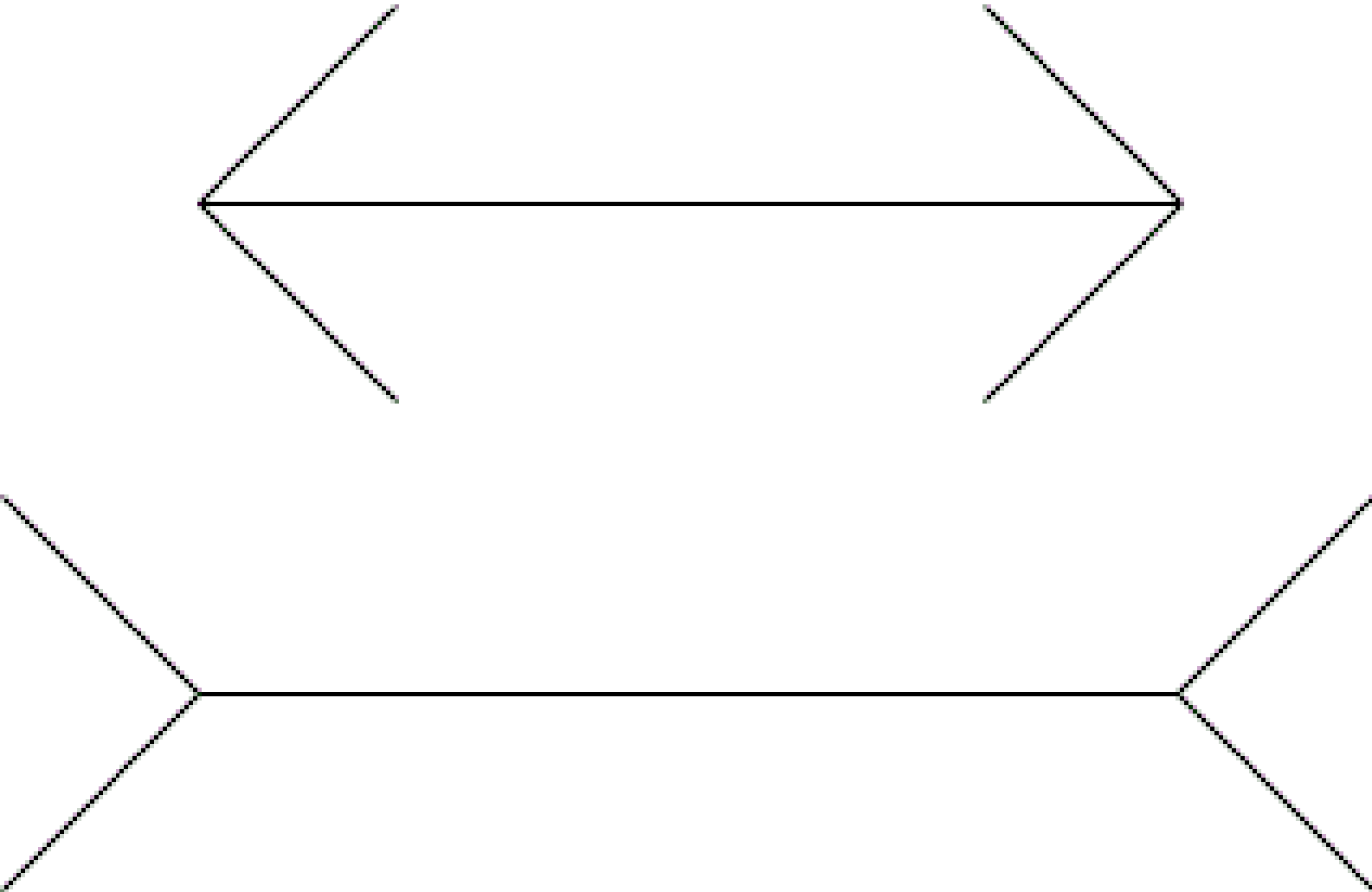
**Close the loop. Send them out wanting to come back.**

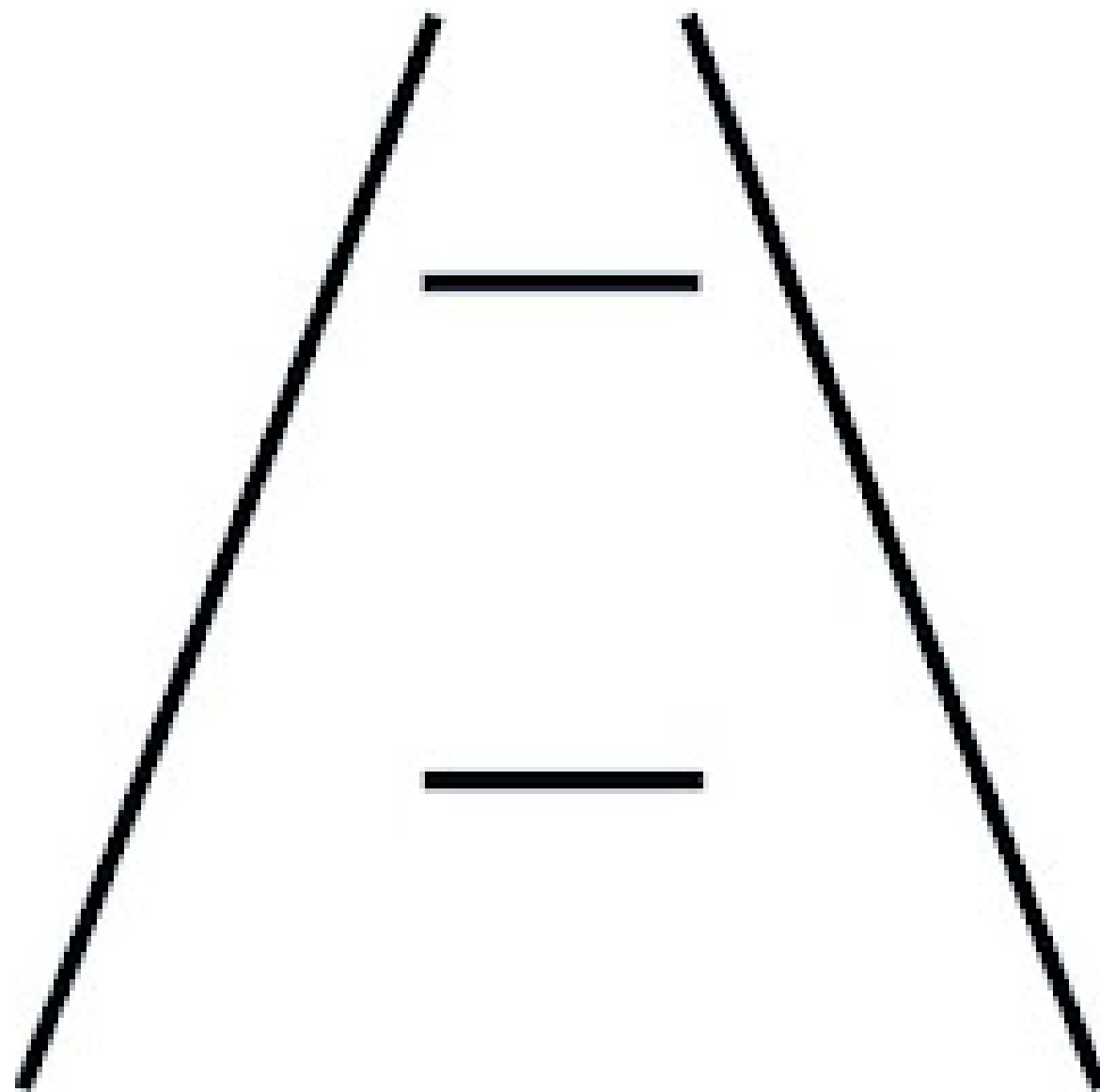
**What to say:** "Lucy has changed a lot throughout our book, and so have you over these lessons. Write a sentence, or letter to yourself on Day 1. Complete the sentence, 'If I could tell myself something on Day 1...' Ask students to share."

**Make Your Own Growth Formula:** Review the [Mistake or Challenge] + [Effort or Help] + [Time] = [Growth] and ask students to create their own from a point in their life.

 **Lightning Bolt:** Award the lightning bolt for the most memorable moment of the session. You can use a physical lightning bolt prop or simply recognize a student out loud — 'Today's lightning bolt goes to \_\_\_\_ for \_\_\_\_.'

**Preview:**  One session left. We celebrate everything — and say goodbye to Lucy.







## SESSION 10

# For the Love of Pi

Appendices + Full Story | The spiral never ends — and neither does this group



## MATERIALS FOR THIS SESSION

- The thermometer wall from Session 2
- markers to update
- Graph paper (2 sheets per student)
- pencils
- jar lids or compasses for smooth curves
- colored pencils
- markers
- sticky notes
- Lightning Bolt Certificates (1 per student pre-written with personal note)



## PRE-SESSION SETUP *(15 minutes of prep before students arrive)*

- ☐ Write the Fibonacci sequence on the board: 1, 1, 2, 3, 5, 8, 13, 21...
- ☐ Write vocabulary words on the board: sequence, infinite, legacy, synthesis, transformation
- ☐ Draw a simple grid on blank paper to model the Fibonacci spiral — no graph paper needed if unavailable
- ☐ Write Lightning Bolt Certificates before students arrive — one per student with a specific personal observation
- ☐ Set out colored pencils, markers, jar lids or coins (to trace curves instead of compasses), and sticky notes
- ☐ Post the Comfort Zone Thermometers from Session 2 prominently — students will update them at arrival
- ☐ Set up a gallery area for displaying all session work — this is the final Wall of Wins display



## ARRIVAL RITUAL

*5 min*

## "Comfort Zone Thermometer — Final Update"

**Script:** Find your thermometer from Session 2.

Update it — or make a new one.

Hold it up. Look around the room.

Who moved? You don't have to say by how much.

Ask the students, "What makes you more comfortable meeting and talking to new people? What would you say to someone who is nervous about it?"

**Movement:** Students get up to find their thermometers or make new ones.



## WORD PLAY

10 min

### Vocabulary Tournament — All 50 Words in Play | 5 words, ~2 min each

**Format:** Today's 5 words PLUS a Wildcard Round: any word from any session. Teams earn 1 point for a correct definition, 2 for a sentence, 3 for connecting it to the novel. Fast-paced, celebratory.

**What the room looks like:** Students are standing when they know the answer. Energy is high, this is a celebration, not a quiz. When the Wildcard Round opens all 50 words, students are reaching back into their memory. You'll hear words from Session 1 come back. That's the whole point.



### SAY IT- DEFINE IT - CONNECT IT - USE IT — repeat for all 5 words

*Session 10 words: sequence, infinite, legacy, synthesis, transformation*



### STUDENT CHOICE — Tournament format?

Let students vote with a show of hands or thumbs before you start:

**Option 1:** Bracket style — teams face off head to head, winner advances

**Option 2:** Lightning round — everyone competes at once, fastest answer wins each point



### HOW TO OPEN WORD PLAY — say this to the group first:

Final Word Play. All 50 words are in play today, today's 5, plus anything from any session.

Definition AND sentence, both have to be right.

Bonus: if you connect the word to the book — who said it, what scene, why it matters — you get 3 points.

This is a celebration of how much vocabulary you've actually absorbed. Let's find out how much that is.



### HOW THIS FORMAT WORKS — Vocabulary Tournament — Bracket or Lightning Round

**HOW IT RUNS:** Today's 5 words PLUS a Wildcard Round where any word from any session is fair game. Definition earns 1 point, sentence earns 2, connecting to the novel earns 3.

**BRACKET:** Teams face off head to head. You call a word — first team to give definition + sentence advances. Draw a simple bracket on the board before you start with student's names and who they will compete against.

**LIGHTNING ROUND:** Anyone can answer. First correct answer wins. Students stand when they know it — first person standing gets to answer. Keep score on the board.

**YOU SAY:** "All 50 words are in play today — today's 5, plus anything from any session. Definition + sentence = 2 points. Connect it to the book = 3 points. This is a celebration of everything you've learned. Let's find out how much that is."



### EMERGING — for students who need more support

For students anxious about the Wildcard Round: let them choose ONE word from their vocabulary journal to 'own' before the tournament — they're the designated expert for that word. This gives everyone at least one guaranteed strong moment.



### ADVANCED — for students ready for more challenge

After the tournament: 'Can you use a word from Session 1 AND a word from Session 10 in the same sentence — in a way that shows how the whole program connects?' This is the highest synthesis challenge of all.



**EDUCATOR NOTE:** Don't quiz — celebrate. If a student uses a word imperfectly, find what's right before correcting: 'You've got the feeling of that word exactly right — let me just sharpen the definition.' This is the last Word Play of the program.



### STORY CIRCLE

15 min

#### Student voices lead. You ask — they talk.

**Setup:** Gallery reflection — no new questions. Facilitator reads 3–4 short passages from across the 10 sessions.

**Q1:** "After each short passage is read: "Where were we when we read this? What do you think now that you didn't think then?"



### STUDENT CHOICE DISCUSSION — Pick a question

Let students vote with a show of hands or thumbs before you start:

**Option 1:** "Find the one sentence in the whole book that you think captures what the entire novel is actually about. Read it aloud, then explain why you chose it and what it means beyond its literal content."

**Option 2:** "This book is called *The Miscalculations of Lightning Girl*, but by the end, the word miscalculation feels different than it did on page one. How has its meaning shifted, and what does the author McAnulty want us to understand about being wrong?"

**Option 3:** "What did this program, not just the book, but this specific group of people doing this specific thing together, make you think about differently?"

➡ **TRANSITION:** *The Fibonacci sequence never ends — each number becomes part of the next one. That's this program. Everything you've built is becoming part of what comes next. Let's make one more thing.*



### STEAM LAB

30 min

#### "Fibonacci Celebration Studio"

**Big Question:** Why does the universe keep using the same spiral, in shells, sunflowers, galaxies, and Lucy's story?

**The Challenge:** Build your own Fibonacci spiral. Every piece goes in the gallery. Every piece goes home.

**Phase 1: THE SEQUENCE** — 5 min. "1, 1, 2, 3, 5, 8, 13, 21 — each number is the sum of the two before it. This shows up in pine cones, flower petals, hurricanes, and spiral galaxies. Why? Because nature is mathematical."

**Phase 2: BUILD THE SPIRAL** — 15 min. On graph paper: draw 1x1 square, another 1x1 next to it, a 2x2 on top, a 3x3 beside it, 5x5 next, 8x8 after. Keep going as far as the paper allows. Connect the corners of each square with a smooth curve (use the jar lid) that's the golden spiral.

**Phase 3: MAKE IT YOURS** — 8 min. Decorate the spiral: colors, patterns, words, a quote from the book, a word from the vocabulary list, anything that's meaningful to you. This is YOURS.

**Phase 4: GALLERY + CELEBRATION** — 7 min. Post all artwork. Walk the gallery. Leave one sticky note for someone else's piece: "I see \_\_\_ in your work." Certificates, group photo, final lightning bolt ritual.

**Teams:** Mostly individual — this is personal work. The gallery is the collective moment.

**Celebrate:** Every single student gets a Lightning Bolt Certificate. Write one specific, observed, genuine thing on each one before the session.

 **STUDENT CHOICE IN THE LAB:** Decoration is completely open — the spiral structure is the same for everyone, but every piece looks different.

#### **IF STUDENTS GET STUCK — Session 10**

**Likely sticking point:** Students' Fibonacci spirals aren't smooth — they look like staircase corners, not curves.

**Say this:** *"The corners are where the magic happens. Place your jar lid or cup in the corner of the square, with the edge touching both sides of the corner. Trace just the quarter circle in that corner, then move to the next square."*

**Quick visual to draw on the board:** Draw the first 4 squares on the board (1x1, 1x1, 2x2, 3x3). Show where the jar lid goes in each corner. The curve goes from one corner of the square to the opposite corner — always a quarter circle. Once students see the first two curves done correctly, the pattern clicks.

**If you haven't pre-made anything:** You don't need to build a spiral yourself first. Bring jar lids of 2–3 different sizes. The 2x2 square needs a smaller lid; the 5x5 needs a larger one. Students figure out which fits as they go — that's part of the discovery.



#### **SHOUTOUT & SEND-OFF**

5 min

#### **Final Celebration**

**What to say:** "We're going around one last time. Complete this sentence: 'When I think about this group, what I'll remember is \_\_\_\_.' No repeats."

 **Lightning Bolt Certificates:** Award the lightning bolt certificates to each student.

Celebrate each student and after each student is called, have the students make thunder by stomping or hitting a desk.

**Send-off:** Students take home: Fibonacci spiral, Growth Equation card, Lightning Bolt Certificate.



**EDUCATOR NOTE:** Write the personal notes on certificates BEFORE Session 10. Think about something specific you noticed about each student across the 10 sessions, a risk they took, a question they asked, a moment they supported someone. This matters more than you think.

# VOCABULARY APPENDIX

The Miscalculations of Lightning Girl | All 50 Words | Sessions 1–10 | 4-Step Routine: Say It → Define It → Connect It → Use It

| #  | Session                 | Words                                                                  |
|----|-------------------------|------------------------------------------------------------------------|
| 1  | Lightning Strikes       | defibrillator · fluorescent · fractal · reclusive · immunization       |
| 2  | The Soft Skills Problem | paparazzi · condoning · savant · obsessive · assessment                |
| 3  | The Outcasts            | telepathic · condescending · ostracized · discriminating · peripheral  |
| 4  | Pi the Dog              | euthanize · statistical · empathy · quantify · sanctuary               |
| 5  | The Sleepover           | unverified · imprecise · betrayal · mesmerized · vulnerability         |
| 6  | Fair vs. Equal          | differentiate · meticulous · oppressed · competence                    |
| 7  | The MathWhiz Reveal     | inquisitive · anonymous · authentic · algorithm · revelation           |
| 8  | The Adoption Event      | persuasive · collaborate · initiative · systematic · culmination       |
| 9  | Miscalculations         | resilience · recalculate · profound · neuroplasticity · miscalculation |
| 10 | For the Love of Pi      | sequence · infinite · legacy · synthesis · transformation              |

**How to use:** Hold up the card for each word. Step 1 — everyone says it aloud (whisper, then full voice). Step 2 — read the definition aloud, then restate it in your own words. Step 3 — ask the Connect It question; wait 5 seconds before calling on anyone. Step 4 — give the Use It prompt; each student makes their own sentence. ~2 minutes per word, 10 minutes total per session.

## SESSION 1 — LIGHTNING STRIKES | Words: defibrillator, fluorescent, fractal, reclusive, immunization

### DEFIBRILLATOR *deh-FIB-rih-lay-tor*

A medical device that sends an electric shock to restart or reset someone's heart.

#### STEP 1 — SAY IT

Say it together: *deh-FIB-rih-lay-tor*. Whisper it. Now say it like you're a doctor yelling across an emergency room. One more time — full voice.

#### STEP 2 — DEFINE IT

A defibrillator is the machine you've probably seen in movies with the paddles — someone yells 'clear!' and it sends a shock to restart a heart that's stopped or beating wrong. This is the device Lucy interacts with on page 2. It's the reason this whole story exists.

#### STEP 3 — CONNECT IT

Lucy's story starts with a defibrillator. Turn and tell your partner: what do you think it feels like to need one? And what might change about a person who survived that?

**Students might say:** "Terrifying — your heart literally stopped." / "You'd probably think about death differently." / "It would feel like a second chance — like the universe made a decision."

#### STEP 4 — USE IT

Use defibrillator in a sentence that explains how it connects to Lucy's story.

**Students might say:** "Lucy's brain changed after a defibrillator restarted her heart when she was eight." / "The word euthanize, once she understood it, rewired the entire project in her mind."

### FLUORESCENT *floo-RES-ent*

Giving off a very bright, buzzing, often harsh light — the kind in schools and hospitals.

#### STEP 1 — SAY IT

Say it together: *floo-RES-ent*. Now say it like the light is annoying you. Say it like you just walked into the worst-lit room you've ever been in.

#### STEP 2 — DEFINE IT

Fluorescent lights are those long tube lights in ceilings — they buzz, flicker, and cast a clinical brightness. Lucy notices them immediately when she walks into East Hamlin. That tells us something about how sensitive she is to her environment.

#### STEP 3 — CONNECT IT

Think about the lights in THIS room right now. How do they make you feel after being under them for a long time? Lucy, because of how her brain works, is far more affected by this than most people.

**Students might say:** "They make me feel tired after a while." / "I never really noticed them before honestly." / "My mom gets headaches from fluorescent lights — maybe she has the same sensitivity."

#### STEP 4 — USE IT

Use fluorescent in a sentence about a place — real or imagined — where the light felt wrong.

**Students might say:** "The fluorescent lights in the cafeteria made everything look pale and a little sad." / "Lucy flinched under the fluorescent buzz of the hallway the moment she walked in."

### FRACTAL *FRAK-tul*

A mathematical pattern that repeats itself at every scale — zoom in and you see the same shape again.

#### STEP 1 — SAY IT

Say it together: *FRAK-tul*. Say it like it's the most beautiful word you've ever heard.

#### STEP 2 — DEFINE IT

A fractal is a shape that keeps repeating no matter how close you zoom in — like a snowflake: every tiny arm looks like the whole snowflake. Or a fern: every tiny leaf looks like the full plant. Lucy loves fractals because they're where math and beauty meet.

#### STEP 3 — CONNECT IT

Look at your hand. Your fingers are kind of fractal — the joints, the knuckles, the branching pattern. Can you think of anything else in nature that has this repeating-at-every-scale quality?

**Students might say:** "Broccoli — every little floret looks like a tiny broccoli." / "Tree branches — the small ones look like smaller versions of the big ones." / "Coastlines apparently repeat their jaggedness at every scale of magnification."

|  |                                                                                                                                                                                                                                                                                                                                                         |
|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <p><b>STEP 4 — USE IT</b><br/> <i>Use fractal in a sentence that connects it to something in Lucy's personality or the way she sees the world.</i><br/> <b>Students might say:</b> "Lucy loves fractals because they prove that beauty and math are the same thing." / "Like a fractal, Lucy's love of numbers repeats at every scale of her life."</p> |
|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

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|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>RECLUSIVE</b> <i>reh-KLOO-siv</i><br/>         Preferring to be alone or avoiding other people — not shy, but genuinely choosing solitude.</p>                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <p><b>STEP 1 — SAY IT</b><br/> <i>Say it together: reh-KLOO-siv. Now say it like you really mean it — like you'd rather not be in this room right now.</i></p> <p><b>STEP 2 — DEFINE IT</b><br/> <i>Reclusive means you pull away from people on purpose — not because you're scared, but because you genuinely prefer solitude. Lucy calls herself a reclusive genius on page 6. She's not apologizing. She's stating a fact.</i></p> | <p><b>STEP 3 — CONNECT IT</b><br/> <i>Is being reclusive the same as being shy? What's the difference? Think for 10 seconds, then tell your partner your answer.</i><br/> <b>Students might say:</b> "Shy means you want to connect but you're scared. Reclusive means you're genuinely fine alone." / "Shy is fear-based. Reclusive is preference-based." / "Lucy doesn't seem anxious about people — she just finds them less interesting than math."</p> <p><b>STEP 4 — USE IT</b><br/> <i>Use reclusive in a sentence about Lucy — show what it means for how she lives her life.</i><br/> <b>Students might say:</b> "Lucy is reclusive because she prefers numbers to people." / "Lucy is reclusive at school but surprisingly open on MathWhiz, where no one knows who she really is."</p> |

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| <p><b>IMMUNIZATION</b> <i>ih-myoo-nih-ZAY-shun</i><br/>         The process of protecting your body from disease — usually through a vaccine that trains your immune system.</p>                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <p><b>STEP 1 — SAY IT</b><br/> <i>Say it together: ih-myoo-nih-ZAY-shun. Say it like a scientist explaining it on a podcast. Now say it like you just got a shot and you're NOT happy about it.</i></p> <p><b>STEP 2 — DEFINE IT</b><br/> <i>Immunization is the process of making someone immune — protected — from a disease. The root IMMUNIS means exempt or free from. Lucy, who has OCD and thinks a lot about germs, would almost certainly have every immunization on record.</i></p> | <p><b>STEP 3 — CONNECT IT</b><br/> <i>Why would someone who thinks like Lucy find comfort in the idea of immunization? What does it offer that most things in her life don't?</i><br/> <b>Students might say:</b> "It's quantifiable — you can calculate your level of protection." / "It gives you control over something scary and invisible." / "Germs are unpredictable, but immunization is measurable — and anything measurable is something Lucy can work with."</p> <p><b>STEP 4 — USE IT</b><br/> <i>Use immunization in a sentence. Bonus: use it both literally AND figuratively — what might Lucy need an immunization against that isn't a disease?</i><br/> <b>Students might say:</b> "Lucy had every immunization on schedule and could recite the date of each one." / "What Lucy really needed was an immunization against social misunderstanding — but no shot could give her that."</p> |

## PAPARAZZI *pah-pah-RAHT-zee*

Photographers who aggressively follow celebrities to take their pictures — often intrusive and unwanted.

### STEP 1 — SAY IT

Say it together: *pah-pah-RAHT-zee*. Now say it like you just spotted a swarm of them outside. One more time — fast.

### STEP 2 — DEFINE IT

Paparazzi are the photographers who chase celebrities everywhere — outside restaurants, at airports, even at their homes. The word comes from Italian — originally slang for a mosquito-like buzzing photographer. Lucy uses it to describe how unwanted attention feels.

### STEP 3 — CONNECT IT

Why would Lucy choose the word *paparazzi* instead of just saying 'I don't like attention'? What does that word choice tell us about the intensity of what she experiences?

**Students might say:** "It means the attention feels aggressive and invasive, not just uncomfortable." / "She's not a celebrity, so calling classmates *paparazzi* is a joke that also reveals how overwhelmed she is." / "She's exaggerating for effect — which means she has more of a sense of humor than she lets on."

### STEP 4 — USE IT

Use *paparazzi* in a sentence — either literally OR figuratively, the way Lucy does, to describe unwanted attention.

**Students might say:** "Every time Lucy answered a question in class, her classmates turned to stare like *paparazzi* who'd caught something scandalous." / "The *paparazzi* outside the restaurant surrounded the actor before he could reach his car — Lucy knew that feeling."

## CONDONING *kon-DOH-ning*

Allowing or accepting something wrong without trying to stop it — your silence becomes a kind of permission.

### STEP 1 — SAY IT

Say it together: *kon-DOH-ning*. Say it firmly, like you disapprove of something happening right now.

### STEP 2 — DEFINE IT

When you condone something, you're not doing the harmful thing yourself — but you're not stopping it either. The saying 'silence is condoning' means that not speaking up sends the message that you're okay with what's happening. The teacher who ignores a nickname is condoning it.

### STEP 3 — CONNECT IT

In Ch. 5–9, someone condones something unkind toward Lucy. Who is it, and what are they allowing to happen? Or think of a time you saw something unfair and didn't say anything — were you condoning it?

**Students might say:** "The teacher condones the nickname by never addressing it." / "I didn't say anything when someone was being made fun of at lunch once, and I felt bad after." / "Even laughing at something you know is wrong is a form of condoning."

### STEP 4 — USE IT

Use *condoning* in a sentence about something that happens in Ch. 5–9 — or in your own experience.

**Students might say:** "By ignoring the nickname, the teacher was condoning the cruelty without meaning to — and meaning doesn't change the effect." / "I realized I had been condoning my friend's behavior by laughing every time she said something cutting."

## SAVANT *sa-VAHNT*

A person with an extraordinary ability in one specific area — mathematical or artistic — that goes far beyond normal expertise.

### STEP 1 — SAY IT

Say it together: *sa-VAHNT*. Say it like you're introducing the most impressive person you've ever met.

### STEP 2 — DEFINE IT

A savant has a superhuman level of ability in one specific thing — calculating huge numbers instantly, playing music heard once from memory, drawing entire cityscapes without reference. Lucy is a math savant. It's not just that she's good at math — she experiences numbers in a way most humans never will.

### STEP 3 — CONNECT IT

What would it feel like to have a brain that works like Lucy's? What would be extraordinary about it? What might be hard or lonely about it?

**Students might say:** "Extraordinary: you'd never fail a test." / "Hard: people would always want to test you or show you off — you'd become a performance." / "Lonely: the thing you're best at, you can't share with almost anyone."

### STEP 4 — USE IT

Use *savant* in a sentence that captures what makes Lucy different from just being 'really smart at math.'

**Students might say:** "Lucy isn't just a math student — she's a savant, which means numbers aren't just something she studies; they're the way she experiences the entire world." / "A savant doesn't choose their ability — it chooses them."

## OBSESSIVE *ob-SES-iv*

Unable to stop thinking about something — when a thought or behavior returns even when you try to move on.

### STEP 1 — SAY IT

Say it together: *ob-SES-iv*. Say it like the thought won't leave you alone.

### STEP 2 — DEFINE IT

Obsessive describes thoughts or behaviors that repeat, even when you want them to stop. For Lucy, this shows up as OCD — her brain gets stuck on certain things like germs or the digits of pi, and no matter how hard she tries, she can't just move on.

### STEP 3 — CONNECT IT

What's something you've thought about obsessively — not necessarily a problem, could be a song, a worry, a video you can't stop watching? What does that feel like over time?

**Students might say:** "I get songs stuck in my head for days and can't stop hearing them." / "Before a big game I replay every possible bad outcome until I'm exhausted." / "I check my phone obsessively when I'm waiting for something important."

### STEP 4 — USE IT

Use obsessive in a sentence. Is it being used as a negative, a positive, or both? Explain.

**Students might say:** "Lucy is obsessive about cleanliness in a way that her classmates don't understand." / "Being obsessive about math in the same way a musician is consumed by a melody — the difference is that her obsession has a calculation at the end."

## ASSESSMENT *uh-SES-ment*

A test or evaluation used to measure what someone knows or can do.

### STEP 1 — SAY IT

Say it together: *uh-SES-ment*. Now say it like it's the most boring word in the world. Now say it like it's the thing you've been dreading all week.

### STEP 2 — DEFINE IT

An assessment is any tool used to find out what someone knows — a quiz, a test, a project, a presentation. Mr. Stoker calls it an assessment. Lucy deliberately gets a zero on hers. Think about what that tells us about her priorities right now.

### STEP 3 — CONNECT IT

Lucy knows every answer but chooses to get a zero. Have you ever hidden how much you knew or could do — to fit in, avoid attention, or just to see what would happen?

**Students might say:** "I've definitely played dumb before so people wouldn't think I was a know-it-all." / "I once didn't try at something because I was scared of what it would mean if I actually succeeded." / "If you do badly on purpose it almost feels safer than actually trying and failing."

### STEP 4 — USE IT

Use assessment in a sentence about what happens in Ch. 5–9. Bonus: use it to say something about what assessments can and can't actually measure.

**Students might say:** "Lucy answered every assessment question wrong on purpose — which means Mr. Stoker's assessment measured nothing real about her." / "An assessment can measure whether you wrote the right answer. It can't measure whether you chose not to."

## TELEPATHIC *tel-uh-PATH-ik*

Having the imagined ability to send or receive thoughts directly, mind to mind, without speaking.

### STEP 1 — SAY IT

Say it together: *tel-uh-PATH-ik*. Say it slowly so you can feel the two parts: **TELE** — **PATHIC**.

### STEP 2 — DEFINE IT

*Telepathic* means communicating mind to mind — no words, no signals. *Tele-* means **FAR** or **DISTANT** (think: telephone = voice from far away). *-Pathic* comes from **PATHOS**, meaning **FEELING**. So telepathic literally means 'feeling from a distance.' Lucy wishes she were telepathic.

### STEP 3 — CONNECT IT

If Lucy were telepathic, how would her life at East Hamlin be different? What does the fact that she **WISHES** for this tell us about what she finds hardest about middle school?

**Students might say:** "She wouldn't have to guess what people mean — she'd just know." / "It would make social stuff more like math — certain and clear." / "It would cut out all the confusion about tone and facial expressions that she keeps misreading."

### STEP 4 — USE IT

Use telepathic **AND** one other tele- word (telephone, telescope, television, teleport) in the same sentence.

**Students might say:** "Lucy would have loved to be telepathic — she'd rather connect like a telephone wire than navigate the static of actual conversation." / "Without telepathic ability, Lucy had to telescope her attention toward tiny social clues she kept misreading."

## CONDESCENDING *kon-deh-SEN-ding*

Acting as if you are above or better than someone else — talking down to them.

### STEP 1 — SAY IT

Say it together: *kon-deh-SEN-ding*. Now say it in the most condescending voice you can manage.

### STEP 2 — DEFINE IT

Condescending means treating someone as beneath you. The root **SCENDERE** means to climb. **Con-DESCEND** means to 'climb **DOWN**' to someone's level — but with an attitude that makes it clear you think you're above them. It's the tone of the students who call Lucy 'the cleaning lady.'

### STEP 3 — CONNECT IT

Show me a condescending face. Now say 'oh, did you not know that?' in a condescending way. How does it feel to be on the receiving end of that tone?

**Students might say:** "It makes you feel small and stupid even if you're not." / "It makes you want to either prove them wrong or disappear." / "It's almost worse than being ignored — at least being ignored is neutral."

### STEP 4 — USE IT

Use condescending in a sentence that describes a specific moment or interaction in Ch. 10–14.

**Students might say:** "The way Maddie explained the social rules to Lucy wasn't helpful — it was condescending, like she was talking to a kindergartner." / "Being condescending is a way of showing power without having to say anything directly cruel."

## OSTRACIZED *OS-truh-sized*

Deliberately excluded from a group — shut out by others as a form of social punishment.

### STEP 1 — SAY IT

Say it together: *OS-truh-sized*. Say it like you're announcing something serious.

### STEP 2 — DEFINE IT

Ostracized means socially banished — shut out. In ancient Athens, citizens could vote to exile someone for 10 years by scratching their name on a pottery shard called an **OSTRAKON**. That's where we get ostracize. Lucy, Windy, and Levi are all ostracized — but for completely different reasons.

### STEP 3 — CONNECT IT

Who gets ostracized in Ch. 10–14, and what's the specific mechanism — what do other students actually **DO** (or not do) to make them feel excluded?

**Students might say:** "For Lucy: they stare, give her nicknames, avoid sitting near her." / "For Windy: she's too enthusiastic — people think she's weird for caring too much." / "For Levi: he dresses differently and isn't trying to fit in at all."

### STEP 4 — USE IT

Use ostracized in a sentence that explains **HOW** the exclusion happens — not just that it does.

**Students might say:** "Lucy was ostracized not through cruelty exactly, but through a wall of avoidance — no one was mean, they just treated her like she didn't quite exist." / "Being ostracized is worse when no one will explain what you did wrong."

## DISCRIMINATING *dis-KRIM-ih-nay-ting*

[In this book:] Having refined taste and careful judgment. [Also:] treating people unfairly based on who they are. Both from the same root.

### STEP 1 — SAY IT

Say it together: *dis-KRIM-ih-nay-ting*. This one has TWO completely different meanings — pay attention.

### STEP 2 — DEFINE IT

On page 106, *discriminating* is used as a compliment — it means having a careful, discerning eye. But the same root gives us *discrimination* in the social justice sense — unfairly dividing people. Both come from Latin *DISCRIMINARE*: to divide or separate. Context tells you which meaning to use.

### STEP 3 — CONNECT IT

What clues in the sentence around page 106 tell you that *discriminating* is being used as a POSITIVE word and not a negative one?

**Students might say:** "The sentence is about taste and quality — not people being excluded." / "The tone is admiring, not critical." / "It's describing an ability, not a behavior toward others."

### STEP 4 — USE IT

Write TWO sentences using *discriminating* — one with each meaning. Make it clear from context which you're using.

**Students might say:** "Lucy had a discriminating mind for mathematical elegance — she could instantly tell the beautiful solutions from the clunky ones. But the social world of East Hamlin ran on discrimination of a different kind: who you sat with, what you wore, how loud you laughed."



## PERIPHERAL *puh-RIF-er-ul*

On the edge or outer boundary — not at the center. Peripheral vision is what you see at the sides without looking directly.

### STEP 1 — SAY IT

Say it together: *puh-RIF-er-ul*. Say it while looking straight ahead — this word lives at the edges.

### STEP 2 — DEFINE IT

*Peripheral* means on the margins — at the side, not the center. The root *PERI-* means AROUND or NEAR. *Perimeter* = the measure around a shape. *Peripheral* = at the outer edge. Lucy, Windy, and Levi are peripheral to East Hamlin's social world. But being peripheral can mean having a view that central people miss.

### STEP 3 — CONNECT IT

What do Lucy, Windy, and Levi each NOTICE from their peripheral position that the popular students probably don't see? What's the advantage of being on the outside looking in?

**Students might say:** "They notice who's actually kind versus who performs kindness." / "Lucy watches social dynamics like a data set — she sees patterns other people are too close to notice." / "People on the periphery often develop richer inner worlds because they're not constantly performing for the center."

### STEP 4 — USE IT

Use *peripheral* in a sentence — either literally (about vision or edges) or figuratively (about social position).

**Students might say:** "From her peripheral position at the edge of the cafeteria, Lucy collected more real data about East Hamlin than anyone sitting at the center table." / "Lucy's peripheral vision was excellent; it was the center of the social world she couldn't quite see clearly."

## EUTHANIZE *YOO-thuh-nize*

To end an animal's life humanely when it is suffering or cannot be adopted — done as mercy, not cruelty.

### STEP 1 — SAY IT

Say it together: YOO-thuh-nize. Say it quietly — this is a serious word.

### STEP 2 — DEFINE IT

Euthanize comes from Greek: EU means GOOD and THANATOS means DEATH — literally a good death, a peaceful end to suffering. At shelters, animals who cannot be adopted and are suffering may be euthanized. This is one of the realities Lucy discovers at the Pet Hut — and it transforms her motivation.

### STEP 3 — CONNECT IT

Why does learning about euthanasia change Lucy's relationship to the data project? What does it mean that math — something abstract — suddenly has life-or-death stakes?

**Students might say:** "It makes the math personal — she's not calculating adoption rates anymore, she's trying to save specific lives." / "Math without stakes is just a puzzle. Math with stakes is a reason to act." / "It's the moment Lucy's gift becomes a tool for something beyond herself."

### STEP 4 — USE IT

Use euthanize in a sentence that explains what Lucy discovers AND how it changes her behavior.

**Students might say:** "When Lucy learned that unadopted dogs could be euthanized, the Pet Hut project stopped being an academic exercise and became something she couldn't walk away from." / "The word euthanize, once she understood it, rewired the entire project in her mind."

## STATISTICAL *stuh-TIS-tih-kul*

Relating to the collection, analysis, and interpretation of numbers to find patterns and draw conclusions.

### STEP 1 — SAY IT

Say it together: stuh-TIS-tih-kul. Say it like a scientist presenting findings.

### STEP 2 — DEFINE IT

Statistical means having to do with data — gathering numbers, finding patterns, and making meaning from what you find. Lucy uses statistical thinking to figure out which animals are most likely to get adopted. Statistics isn't just math — it's math with a purpose.

### STEP 3 — CONNECT IT

Lucy wants to answer a statistical question: which types of animals get adopted fastest? What data would YOU collect to answer that? What variables matter most?

**Students might say:** "Age, breed, size, energy level, how long they've been there." / "You might also want to know what adopters are looking for — that's the demand side." / "Photos probably matter too — but that's harder to quantify."

### STEP 4 — USE IT

Use statistical in a sentence that shows it means more than just 'using numbers' — show it means using numbers WITH a purpose.

**Students might say:** "Lucy's statistical approach to the Pet Hut wasn't about loving data — it was about using data to love animals better." / "A statistical question is one that numbers can actually answer — and Lucy was very good at identifying which questions those were."

## EMPATHY *EM-puh-thee*

The ability to understand and actually feel what another person or creature is experiencing — feeling WITH someone, not just ABOUT them.

### STEP 1 — SAY IT

Say it together: EM-puh-thee. Say it gently — this is a feeling word.

### STEP 2 — DEFINE IT

Empathy comes from Greek: EM means INTO and PATHOS means FEELING. Empathy means feeling INTO someone else's experience — not just understanding it in your head, but actually feeling it. It's different from sympathy, which is feeling ABOUT someone. Empathy is feeling WITH them.

### STEP 3 — CONNECT IT

Lucy struggles with empathy at the start of the book. What in Ch. 15–19 starts to change that? What does Pi the dog do that a human classmate couldn't quite manage?

**Students might say:** "Pi doesn't judge her or expect her to be normal." / "With Pi, there's no misreading signals — dogs are direct in a way humans aren't." / "When Pi is sick, Lucy feels it — maybe for the first time she's worried about someone other than herself."

### STEP 4 — USE IT

Use empathy in a sentence that explains how Lucy's capacity for empathy is growing in this section — give a specific example.

**Students might say:** "The empathy Lucy couldn't find for classmates who stared came more easily when Pi was sick — the dog's pain was simple and clear in a way human emotions rarely were." / "Developing empathy turned out to be Lucy's hardest math problem."

## QUANTIFY *KWON-tuh-fye*

To express something as a number or measurable quantity — to put a numerical value on something.

### STEP 1 — SAY IT

Say it together: KWON-tuh-fye. Say it like you're about to measure everything in the room.

### STEP 2 — DEFINE IT

Quantify means to turn something into numbers — to make it measurable. Lucy quantifies everything: she doesn't just notice that some dogs get adopted faster, she counts exactly how many days each dog waits. The suffix -ify means TO MAKE, so quantify literally means TO MAKE QUANTIFIABLE.

### STEP 3 — CONNECT IT

Lucy tries to quantify social interactions — like how many conversations she needs to have before she's made a friend. What's useful about quantifying human experience? What gets lost when you put numbers on everything?

**Students might say:** "Useful: you can track progress and know when you've succeeded." / "What gets lost: some things — grief, love, belonging — resist being measured." / "Measuring something can change it — does tracking a friendship make it feel less real?"

### STEP 4 — USE IT

Use quantify in a sentence that captures Lucy's instinct AND its limits.

**Students might say:** "Lucy could quantify adoption wait times with precision, but she couldn't quantify why Pi looked at her differently from the way he looked at everyone else." / "When you can't quantify something, it doesn't mean it isn't real — it means it might matter more."



## SANCTUARY *SANK-choo-air-ee*

A safe, protected place — originally a holy place where people couldn't be harmed. Now used for any place of safety or refuge.

### STEP 1 — SAY IT

Say it together: SANK-choo-air-ee. Say it like you just found somewhere you can finally breathe.

### STEP 2 — DEFINE IT

Sanctuary comes from Latin SANCTUS — holy or sacred. Originally it was a church or temple where you couldn't be arrested or harmed. Now it means any place where you feel truly safe. For Lucy, math is a sanctuary. The Pet Hut becomes one too.

### STEP 3 — CONNECT IT

What is YOUR sanctuary — the place or activity where you feel like you can just exist without performing or explaining yourself? You don't have to share if it's private — just think of it.

**Students might say:** "My room with headphones on." / "The gym when I'm shooting hoops alone." / "Honestly — this program, kind of. I don't feel like I have to be a certain way here."

### STEP 4 — USE IT

Use sanctuary in a sentence that shows both its literal meaning AND its emotional meaning — try to capture both in one sentence.

**Students might say:** "The Pet Hut became Lucy's sanctuary — a physical place where her way of being made sense, and a mental one where she didn't have to translate herself for anyone." / "Math had always been Lucy's sanctuary: a world with rules she understood and a silence that felt like peace."

## UNVERIFIED *un-VAIR-ih-fyed*

Not yet confirmed or proven to be true — a claim that might be true but lacks evidence.

### STEP 1 — SAY IT

Say it together: *un-VAIR-ih-fyed*. Say it like a journalist who just received a tip they can't use yet.

### STEP 2 — DEFINE IT

Unverified means it hasn't been checked or confirmed. The root VER comes from Latin VERUS — meaning TRUE. Verify, verdict, verity — all from the same root. Un-verified = not made true yet. Rumors and gossip are always unverified — that's what makes them dangerous.

### STEP 3 — CONNECT IT

Think about Ch. 20–24. What information circulates that is unverified? Who chooses to act on unverified information — and what goes wrong?

**Students might say:** "The things people say about Lucy's 'weirdness' are unverified — assumption and observation, not fact." / "Windy reveals something before checking whether Lucy wanted it shared." / "Gossip is always unverified — that's its defining feature and its danger."

### STEP 4 — USE IT

Use unverified in a sentence that shows how dangerous unverified information can be in a social setting.

**Students might say:** "The unverified rumor moved through the party faster than anyone could correct it, and by the time Lucy heard her own story back, it was unrecognizable." / "Lucy trusted data precisely because data could be verified — unlike the things people said about her."

## IMPRECISE *im-preh-SICE*

Not exact or accurate — vague, approximate, or lacking the specificity needed to be truly correct.

### STEP 1 — SAY IT

Say it together: *im-preh-SICE*. Say it like something is slightly, frustratingly wrong.

### STEP 2 — DEFINE IT

Imprecise means not exact enough. For most people, being 'around 5 o'clock' is fine. For Lucy, it's imprecise to the point of meaninglessness — she thinks in exact numbers. The prefix IM- means NOT, and PRECISE comes from Latin PRAECIDERE — to cut off exactly.

### STEP 3 — CONNECT IT

Give me an example of something you might say that would drive Lucy absolutely crazy with imprecision.

**Students might say:** "Meet you later' — later when exactly?" / "I'll probably be there around 7-ish." / "'A few days ago' — three days? Five? The distinction matters!"

### STEP 4 — USE IT

Use imprecise in a sentence that captures WHY imprecision bothers Lucy specifically.

**Students might say:** "Imprecise language felt to Lucy like a slightly off-key note — technically communicating something, but fundamentally wrong in a way that was hard to ignore." / "When Windy said 'kind of soon,' Lucy immediately felt the imprecision like a math error that needed correcting."

## BETRAYAL *beh-TRAY-ul*

The act of breaking someone's trust — going against someone who counted on you.

### STEP 1 — SAY IT

Say it together: *beh-TRAY-ul*. Say it like something just happened that shouldn't have.

### STEP 2 — DEFINE IT

Betrayal comes from Old French TRAIR — to hand over. A traitor, treason — all from the same root. To betray someone is to 'hand them over' to something harmful. The question: was what Windy did a deliberate betrayal, or a mistake made under pressure?

### STEP 3 — CONNECT IT

Quick take: was what Windy did a betrayal? Show with fingers — 1 for yes, 2 for kind of, 3 for no. Now: defend your position.

**Students might say:** "Yes: she knew the secret was private and told it anyway." / "Kind of: she didn't mean to hurt Lucy — she was defending her, weirdly." / "No: betrayal requires intent. Windy panicked. That's a mistake."

### STEP 4 — USE IT

Use betrayal in a sentence that argues a specific position — was Windy's action a betrayal or not?

**Students might say:** "Windy's betrayal wasn't malicious — but the effect was the same as if it had been, which might be the more honest definition of the word." / "What Windy did was a mistake, not a betrayal — betrayal requires choosing harm, and Windy chose wrong without choosing harm."

## MESMERIZED *MEZ-mer-ized*

Completely captivated — unable to look away, as if hypnotized.

### STEP 1 — SAY IT

Say it together: *MEZ-mer-ized*. Say it like you can't look away from something.

### STEP 2 — DEFINE IT

Mesmerized comes from a real person: Franz Anton MESMER, an 18th-century physician who developed mesmerism — an early form of hypnosis. This makes mesmerized an eponym — a word named after a person. Other eponyms: boycott, sandwich, jacuzzi.

### STEP 3 — CONNECT IT

What mesmerizes Lucy in Ch. 20–24? And notice: being mesmerized takes away your control a little. How does that connect to how out-of-control the social situation feels to her?

**Students might say:** "She's mesmerized by the party dynamics — she can't stop observing even when observing hurts." / "Math is safe because she controls it. Being mesmerized means something outside her controls her attention." / "It's like she can't look away from the thing that's breaking her down."

### STEP 4 — USE IT

Use *mesmerized* in a sentence that captures whether being mesmerized in this context is a good thing, a bad thing, or both.

**Students might say:** "Lucy was mesmerized by the party — not because she was having fun, but because she couldn't stop collecting data about a social system she didn't understand." / "Being mesmerized by something can feel like wonder or like being trapped, and Lucy was never quite sure which one was happening."

## VULNERABILITY *vul-ner-uh-BIL-ih-tee*

The state of being open to being hurt — emotionally, physically, or socially. Also: the willingness to be honest about your fears or imperfections.

### STEP 1 — SAY IT

Say it together: *vul-ner-uh-BIL-ih-tee*. Say it quietly — this word deserves some space.

### STEP 2 — DEFINE IT

Vulnerability comes from Latin *VULNUS* — a wound. The capacity to be wounded. Research by Brené Brown suggests vulnerability is the birthplace of connection — you can't build real relationships without being willing to be hurt. Lucy's vulnerability in this section is forced, not chosen. But it still opens a door.

### STEP 3 — CONNECT IT

Windy revealing Lucy's secret created forced vulnerability — Lucy's private self was exposed without her consent. How is that different from choosing to be vulnerable?

**Students might say:** "Chosen vulnerability feels brave. Forced vulnerability feels violated." / "But sometimes forced vulnerability does the same work — people see the real you and stay anyway." / "The difference is trust — chosen vulnerability is about deciding who gets to see you."

### STEP 4 — USE IT

Use *vulnerability* in two sentences: one where it's a painful experience, and one where it turns out to be a source of strength.

**Students might say:** "The vulnerability of having her secret revealed at the party was humiliating — Lucy had not chosen to be seen, and being seen that way felt like a math error she hadn't made." / "But something strange happened after: Windy showed up the next day anyway. The vulnerability Lucy hadn't chosen had, somehow, deepened the friendship."

## DIFFERENTIATE *dif-er-EN-shee-ate*

To recognize or show differences between things. In education: to adjust teaching to meet each student's individual needs.

### STEP 1 — SAY IT

Say it together: *dif-er-EN-shee-ate*. Feel all five syllables: *dif-er-EN-shee-ate*.

### STEP 2 — DEFINE IT

*Differentiate means to treat things differently based on what each one needs. In education, it means changing your teaching approach for different learners — same class, different challenge. The root DIFFERRE means to carry in different directions.*

### STEP 3 — CONNECT IT

*Has a teacher or coach ever differentiated for YOU — given you something harder, easier, or completely different? How did it feel?*

**Students might say:** "My soccer coach had me doing different drills — it made me feel singled out at first, then really seen." / "I've never had a teacher do that. Everyone just got the same thing." / "My 5th grade teacher gave me harder books. I didn't love it then, but I get it now."

### STEP 4 — USE IT

*Use differentiate in a sentence — either about education or about any situation where treating things differently is more fair than treating them the same.*

**Students might say:** "To differentiate her instruction, the teacher gave Lucy problems that stretched her mind rather than confirming what she already knew." / "A good coach knows how to differentiate — not everyone needs the same drill to reach the same goal."

## METICULOUS *meh-TIK-yoo-lus*

Extremely careful and precise — paying very close attention to every detail.

### STEP 1 — SAY IT

Say it together: *meh-TIK-yoo-lus*. Say it carefully — every syllable exactly right.

### STEP 2 — DEFINE IT

*Meticulous means leaving nothing to chance. Here's a surprising origin: meticulous comes from Latin METUS, meaning FEAR — originally it meant 'overly fearful/careful.' Over time it shifted to a positive: admirably precise. Lucy is meticulous in her math work and in her OCD routines.*

### STEP 3 — CONNECT IT

*Where in YOUR life are you meticulous? Where are you the opposite? Is being meticulous always a strength, or can it hold you back?*

**Students might say:** "I'm meticulous about my appearance before school, but I rush through homework." / "I'm meticulous in video games — I read every item description — but that drives my friends crazy." / "It can hold you back when you spend so long perfecting step one that you never get to step two."

### STEP 4 — USE IT

*Use meticulous in a sentence about Lucy that shows it applies to BOTH her greatest strength AND a social challenge.*

**Students might say:** "Lucy's meticulous approach to the Pet Hut data was exactly what the animals needed — and exactly what drove Windy crazy when they were supposed to be leaving for the party." / "Being meticulous made Lucy brilliant and lonely in equal measure."

## OPPRESSED *uh-PREST*

Treated in a way that is unjust or that limits freedom — kept down by a person, system, or circumstance.

### STEP 1 — SAY IT

Say it together: *uh-PREST*. Say it like something heavy is pressing down on you.

### STEP 2 — DEFINE IT

Oppressed comes from Latin *OB* (against) + *PREMERE* (to press) — literally pressed down against. Oppression can be personal, institutional, or systemic. The word carries serious historical weight. Using it carefully matters.

### STEP 3 — CONNECT IT

Page 181 uses the word *oppressed*. What is the context — who feels oppressed, and is the word being used literally, figuratively, or both? Does the intensity of the word fit the situation?

**Students might say:** "It might be a slightly hyperbolic use — Lucy isn't oppressed in the way historical groups have been." / "But feeling oppressed by social expectations that don't fit your brain is real." / "The word makes you feel the weight of it — that's probably why McAnulty chose it."

### STEP 4 — USE IT

Use *oppressed* in a sentence that is careful about the word's weight — show you understand it means more than just 'treated unfairly.'

**Students might say:** "Lucy didn't use the word *oppressed* lightly — she was describing the feeling of being systematically misunderstood by a world built for people whose brains worked differently from hers." / "There is a difference between feeling oppressed and being oppressed — but the feeling is real, and dismissing it helps no one."

## COMPETENCE *KOM-peh-tence*

The ability to do something successfully and efficiently — having the skill and knowledge required to perform a task well.

### STEP 1 — SAY IT

Say it together: *KOM-peh-tence*. Say it like you've just proven something.

### STEP 2 — DEFINE IT

Competence comes from Latin *COM* (fully) + *PETERE* (to seek or strive) — the state of fully striving or being capable. Nana sends Lucy to school to develop *SOCIAL* competence — the ability to navigate human relationships, not just mathematical ones.

### STEP 3 — CONNECT IT

Lucy has *mathematical competence*. What would social competence look like for Lucy specifically — not popularity, just the minimum viable ability to function in relationships?

**Students might say:** "Being able to read when someone is upset without being told directly." / "Knowing when to stop talking about math in a social setting." / "Remembering that other people's needs matter alongside her own."

### STEP 4 — USE IT

Use *competence* in a sentence that distinguishes *mathematical competence* from *social competence* — and says something about which matters more by the end of this section.

**Students might say:** "Lucy's *mathematical competence* had never been in question. Her *social competence* was still under construction — but for the first time, she seemed to know that and was interested in the work." / "Competence in one area doesn't guarantee competence in another. Lucy was learning that the hard way."

**INQUISITIVE** *in-KWIZ-ih-tiv*

Having a curious, questioning mind — always wanting to know more and investigate further.

**STEP 1 — SAY IT**

Say it together: *in-KWIZ-ih-tiv*. Say it like you just noticed something that doesn't add up.

**STEP 2 — DEFINE IT**

*Inquisitive* comes from Latin *INQUIRERE* — to search. An *inquisitive* person asks questions compulsively — they can't let a mystery go. Lucy is *inquisitive* about math in a way that made her a genius. The question: is being *inquisitive* about PEOPLE a skill she's developing?

**STEP 3 — CONNECT IT**

Give an example from Ch. 29–32 where Lucy's *inquisitive* nature helps her — and one where it makes things more complicated.

**Students might say:** "Helps: she asks the right questions about Pi's medical situation because she researches obsessively." / "Complicates: she investigates Mr. Stoker's identity online instead of just asking him directly — brilliant and a little invasive."

**STEP 4 — USE IT**

Use *inquisitive* in a sentence that shows how Lucy's *inquisitiveness* both serves and limits her in this section.

**Students might say:** "Lucy's *inquisitive* mind would have made her an extraordinary scientist — it was making her a complicated person to know." / "Being *inquisitive* about data is different from being *inquisitive* about people, and Lucy was only beginning to understand the second kind required more care."

**ANONYMOUS** *uh-NON-ih-mus*

Having an unknown or unacknowledged identity — not identified by name.

**STEP 1 — SAY IT**

Say it together: *uh-NON-ih-mus*. Say it quietly, like no one knows it's you.

**STEP 2 — DEFINE IT**

*Anonymous* comes from Greek *AN* (without) + *ONYMA* (name). Without a name. Online, people can be *anonymous*. Lucy on MathWhiz is technically *anonymous* — but she's more herself there than anywhere else. That's the paradox this section investigates.

**STEP 3 — CONNECT IT**

How is Lucy *MORE* *authentic* when she's *anonymous* online than when she's identified at school? What does that tell us about what happens to our real selves when we feel watched and evaluated?

**Students might say:** "When no one knows who you are, you stop performing for them." / "Anonymity removes the social tax — you don't have to manage anyone's impression of you." / "Her truest self could only exist where no one could see her — which is both liberating and sad."

**STEP 4 — USE IT**

Use *anonymous* in a sentence about Lucy that captures the irony of being most yourself when no one knows who you are.

**Students might say:** "Lucy was more fully herself as an *anonymous* username than as the named student everyone at East Hamlin had already decided they understood." / "Anonymity gave Lucy permission to be *inquisitive* without being judged — which said something unfortunate about her school."

**AUTHENTIC** *aw-THEN-tik*

Genuine and real — truly representing who a person is, without performance or pretense.

**STEP 1 — SAY IT**

Say it together: *aw-THEN-tik*. Say it like you mean it.

**STEP 2 — DEFINE IT**

*Authentic* comes from Greek *AUTOS* — self. Truly from the self. An *authentic* person is who they actually are, not who they think others want them to be. Lucy on MathWhiz is *authentic*. Lucy at East Hamlin is performing. The MathWhiz reveal forces her toward *authenticity*.

**STEP 3 — CONNECT IT**

Where in your life do you feel most *authentic* — most like your actual self? Where do you feel least *authentic*? What's the difference between those two contexts?

**Students might say:** "I'm most *authentic* with my best friend — I don't edit myself." / "Least *authentic*: honestly, at school. You're always performing for someone." / "I'm most *authentic* alone, which is kind of like Lucy on MathWhiz."

**STEP 4 — USE IT**

Use *authentic* in a sentence that describes the difference between Lucy online and Lucy at school — and argues which version is more real.

**Students might say:** "The *authentic* Lucy — the one who existed on MathWhiz — was curious, confident, and generous with her thinking. The Lucy at East Hamlin was a performance of someone trying not to be noticed." / "Both Lucys were real. One was just less afraid."

## ALGORITHM *AL-goh-rith-um*

A precise, step-by-step set of rules for solving a problem — used in math, coding, and, Lucy would argue, life.

### STEP 1 — SAY IT

Say it together: *AL-goh-rith-um*. Say it like you're explaining something obvious.

### STEP 2 — DEFINE IT

Algorithm is an eponym — named after 9th-century Persian mathematician Muhammad al-Khwarizmi. Lucy sees social situations as problems that should have algorithms — fixed inputs, predictable outputs. The tragedy: humans are not algorithms.

### STEP 3 — CONNECT IT

Lucy tries to create social algorithms: if I say X, they should respond with Y. Why doesn't this work for human relationships? What variable does she keep getting wrong?

**Students might say:** "Humans have emotions that override logic — that's not a bug, it's how we work." / "Context changes everything. The same action means different things in different relationships." / "You can't predict people because they're also trying to predict you — it's recursive."

### STEP 4 — USE IT

Use algorithm in a sentence that captures both its mathematical meaning AND Lucy's attempt to apply it to her social life.

**Students might say:** "Lucy drafted social algorithms the way other kids drafted texts — carefully, with many revisions — and they failed for the same reason: you can't algorithmically account for the person on the other end." / "An algorithm requires consistent inputs for consistent outputs. People are the most inconsistent inputs imaginable."



## REVELATION *rev-uh-LAY-shun*

A dramatic disclosure — something hidden that is suddenly made known, often changing everything.

### STEP 1 — SAY IT

Say it together: *rev-uh-LAY-shun*. Say it like the curtain just went up on something.

### STEP 2 — DEFINE IT

Revelation comes from Latin *RE* (back) + *VELARE* (to veil). A revelation is literally an UN-veiling. The MathWhiz reveal is the central revelation of the novel: Lucy's two worlds, which she kept carefully separate, suddenly collide.

### STEP 3 — CONNECT IT

Why is the MathWhiz revelation significant beyond the embarrassment of being caught? What does it FORCE Lucy to do that she had been successfully avoiding?

**Students might say:** "It forces her to be the same person in both places." / "She can't keep her math identity and her school identity separate anymore." / "It removes her only safe hiding place — which is both terrifying and maybe necessary."

### STEP 4 — USE IT

Use revelation in a sentence that describes what changes for Lucy after the MathWhiz reveal — not just what is discovered, but what that discovery demands of her.

**Students might say:** "The revelation wasn't just that Mr. Stoker knew her username — it was that Lucy could no longer be anonymous anywhere, and she'd have to figure out how to be herself in plain sight." / "Every revelation in a story demands something from its characters: this one demanded that Lucy stop hiding."

## PERSUASIVE *per-SWAY-siv*

Able to convincingly change someone's mind or move them to action — through evidence, logic, or emotional appeal.

### STEP 1 — SAY IT

Say it together: *per-SWAY-siv*. Say it like you're about to make an argument you're going to win.

### STEP 2 — DEFINE IT

Persuasive comes from Latin *PER* + *SUADERE* — thoroughly urging someone. Persuasion uses three tools: *LOGOS* (logic and evidence), *PATHOS* (emotion and story), and *ETHOS* (credibility). Lucy's campaign uses primarily *logos* — data. Windy adds *pathos*. Together they're more persuasive than either alone.

### STEP 3 — CONNECT IT

Think about the most persuasive argument you've ever heard or made. What made it work? Was it data? Emotion? The person's credibility? All three?

**Students might say:** "The most persuasive thing I heard was a personal story that made an abstract issue feel real." / "My dad only responds to data — I have to come with numbers if I want him to agree to anything." / "Sometimes the most persuasive thing is just being calm when everyone else is emotional."

### STEP 4 — USE IT

Use *persuasive* in a sentence that argues which element — *logos*, *pathos*, or *ethos* — is most essential to Lucy's campaign.

**Students might say:** "Lucy's campaign was persuasive because the data was indisputable — adopters saw the numbers before they felt the feelings, which lowered their defenses." / "A truly persuasive argument uses all three: Lucy's data (*logos*), Pi's story (*pathos*), and the fact that real animals were dying for it (*ethos*)."

## COLLABORATE *kuh-LAB-or-ate*

To work together toward a shared goal, each person contributing something the others can't.

### STEP 1 — SAY IT

Say it together: *kuh-LAB-or-ate*. Say it like a team right before a big moment.

### STEP 2 — DEFINE IT

Collaborate comes from Latin *COM* (together) + *LABORARE* (to work). Real collaboration is more than dividing tasks — it requires trust, complementary skills, and the belief that the result will be better because of what each person brings.

### STEP 3 — CONNECT IT

What does each person contribute to the Pet Hut collaboration that the others couldn't provide alone? Be specific — what would be missing if any one of them wasn't there?

**Students might say:** "Without Lucy: no data, no statistical analysis, no system." / "Without Windy: no energy, no emotional connection to the animals." / "Without Levi: structural calm — he's the one who keeps them organized."

### STEP 4 — USE IT

Use *collaborate* in a sentence that explains what made *THIS* collaboration work — what conditions had to be in place first?

**Students might say:** "Lucy, Windy, and Levi could only truly collaborate because each had already failed to belong somewhere else — they had nothing to protect and everything to gain from trusting each other." / "Collaboration works when people value the goal more than the credit."

## INITIATIVE *ih-NISH-uh-tiv*

Taking action independently — starting something without being told to, or taking the first step in a plan.

### STEP 1 — SAY IT

Say it together: *ih-NISH-uh-tiv*. Say it like you just decided to go for it.

### STEP 2 — DEFINE IT

Initiative comes from Latin *INITIUM* — a beginning. To take initiative is to begin on your own authority. For Lucy, taking initiative at the Pet Hut is significant: it's the first time in the book she starts something social without being pushed into it by Nana.

### STEP 3 — CONNECT IT

What's the difference between following someone else's initiative and taking your own? What does it feel like to take initiative when you might fail or be judged for it?

**Students might say:** "Following someone else's initiative is safer — if it fails, it's not your fault." / "Taking your own initiative means owning both the outcome and the risk." / "It takes courage — the fear of being the one who started something that didn't work."

### STEP 4 — USE IT

Use *initiative* in a sentence that shows how Lucy taking initiative here is different from how she acted at the start of the novel.

**Students might say:** "The Lucy of Chapter 1 would never have taken the initiative to design an entire data system for the Pet Hut — that Lucy was counting down the days until she could go back to homeschooling." / "Taking initiative was Lucy's first truly voluntary act of connection."

## SYSTEMATIC *sis-teh-MAT-ik*

Done according to a fixed, organized plan or method — following a clear system, step by step.

### STEP 1 — SAY IT

Say it together: *sis-teh-MAT-ik*. Say it like someone who has a plan and is executing it.

### STEP 2 — DEFINE IT

Systematic comes from Greek SYSTEMA — an organized whole. Being systematic means you have a method, you follow it, and you can explain each step. Lucy's approach to the Pet Hut is entirely systematic: she identifies the question, collects the data, analyzes it, draws conclusions.

### STEP 3 — CONNECT IT

Is Lucy's systematic approach the most important thing she brings to the project? Or is it one ingredient among several? What would happen if someone systematic but completely lacking empathy ran this project?

**Students might say:** "A systematic person without empathy would optimize for efficiency — most adoptable animals get promoted, hard cases get deprioritized." / "The systematic approach needs Windy's empathy to decide which data matters morally." / "Systematic thinking tells you what IS. It doesn't tell you what SHOULD BE."

### STEP 4 — USE IT

Use systematic in a sentence that connects Lucy's approach to the Pet Hut to what good data analysis actually looks like.

**Students might say:** "Lucy's systematic data collection at the Pet Hut was applied mathematics at its most meaningful — represent data, analyze the results, draw conclusions." / "Being systematic was Lucy's love language: she showed she cared by making a plan."

## CULMINATION *kul-mih-NAY-shun*

The highest or final point of something — the peak that everything before has been building toward.

### STEP 1 — SAY IT

Say it together: *kul-mih-NAY-shun*. Say it like you're describing the top of a mountain you've been climbing.

### STEP 2 — DEFINE IT

Culmination comes from Latin CULMEN — peak or summit. A culmination is when everything that has been building finally arrives at its highest point. The adoption event is the culmination of Lucy's year at East Hamlin.

### STEP 3 — CONNECT IT

What were the three most important events before the adoption event that made this culmination possible? What had to happen first for this moment to be meaningful?

**Students might say:** "Lucy had to lose control at the sleepover — vulnerability before culmination." / "She had to meet Pi and care about something outside herself." / "Windy had to betray her and repair it — the friendship had to be tested before it could hold weight."

### STEP 4 — USE IT

Use culmination in a sentence that argues WHY the adoption event is the culmination — not just the climax, but the EARNED peak.

**Students might say:** "The adoption event was a culmination, not just a climax — every risk Lucy had taken and every connection she'd nearly broken had been preparation for this moment." / "A culmination is different from an ending — it's the proof that the journey was worth it."

## RESILIENCE *reh-ZIL-ee-ence*

The ability to bounce back from difficulty — not the absence of struggle, but the capacity to recover from it.

### STEP 1 — SAY IT

Say it together: reh-ZIL-ee-ence. Say it like you've been knocked down and you're getting up anyway.

### STEP 2 — DEFINE IT

Resilience comes from Latin RESILIRE — to spring back. Like a rubber band: you can stretch it, but it returns to shape. Resilience is NOT the absence of pain — it's the capacity to recover from it. Lucy's year is a story of resilience.

### STEP 3 — CONNECT IT

Here's the important distinction: resilient doesn't mean unaffected. What's a moment in Ch. 37–40 where Lucy shows resilience — not by being fine, but by choosing to keep going despite NOT being fine?

**Students might say:** "After the sleepover disaster, she goes back to school instead of asking Nana to pull her out again." / "She keeps working on the Pet Hut project even when she's hurt." / "She shows up to the adoption event even though she's terrified of presenting."

### STEP 4 — USE IT

Use resilience in a sentence that shows it means recovery, not invulnerability — capture both the difficulty AND the bounce-back.

**Students might say:** "Lucy's resilience wasn't the absence of tears — it was the decision to keep going while crying." / "Resilience looks different in math and in life: in math, you recalculate; in life, you recalibrate. Lucy was learning to do both."

## RECALCULATE *ree-KAL-kyoo-late*

To calculate again — to revise your thinking or approach when the first answer was wrong.

### STEP 1 — SAY IT

Say it together: ree-KAL-kyoo-late. Say it like a GPS that just found a better route.

### STEP 2 — DEFINE IT

Recalculate literally means to do the math again. In life, it means to reassess and adjust your approach when what you're doing isn't working. Lucy recalculates her understanding of people throughout this novel — each time something doesn't go as expected, she gathers new data and tries again.

### STEP 3 — CONNECT IT

What is the most significant recalculation Lucy makes in Ch. 37–40 — not a math one, but a people one? What was her original calculation, what went wrong, and what did she recalculate to?

**Students might say:** "Original: friendship is a variable I can't solve for. Recalculation: it's a variable that requires iterative input." / "Original: middle school is pointless hazing. Recalculation: it was where I learned things I couldn't have learned alone."

### STEP 4 — USE IT

Use recalculate in a sentence — either literally (math) or figuratively (how Lucy revises her understanding of something or someone).

**Students might say:** "Lucy had to recalculate her understanding of Windy three times over the course of the novel — which, she was beginning to understand, was not bad math but a relationship actually developing." / "Recalculate. It was the most honest word she knew for what growing up felt like."

## PROFOUND *proh-FOWND*

Very deep — having great emotional, intellectual, or philosophical depth. More than just important: foundational.

### STEP 1 — SAY IT

Say it together: proh-FOWND. Say it like something just hit you in a way you weren't expecting.

### STEP 2 — DEFINE IT

Profound comes from Latin PRO (into) + FUNDUS (bottom or foundation). Something profound goes all the way to the bottom — it reaches the foundation of things. A profound idea changes how you see everything after it. Lucy's year is not just significant — it's profound.

### STEP 3 — CONNECT IT

What is the most profound realization Lucy arrives at by Ch. 40? Not the most surprising plot event — the insight that most changes who she is.

**Students might say:** "That she needed other people more than she thought she did." / "That being different isn't a defect — it's just a different set of inputs and outputs." / "That the soft skills Nana wanted her to learn weren't tricks — they were the real work of being a person."

### STEP 4 — USE IT

Use profound in a sentence about the novel's ending that shows you understand it means something deeper than just 'important.'

**Students might say:** "The ending was profound not because Lucy had solved the problem of being herself, but because she had stopped treating it as a problem to be solved." / "A profound realization makes the world look different afterward. Lucy had several. She was still adjusting."

## NEUROPLASTICITY *nyoo-roh-plas-TIS-ih-tee*

The brain's ability to physically reorganize itself by forming new connections in response to learning, experience, or injury.

### STEP 1 — SAY IT

Say it together: *nyoo-roh-plas-TIS-ih-tee*. Feel all seven syllables: *neu-ro-plas-TIS-ih-tee*.

### STEP 2 — DEFINE IT

Neuroplasticity: **NEURON** (nerve) + **PLASTICUS** (able to be molded). The brain is plastic — like clay: it can be shaped and reshaped. Every time you learn something, your brain builds new connections. Lucy's brain was changed by lightning. ALL brains change by living.

### STEP 3 — CONNECT IT

Connect neuroplasticity directly to Lucy's story: in what ways has Lucy's brain changed over the course of this year? What new pathways might she be building?

**Students might say:** "Her empathy circuits are getting stronger — she's building capacity for emotional recognition she didn't have before." / "Her social tolerance is expanding — the same things that shut her down in Ch. 1 don't fully shut her down anymore." / "She's learning to hold ambiguity — that people can be wrong and still good."

### STEP 4 — USE IT

Use neuroplasticity in a sentence that argues Lucy's year at East Hamlin was neurologically necessary.

**Students might say:** "Without the friction of East Hamlin, Lucy's brain would have had nothing to grow against — neuroplasticity requires challenge, not just time." / "The neurons that fire together wire together: Lucy and her people had been firing at each other all year, and something had grown."



## MISCALCULATION *mis-kal-kyoo-LAY-shun*

An error in calculation or judgment — a wrong assessment of a situation, person, or outcome.

### STEP 1 — SAY IT

Say it together: *mis-kal-kyoo-LAY-shun*. Say it like you just realized you were wrong about something important.

### STEP 2 — DEFINE IT

Miscalculation — the word literally in the title — means a calculation that went wrong. In math, it's arithmetic. In life, it's a judgment error: misjudging a person, a situation, or your own ability to handle something. The title works on both levels simultaneously.

### STEP 3 — CONNECT IT

Name Lucy's three most significant miscalculations across the whole novel — people or situation errors, not math ones. Then: which one was the most valuable? Why?

**Students might say:** "1. Assuming Windy wasn't worth the risk of friendship. 2. Assuming Mr. Stoker's challenge was a punishment, not a gift. 3. Assuming that doing everything right would protect her from pain." / "Most valuable: the third — because that's the one that let her stop calculating and start living."

### STEP 4 — USE IT

Use miscalculation in a sentence that connects the word to the novel's central argument.

**Students might say:** "The title promises miscalculations and delivers something more generous: the argument that getting the math wrong is how you learn to do the math right." / "Lucy's miscalculations were not errors to be corrected — they were the curriculum."

## SEQUENCE *SEE-kwence*

An ordered list where each element follows a rule — each thing comes because of what came before it.

### STEP 1 — SAY IT

Say it together: *SEE-kwence*. Say it deliberately — like each syllable is a step in a pattern.

### STEP 2 — DEFINE IT

Sequence comes from Latin *SEQUI* — to follow. The Fibonacci sequence (1, 1, 2, 3, 5, 8, 13...) is the most famous in nature — each number is the sum of the two before it. It appears in sunflowers, shells, hurricanes, and galaxies.

### STEP 3 — CONNECT IT

Think about this program as a sequence — each session building on what came before. What was the rule? What did each session add that made the next one possible?

**Students might say:** "You had to trust the room before you could be vulnerable in Story Circle." / "You had to understand Lucy's world before you could disagree with it intelligently." / "The STEAM labs built on each other — circuits to math to data to persuasion to celebration."

### STEP 4 — USE IT

Use sequence in a sentence that connects the Fibonacci sequence to Lucy's year — show how her growth follows a pattern, each step building on the last.

**Students might say:** "Like the Fibonacci sequence, Lucy's growth couldn't be rushed — each stage of friendship depended on the one before it, adding onto what was already there." / "A sequence has no shortcut: you can't get to 8 without going through 1, 1, 2, 3, 5 first. Lucy's year worked the same way."

## INFINITE *IN-fih-nit*

Without limit or end — going on forever.

### STEP 1 — SAY IT

Say it together: *IN-fih-nit*. Say it like you're looking at something that keeps going.

### STEP 2 — DEFINE IT

Infinite comes from Latin *IN* (not) + *FINITUS* (finished). Without end. The digits of pi are infinite — they never repeat, never stop, no pattern has ever been found. Lucy finds comfort in this: math contains things that go on forever, which means there's always more to discover.

### STEP 3 — CONNECT IT

What in this program — or in this book — has felt infinite to you? Not literally, but in the sense that you keep finding more in it the longer you look?

**Students might say:** "The questions in Story Circle — every answer opened three more questions." / "Lucy herself — every time I thought I understood her, she surprised me." / "The vocabulary words — you start using them and suddenly you see them everywhere."

### STEP 4 — USE IT

Use infinite in two sentences: one about the mathematical infinite (pi, Fibonacci) and one as a metaphor for something from this program or this book.

**Students might say:** "Pi is infinite — its digits never repeat and never end, which is either comforting or terrifying depending on how you feel about certainty." / "What Lucy found infinite was more surprising: not the sequence itself, but the number of ways a person could surprise you once you stopped calculating what to expect."

## LEGACY *LEG-uh-see*

What you leave behind — the lasting impact of your actions, choices, or presence on the world or on other people.

### STEP 1 — SAY IT

Say it together: *LEG-uh-see*. Say it like something that will outlast the room.

### STEP 2 — DEFINE IT

Legacy comes from Latin *LEGATUS* — an ambassador, a messenger. A legacy is the message you leave when you're gone. Lucy leaves a legacy at the Pet Hut: a system that keeps working after she created it. She also leaves a legacy with Windy and Levi.

### STEP 3 — CONNECT IT

What legacy — honestly — do you think this program leaves for each of you? Not what it was supposed to do, but what actually happened over these 10 sessions.

**Students might say:** "I learned that I actually care about books more than I thought." / "I feel like I know these people differently than I did at the start." / "I got really good at arguing about ideas — actually defending a position with evidence."

### STEP 4 — USE IT

Use legacy in a sentence about Lucy's year at East Hamlin — what does she leave behind that will outlast her time there?

**Students might say:** "Lucy's legacy at East Hamlin was not her math ability — everyone had suspected that. It was the proof that being different, given time and the right conditions, could become a reason to belong." / "A legacy is not what you planned to leave. It's what people carry with them after you're gone."

## SYNTHESIS *SIN-thuh-sis*

The combination of different elements into a unified whole — bringing separate things together to create something new.

### STEP 1 — SAY IT

Say it together: *SIN-thuh-sis*. Say it like pieces clicking into place.

### STEP 2 — DEFINE IT

Synthesis comes from Greek SYN (together) + TITHENAI (to place). To synthesize is to bring things together into something unified and new. Lucy at the end of this novel is a synthesis: math genius + willing friend + caring advocate, all at once.

### STEP 3 — CONNECT IT

This whole program has been a synthesis — literacy AND STEAM, Lucy's story AND your lives. What new thing was created by bringing all of those together that couldn't have existed separately?

**Students might say:** "I don't think of literacy and STEAM as separate anymore — they're both about noticing things." / "The combination of Lucy's story and the STEAM labs made me think about math differently." / "This group became something — not just a class, something with its own identity."

### STEP 4 — USE IT

Use synthesis in a sentence that describes what THIS program — this specific 10 sessions — synthesized into.

**Students might say:** "This program was a synthesis of things that are usually kept separate: story and science, individual growth and community, what you read and what you make." / "Synthesis doesn't just combine — it transforms. We didn't end up with a literature class plus STEAM activities. We ended up with something that was neither and both."

## TRANSFORMATION *trans-for-MAY-shun*

A deep, thorough change — not just getting better, but fundamentally becoming different.

### STEP 1 — SAY IT

Say it together: *trans-for-MAY-shun*. Say it like something has just permanently changed.

### STEP 2 — DEFINE IT

Transformation comes from Latin TRANS (across) + FORMARE (to form). To transform is to be reshaped completely. A caterpillar doesn't just grow — it transforms. Lucy doesn't just improve at social skills; she transforms into someone who no longer sees connection as a problem to be solved.

### STEP 3 — CONNECT IT

Final question: How is the Lucy on the last page different from the Lucy on page 1? Which transformation was most significant — in math, in friendship, or in how she sees herself?

**Students might say:** "On page 1, Lucy counts down days. On the last page, she's not counting anything. That's the transformation." / "She stopped trying to solve other people and started trying to know them — those are completely different projects."

### STEP 4 — USE IT

Use transformation in your final sentence of the program. Make it about Lucy, about yourself, or about both. Make it true.

**Students might say:** "The transformation wasn't that Lucy stopped being a math genius — she was still that. It was that she stopped being only that." / "I came to this program thinking I didn't like reading. I'm leaving knowing that's not true — which is its own small, genuine transformation."

# VOCABULARY WORD CARDS

*The Miscalculations of Lightning Girl | Sessions 1–10 | 50 Words*

## How to use these cards

These cards are designed to be printed, cut apart, and used by an educator to run the 4-Step Vocabulary Routine in each session. Each card contains everything you need to teach one word — say it out loud, define it, connect it, and use it.

**STEP 1 — SAY IT:** Read the prompt aloud. Have every student repeat the word — whisper, then full voice.

**STEP 2 — DEFINE IT:** Read the script aloud. Restate the definition in your own words immediately after.

**STEP 3 — CONNECT IT:** Ask the question. Wait 5 full seconds before calling on anyone. Take 2–3 responses. Example student answers are shown in italics.

**STEP 4 — USE IT:** Give the prompt. Each student makes an original sentence. Example sentences are shown in italics.

⌚ *Each word takes about 2 minutes. 5 words = 10 minutes total.*

## Sessions at a glance

| Session    | Title                   | Words                                                                     |
|------------|-------------------------|---------------------------------------------------------------------------|
| Session 1  | Lightning Strikes       | <i>defibrillator, fluorescent, fractal, reclusive, immunization</i>       |
| Session 2  | The Soft Skills Problem | <i>paparazzi, condoning, savant, obsessive, assessment</i>                |
| Session 3  | The Outcasts            | <i>telepathic, condescending, ostracized, discriminating, peripheral</i>  |
| Session 4  | Pi the Dog              | <i>euthanize, statistical, empathy, quantify, sanctuary</i>               |
| Session 5  | The Sleepover           | <i>unverified, imprecise, betrayal, mesmerized, vulnerability</i>         |
| Session 6  | Fair vs. Equal          | <i>differentiate, meticulous, oppressed, competence</i>                   |
| Session 7  | The MathWhiz Reveal     | <i>inquisitive, anonymous, authentic, algorithm, revelation</i>           |
| Session 8  | The Adoption Event      | <i>persuasive, collaborate, initiative, systematic, culmination</i>       |
| Session 9  | Miscalculations         | <i>resilience, recalculate, profound, neuroplasticity, miscalculation</i> |
| Session 10 | For the Love of Pi      | <i>sequence, infinite, legacy, synthesis, transformation</i>              |

SESSION 1 — LIGHTNING STRIKES

SESSION 1 | Lightning Strikes

DEFIBRILLATOR

deh-FIB-rih-lay-tor

A medical device that sends an electric shock to restart or reset someone's heart.

STEP 1 SAY IT

Say it together: deh-FIB-rih-lay-tor. Whisper it. Now say it like you're a doctor yelling across an emergency room. One more time — full voice.

STEP 2 DEFINE IT

A defibrillator is the machine you've probably seen in movies with the paddles — someone yells 'clear!' and it sends a shock to restart a heart that's stopped or beating wrong. This is the device Lucy interacts with on page 2. It's the reason this whole story exists.

STEP 3 CONNECT IT

Lucy's story starts with a defibrillator. Turn and tell your partner: what do you think it feels like to need one? And what might change about a person who survived that?

STEP 4 USE IT

Use defibrillator in a sentence that explains how it connects to Lucy's story.

✂ cut here

SESSION 1 | Lightning Strikes

FLUORESCENT

floo-RES-ent

Giving off a very bright, buzzing, often harsh light — the kind in schools and hospitals.

STEP 1 SAY IT

Say it together: floo-RES-ent. Now say it like the light is annoying you. Say it like you just walked into the worst-lit room you've ever been in.

STEP 2 DEFINE IT

Fluorescent lights are those long tube lights in ceilings — they buzz, flicker, and cast a clinical brightness. Lucy notices them immediately when she walks into East Hamlin. That tells us something about how sensitive she is to her environment.

STEP 3 CONNECT IT

Think about the lights in THIS room right now. How do they make you feel after being under them for a long time? Lucy, because of how her brain works, is far more affected by this than most people.

STEP 4 USE IT

Use fluorescent in a sentence about a place — real or imagined — where the light felt wrong.

✂ cut here

SESSION 1 | Lightning Strikes

# FRACTAL *FRAK-tul*

A mathematical pattern that repeats itself at every scale — zoom in and you see the same shape again.

## STEP 1 SAY IT

Say it together: *FRAK-tul*. Say it like it's the most beautiful word you've ever heard.

## STEP 2 DEFINE IT

A fractal is a shape that keeps repeating no matter how close you zoom in — like a snowflake: every tiny arm looks like the whole snowflake. Or a fern: every tiny leaf looks like the full plant. Lucy loves fractals because they're where math and beauty meet.

## STEP 3 CONNECT IT

Look at your hand. Your fingers are kind of fractal — the joints, the knuckles, the branching pattern. Can you think of anything else in nature that has this repeating-at-every-scale quality?

## STEP 4 USE IT

Use fractal in a sentence that connects it to something in Lucy's personality or the way she sees the world.

✂ cut here

SESSION 1 | Lightning Strikes

# RECLUSIVE *reh-KLOO-siv*

Preferring to be alone or avoiding other people — not shy, but genuinely choosing solitude.

## STEP 1 SAY IT

Say it together: *reh-KLOO-siv*. Now say it like you really mean it — like you'd rather not be in this room right now.

## STEP 2 DEFINE IT

Reclusive means you pull away from people on purpose — not because you're scared, but because you genuinely prefer solitude. Lucy calls herself a reclusive genius on page 6. She's not apologizing. She's stating a fact.

## STEP 3 CONNECT IT

Is being reclusive the same as being shy? What's the difference? Think for 10 seconds, then tell your partner your answer.

## STEP 4 USE IT

Use reclusive in a sentence about Lucy — show what it means for how she lives her life.

✂ cut here

# IMMUNIZATION *ih-myoo-nih-ZAY-shun*

The process of protecting your body from disease — usually through a vaccine that trains your immune system.

## STEP 1 SAY IT

Say it together: *ih-myoo-nih-ZAY-shun*. Say it like a scientist explaining it on a podcast. Now say it like you just got a shot and you're NOT happy about it.

## STEP 2 DEFINE IT

Immunization is the process of making someone immune — protected — from a disease. The root *IMMUNIS* means exempt or free from. Lucy, who has OCD and thinks a lot about germs, would almost certainly have every immunization on record.

## STEP 3 CONNECT IT

Why would someone who thinks like Lucy find comfort in the idea of immunization? What does it offer that most things in her life don't?

## STEP 4 USE IT

Use immunization in a sentence. Bonus: use it both literally AND figuratively — what might Lucy need an immunization against that isn't a disease?

SESSION 2 — THE SOFT SKILLS PROBLEM

SESSION 2 | The Soft Skills Problem

PAPARAZZI

*pah-pah-RAHT-zee*

Photographers who aggressively follow celebrities to take their pictures — often intrusive and unwanted.

STEP 1 SAY IT

Say it together: *pah-pah-RAHT-zee*. Now say it like you just spotted a swarm of them outside. One more time — fast.

STEP 2 DEFINE IT

*Paparazzi are the photographers who chase celebrities everywhere — outside restaurants, at airports, even at their homes. They're looking for a shot the celebrity doesn't want taken. The word comes from Italian — originally slang for a mosquito-like buzzing photographer. Lucy uses it to describe how unwanted attention feels.*

STEP 3 CONNECT IT

*Why would Lucy choose the word paparazzi instead of just saying 'I don't like attention'? What does that word choice tell us about the intensity of what she experiences?*

STEP 4 USE IT

*Use paparazzi in a sentence — either literally OR figuratively, the way Lucy does, to describe unwanted attention.*

✂ cut here

SESSION 2 | The Soft Skills Problem

CONDONING

*kon-DOH-ning*

Allowing or accepting something wrong without trying to stop it — your silence becomes a kind of permission.

STEP 1 SAY IT

Say it together: *kon-DOH-ning*. Say it firmly, like you disapprove of something happening right now.

STEP 2 DEFINE IT

*When you condone something, you're not doing the harmful thing yourself — but you're not stopping it either. The saying 'silence is condoning' means that not speaking up sends the message that you're okay with what's happening. The teacher who ignores a nickname is condoning it.*

STEP 3 CONNECT IT

*In Ch. 5–9, someone condones something unkind toward Lucy. Who is it, and what are they allowing to happen? Or think of a time you saw something unfair and didn't say anything — were you condoning it?*

STEP 4 USE IT

*Use condoning in a sentence about something that happens in Ch. 5–9 — or in your own experience.*

✂ cut here

SESSION 2 | The Soft Skills Problem

# SAVANT sa-VAHNT

A person with an extraordinary ability in one specific area — mathematical or artistic — that goes far beyond normal expertise.

## STEP 1 SAY IT

*Say it together: sa-VAHNT. Say it like you're introducing the most impressive person you've ever met.*

## STEP 2 DEFINE IT

*A savant has a superhuman level of ability in one specific thing — calculating huge numbers instantly, playing music heard once from memory, drawing entire cityscapes without reference. Lucy is a math savant. It's not just that she's good at math — she experiences numbers in a way most humans never will.*

## STEP 3 CONNECT IT

*What would it feel like to have a brain that works like Lucy's? What would be extraordinary about it? What might be hard or lonely about it?*

## STEP 4 USE IT

*Use savant in a sentence that captures what makes Lucy different from just being 'really smart at math.'*

✂ cut here

SESSION 2 | The Soft Skills Problem

# OBSESSIVE ob-SES-iv

Unable to stop thinking about something — when a thought or behavior returns even when you try to move on.

## STEP 1 SAY IT

*Say it together: ob-SES-iv. Say it like the thought won't leave you alone.*

## STEP 2 DEFINE IT

*Obsessive describes thoughts or behaviors that repeat, even when you want them to stop. For Lucy, this shows up as OCD — her brain gets stuck on certain things like germs or the digits of pi, and no matter how hard she tries, she can't just move on. The book describes pi's digits 'taking over like an infection' — that simile tells you exactly what obsessive thoughts feel like.*

## STEP 3 CONNECT IT

*What's something you've thought about obsessively — not necessarily a problem, could be a song, a worry, a video you can't stop watching? What does that feel like over time?*

## STEP 4 USE IT

*Use obsessive in a sentence. Is it being used as a negative, a positive, or both? Explain.*

✂ cut here

# ASSESSMENT *uh-SES-ment*

A test or evaluation used to measure what someone knows or can do.

## STEP 1 SAY IT

*Say it together: uh-SES-ment. Now say it like it's the most boring word in the world. Now say it like it's the thing you've been dreading all week.*

## STEP 2 DEFINE IT

*An assessment is any tool used to find out what someone knows — a quiz, a test, a project, a presentation. Mr. Stoker calls it an assessment. Lucy deliberately gets a zero on hers. Think about what that tells us about her priorities right now.*

## STEP 3 CONNECT IT

*Lucy knows every answer but chooses to get a zero. Have you ever hidden how much you knew or could do — to fit in, avoid attention, or just to see what would happen? This is a real thing people do.*

## STEP 4 USE IT

*Use assessment in a sentence about what happens in Ch. 5–9. Bonus: use it to say something about what assessments can and can't actually measure.*

SESSION 3 — THE OUTCASTS

SESSION 3 | The Outcasts

TELEPATHIC *tel-uh-PATH-ik*

Having the imagined ability to send or receive thoughts directly, mind to mind, without speaking.

STEP 1 SAY IT

Say it together: *tel-uh-PATH-ik*. Say it slowly so you can feel the two parts: *TELE — PATHIC*.

STEP 2 DEFINE IT

Telepathic means communicating mind to mind — no words, no signals. Tele- means FAR or DISTANT (think: telephone = voice from far away). -Pathic comes from PATHOS, meaning FEELING. So telepathic literally means 'feeling from a distance.' Lucy wishes she were telepathic. Why do you think?

STEP 3 CONNECT IT

If Lucy were telepathic, how would her life at East Hamlin be different? What does the fact that she WISHES for this tell us about what she finds hardest about middle school?

STEP 4 USE IT

Use telepathic AND one other tele- word (telephone, telescope, television, teleport) in the same sentence.

✂ cut here

SESSION 3 | The Outcasts

CONDESCENDING *kon-deh-SEN-ding*

Acting as if you are above or better than someone else — talking down to them.

STEP 1 SAY IT

Say it together: *kon-deh-SEN-ding*. Now say it in the most condescending voice you can manage.

STEP 2 DEFINE IT

Condescending means treating someone as beneath you. The root SCENDERE means to climb. Con-DESCEND means to 'climb DOWN' to someone's level — but with an attitude that makes it clear you think you're above them. It's the tone of the students who call Lucy 'the cleaning lady.'

STEP 3 CONNECT IT

Show me a condescending face. Now say 'oh, did you not know that?' in a condescending way. How does it feel to be on the receiving end of that tone?

STEP 4 USE IT

Use condescending in a sentence that describes a specific moment or interaction in Ch. 10–14.

✂ cut here

SESSION 3 | The Outcasts

# OSTRACIZED OS-truh-sized

Deliberately excluded from a group — shut out by others as a form of social punishment.

## STEP 1 SAY IT

Say it together: OS-truh-sized. Say it like you're announcing something serious.

## STEP 2 DEFINE IT

Ostracized means socially banished — shut out. In ancient Athens, citizens could vote to exile someone for 10 years by scratching their name on a pottery shard called an OSTRAKON. That's where we get ostracize. Lucy, Windy, and Levi are all ostracized — but for completely different reasons.

## STEP 3 CONNECT IT

Who gets ostracized in Ch. 10–14, and what's the specific mechanism — what do other students actually DO (or not do) to make them feel excluded?

## STEP 4 USE IT

Use ostracized in a sentence that explains HOW the exclusion happens — not just that it does.

✂ cut here

SESSION 3 | The Outcasts

# DISCRIMINATING dis-KRIM-ih-nay-ting

[In this book:] Having refined taste and careful judgment — able to notice subtle differences in quality. [Also:] treating people unfairly based on who they are. Both from the same root.

## STEP 1 SAY IT

Say it together: dis-KRIM-ih-nay-ting. This one has TWO completely different meanings — pay attention.

## STEP 2 DEFINE IT

On page 106, discriminating is used as a compliment — it means having a careful, discerning eye. But the same root gives us discrimination in the social justice sense — unfairly dividing people. Both come from Latin DISCRIMINARE: to divide or separate. Context tells you which meaning to use.

## STEP 3 CONNECT IT

What clues in the sentence around page 106 tell you that discriminating is being used as a POSITIVE word and not a negative one?

## STEP 4 USE IT

Write TWO sentences using discriminating — one with each meaning. Make it clear from context which you're using.

✂ cut here

SESSION 3 | The Outcasts

# PERIPHERAL *puh-RIF-er-ul*

On the edge or outer boundary — not at the center. Peripheral vision is what you see at the sides without looking directly.

## STEP 1 SAY IT

*Say it together: puh-RIF-er-ul. Say it while looking straight ahead — this word lives at the edges.*

## STEP 2 DEFINE IT

*Peripheral means on the margins — at the side, not the center. The root PERI- means AROUND or NEAR. Perimeter = the measure around a shape. Peripheral = at the outer edge. Lucy, Windy, and Levi are peripheral to East Hamlin's social world. But being peripheral can also mean having a view that central people miss.*

## STEP 3 CONNECT IT

*What do Lucy, Windy, and Levi each NOTICE from their peripheral position that the popular students probably don't see? What's the advantage of being on the outside looking in?*

## STEP 4 USE IT

*Use peripheral in a sentence — either literally (about vision or edges) or figuratively (about social position).*

SESSION 4 — PI THE DOG

SESSION 4 | Pi the Dog

EUTHANIZE *YOO-thuh-nize*

To end an animal's life humanely when it is suffering or cannot be adopted — done as mercy, not cruelty.

STEP 1 SAY IT

Say it together: *YOO-thuh-nize*. Say it quietly — *this is a serious word*.

STEP 2 DEFINE IT

Euthanize comes from Greek: EU means GOOD and THANATOS means DEATH — literally a good death, a peaceful end to suffering. At shelters, animals who cannot be adopted and are suffering may be euthanized. This is one of the realities Lucy discovers at the Pet Hut — and it transforms her motivation from casual volunteering to urgent mission.

STEP 3 CONNECT IT

Why does learning about euthanasia change Lucy's relationship to the data project? What does it mean that math — something abstract — suddenly has life-or-death stakes?

STEP 4 USE IT

Use euthanize in a sentence that explains what Lucy discovers AND how it changes her behavior.

✂ cut here

SESSION 4 | Pi the Dog

STATISTICAL *stuh-TIS-tih-kul*

Relating to the collection, analysis, and interpretation of numbers to find patterns and draw conclusions.

STEP 1 SAY IT

Say it together: *stuh-TIS-tih-kul*. Say it like a scientist presenting findings.

STEP 2 DEFINE IT

Statistical means having to do with data — gathering numbers, finding patterns, and making meaning from what you find. Lucy uses statistical thinking to figure out which animals are most likely to get adopted. Statistics isn't just math — it's math with a purpose.

STEP 3 CONNECT IT

Lucy wants to answer a statistical question: which types of animals get adopted fastest? What data would YOU collect to answer that? What variables matter most?

STEP 4 USE IT

Use statistical in a sentence that shows it means more than just 'using numbers' — show it means using numbers WITH a purpose.

✂ cut here

SESSION 4 | Pi the Dog

# EMPATHY EM-puh-thee

The ability to understand and actually feel what another person or creature is experiencing — feeling WITH someone, not just ABOUT them.

## STEP 1 SAY IT

Say it together: EM-puh-thee. Say it gently — this is a feeling word.

## STEP 2 DEFINE IT

Empathy comes from Greek: EM means INTO and PATHOS means FEELING. Empathy means feeling INTO someone else's experience — not just understanding it in your head, but actually feeling it. It's different from sympathy, which is feeling ABOUT someone. Empathy is feeling WITH them.

## STEP 3 CONNECT IT

Lucy struggles with empathy at the start of the book. What in Ch. 15–19 starts to change that? What does Pi the dog do that a human classmate couldn't quite manage?

## STEP 4 USE IT

Use empathy in a sentence that explains how Lucy's capacity for empathy is growing in this section — give a specific example.

✂ cut here

SESSION 4 | Pi the Dog

# QUANTIFY KWON-tuh-fye

To express something as a number or measurable quantity — to put a numerical value on something.

## STEP 1 SAY IT

Say it together: KWON-tuh-fye. Say it like you're about to measure everything in the room.

## STEP 2 DEFINE IT

Quantify means to turn something into numbers — to make it measurable. Lucy quantifies everything: she doesn't just notice that some dogs get adopted faster, she counts exactly how many days each dog waits. The suffix -ify means TO MAKE, so quantify literally means TO MAKE QUANTIFIABLE.

## STEP 3 CONNECT IT

Lucy tries to quantify social interactions — like how many conversations she needs to have before she's made a friend. What's useful about quantifying human experience? What gets lost when you put numbers on everything?

## STEP 4 USE IT

Use quantify in a sentence that captures Lucy's instinct AND its limits.

✂ cut here

# SANCTUARY SANK-choo-air-ee

A safe, protected place — originally a holy place where people couldn't be harmed. Now used for any place of safety or refuge.

## STEP 1 SAY IT

*Say it together: SANK-choo-air-ee. Say it like you just found somewhere you can finally breathe.*

## STEP 2 DEFINE IT

*Sanctuary comes from Latin SANCTUS — holy or sacred. Originally it was a church or temple where you couldn't be arrested or harmed. Now it means any place where you feel truly safe. For Lucy, math is a sanctuary. The Pet Hut becomes one too.*

## STEP 3 CONNECT IT

*What is YOUR sanctuary — the place or activity where you feel like you can just exist without performing or explaining yourself? You don't have to share if it's private — just think of it.*

## STEP 4 USE IT

*Use sanctuary in a sentence that shows both its literal meaning AND its emotional meaning — try to capture both in one sentence.*

SESSION 5 — THE SLEEPOVER

SESSION 5 | The Sleepover

UNVERIFIED

*un-VAIR-ih-fyed*

Not yet confirmed or proven to be true — a claim that might be true but lacks evidence.

STEP 1 SAY IT

Say it together: *un-VAIR-ih-fyed*. Say it like a journalist who just received a tip they can't use yet.

STEP 2 DEFINE IT

Unverified means it hasn't been checked or confirmed. The root VER comes from Latin VERUS — meaning TRUE. Verify, verdict, verity — all from the same root. Un-verified = not made true yet. Rumors and gossip are always unverified — that's what makes them dangerous.

STEP 3 CONNECT IT

Think about Ch. 20–24. What information circulates that is unverified? Who chooses to act on unverified information — and what goes wrong?

STEP 4 USE IT

Use unverified in a sentence that shows how dangerous unverified information can be in a social setting.

✂ cut here

SESSION 5 | The Sleepover

IMPRECISE

*im-preh-SICE*

Not exact or accurate — vague, approximate, or lacking the specificity needed to be truly correct.

STEP 1 SAY IT

Say it together: *im-preh-SICE*. Say it like something is slightly, frustratingly wrong.

STEP 2 DEFINE IT

Imprecise means not exact enough. For most people, being 'around 5 o'clock' is fine. For Lucy, it's imprecise to the point of meaninglessness — she thinks in exact numbers. The prefix IM- means NOT, and PRECISE comes from Latin PRAECIDERE — to cut off exactly.

STEP 3 CONNECT IT

Give me an example of something you might say that would drive Lucy absolutely crazy with imprecision.

STEP 4 USE IT

Use imprecise in a sentence that captures WHY imprecision bothers Lucy specifically.

✂ cut here

**BETRAYAL** *beh-TRAY-ul*

The act of breaking someone's trust — going against someone who counted on you.

**STEP 1 SAY IT**

Say it together: *beh-TRAY-ul*. Say it like something just happened that shouldn't have.

**STEP 2 DEFINE IT**

Betrayal comes from Old French *TRAIR* — to hand over. A traitor, treason — all from the same root. To betray someone is to 'hand them over' to something harmful. The question: was what Windy did a deliberate betrayal, or a mistake made under pressure?

**STEP 3 CONNECT IT**

Quick take before we discuss: was what Windy did a betrayal? Show with fingers — 1 for yes, 2 for kind of, 3 for no. Now: defend your position.

**STEP 4 USE IT**

Use betrayal in a sentence that argues a specific position — was Windy's action a betrayal or not?

✂ cut here

**MESMERIZED** *MEZ-mer-ized*

Completely captivated — unable to look away, as if hypnotized.

**STEP 1 SAY IT**

Say it together: *MEZ-mer-ized*. Say it like you can't look away from something.

**STEP 2 DEFINE IT**

Mesmerized comes from a real person: Franz Anton *MESMER*, an 18th-century physician who developed *mesmerism* — an early form of hypnosis. This makes *mesmerized* an *eponym* — a word named after a person. Other eponyms: *boycott*, *sandwich*, *jacuzzi*.

**STEP 3 CONNECT IT**

What mesmerizes Lucy in Ch. 20–24? And notice: being mesmerized takes away your control a little. How does that connect to how out-of-control the social situation feels to her?

**STEP 4 USE IT**

Use mesmerized in a sentence that captures whether being mesmerized in this context is a good thing, a bad thing, or both.

✂ cut here

# VULNERABILITY vul-ner-uh-BIL-ih-tee

The state of being open to being hurt — emotionally, physically, or socially. Also: the willingness to be honest about your fears or imperfections.

## STEP 1 SAY IT

*Say it together: vul-ner-uh-BIL-ih-tee. Say it quietly — this word deserves some space.*

## STEP 2 DEFINE IT

*Vulnerability comes from Latin VULNUS — a wound. The capacity to be wounded. Research by Brené Brown suggests vulnerability is the birthplace of connection — you can't build real relationships without being willing to be hurt. Lucy's vulnerability in this section is forced, not chosen. But it still opens a door.*

## STEP 3 CONNECT IT

*Windy revealing Lucy's secret created forced vulnerability — Lucy's private self was exposed without her consent. How is that different from choosing to be vulnerable?*

## STEP 4 USE IT

*Use vulnerability in two sentences: one where it's a painful experience, and one where it turns out to be a source of strength.*

✂ cut here

SESSION 6 | Fair vs. Equal

**DIFFERENTIATE** *dif-er-EN-shee-ate*

To recognize or show differences between things. In education: to adjust teaching to meet each student's individual needs.

**STEP 1 SAY IT**

Say it together: *dif-er-EN-shee-ate*. Feel all five syllables: *dif-er-EN-shee-ate*.

**STEP 2 DEFINE IT**

*Differentiate means to treat things differently based on what each one needs. In education, it means changing your teaching approach for different learners — same class, different challenge. The root DIFFERRE means to carry in different directions.*

**STEP 3 CONNECT IT**

*Has a teacher or coach ever differentiated for YOU — given you something harder, easier, or completely different? How did it feel?*

**STEP 4 USE IT**

*Use differentiate in a sentence — either about education or about any situation where treating things differently is more fair than treating them the same.*

✂ cut here

SESSION 6 | Fair vs. Equal

# METICULOUS meh-TIK-yoo-lus

Extremely careful and precise — paying very close attention to every detail.

## STEP 1 SAY IT

Say it together: meh-TIK-yoo-lus. Say it carefully — every syllable exactly right.

## STEP 2 DEFINE IT

Meticulous means leaving nothing to chance. Here's a surprising origin: meticulous comes from Latin METUS, meaning FEAR — originally it meant 'overly fearful/careful.' Over time it shifted to a positive: admirably precise. Lucy is meticulous in her math work and in her OCD routines.

## STEP 3 CONNECT IT

Where in YOUR life are you meticulous? Where are you the opposite? Is being meticulous always a strength, or can it hold you back?

## STEP 4 USE IT

Use meticulous in a sentence about Lucy that shows it applies to BOTH her greatest strength AND a social challenge.

✂ cut here

SESSION 6 | Fair vs. Equal

# OPPRESSED uh-PREST

Treated in a way that is unjust or that limits freedom — kept down by a person, system, or circumstance.

## STEP 1 SAY IT

Say it together: uh-PREST. Say it like something heavy is pressing down on you.

## STEP 2 DEFINE IT

Oppressed comes from Latin OB (against) + PREMERE (to press) — literally pressed down against. Oppression can be personal, institutional, or systemic. The word carries serious historical weight. Using it carefully matters.

## STEP 3 CONNECT IT

Page 181 uses the word oppressed. What is the context — who feels oppressed, and is the word being used literally, figuratively, or both? Does the intensity of the word fit the situation?

## STEP 4 USE IT

Use oppressed in a sentence that is careful about the word's weight — show you understand it means more than just 'treated unfairly.'

✂ cut here

# COMPETENCE *KOM-peh-tence*

The ability to do something successfully and efficiently — having the skill and knowledge required to perform a task well.

## STEP 1 SAY IT

*Say it together: KOM-peh-tence. Say it like you've just proven something.*

## STEP 2 DEFINE IT

*Competence comes from Latin COM (fully) + PETERE (to seek or strive) — the state of fully striving or being capable. Nana sends Lucy to school to develop SOCIAL competence — the ability to navigate human relationships, not just mathematical ones.*

## STEP 3 CONNECT IT

*Lucy has mathematical competence. What would social competence look like for Lucy specifically — not popularity, just the minimum viable ability to function in relationships?*

## STEP 4 USE IT

*Use competence in a sentence that distinguishes mathematical competence from social competence — and says something about which matters more by the end of this section.*

SESSION 7 — THE MATHWHIZ REVEAL

SESSION 7 | The MathWhiz Reveal

INQUISITIVE

*in-KWIZ-ih-tiv*

Having a curious, questioning mind — always wanting to know more and investigate further.

STEP 1 SAY IT

Say it together: *in-KWIZ-ih-tiv*. Say it like you just noticed something that doesn't add up.

STEP 2 DEFINE IT

*Inquisitive comes from Latin INQUIRERE — to search. An inquisitive person asks questions compulsively — they can't let a mystery go. Lucy is inquisitive about math in a way that made her a genius. The question: is being inquisitive about PEOPLE a skill she's developing?*

STEP 3 CONNECT IT

*Give an example from Ch. 29–32 where Lucy's inquisitive nature helps her — and one where it makes things more complicated.*

STEP 4 USE IT

*Use inquisitive in a sentence that shows how Lucy's inquisitiveness both serves and limits her in this section.*

✂ cut here

SESSION 7 | The MathWhiz Reveal

ANONYMOUS

*uh-NON-ih-mus*

Having an unknown or unacknowledged identity — not identified by name.

STEP 1 SAY IT

Say it together: *uh-NON-ih-mus*. Say it quietly, like no one knows it's you.

STEP 2 DEFINE IT

*Anonymous comes from Greek AN (without) + ONYMA (name). Without a name. Online, people can be anonymous. Lucy on MathWhiz is technically anonymous — but she's more herself there than anywhere else. That's the paradox this section investigates.*

STEP 3 CONNECT IT

*How is Lucy MORE authentic when she's anonymous online than when she's identified at school? What does that tell us about what happens to our real selves when we feel watched and evaluated?*

STEP 4 USE IT

*Use anonymous in a sentence about Lucy that captures the irony of being most yourself when no one knows who you are.*

✂ cut here

SESSION 7 | The MathWhiz Reveal

# AUTHENTIC aw-THEN-tik

Genuine and real — truly representing who a person is, without performance or pretense.

## STEP 1 SAY IT

*Say it together: aw-THEN-tik. Say it like you mean it.*

## STEP 2 DEFINE IT

*Authentic comes from Greek AUTOS — self. Truly from the self. An authentic person is who they actually are, not who they think others want them to be. Lucy on MathWhiz is authentic. Lucy at East Hamlin is performing. The MathWhiz reveal forces her toward authenticity in a place she hasn't felt safe to be real.*

## STEP 3 CONNECT IT

*Where in your life do you feel most authentic — most like your actual self? Where do you feel least authentic? What's the difference between those two contexts?*

## STEP 4 USE IT

*Use authentic in a sentence that describes the difference between Lucy online and Lucy at school — and argues which version is more real.*

✂ cut here

SESSION 7 | The MathWhiz Reveal

# ALGORITHM AL-goh-rith-um

A precise, step-by-step set of rules for solving a problem — used in math, coding, and, Lucy would argue, life.

## STEP 1 SAY IT

*Say it together: AL-goh-rith-um. Say it like you're explaining something obvious.*

## STEP 2 DEFINE IT

*Algorithm is an eponym — named after 9th-century Persian mathematician Muhammad al-Khwarizmi. Lucy sees social situations as problems that should have algorithms — fixed inputs, predictable outputs. The tragedy: humans are not algorithms.*

## STEP 3 CONNECT IT

*Lucy tries to create social algorithms: if I say X, they should respond with Y. Why doesn't this work for human relationships? What variable does she keep getting wrong?*

## STEP 4 USE IT

*Use algorithm in a sentence that captures both its mathematical meaning AND Lucy's attempt to apply it to her social life.*

✂ cut here

# REVELATION rev-uh-LAY-shun

A dramatic disclosure — something hidden that is suddenly made known, often changing everything.

## STEP 1 SAY IT

*Say it together: rev-uh-LAY-shun. Say it like the curtain just went up on something.*

## STEP 2 DEFINE IT

*Revelation comes from Latin RE (back) + VELARE (to veil). A revelation is literally an UN-veiling. The MathWhiz reveal is the central revelation of the novel: Lucy's two worlds, which she kept carefully separate, suddenly collide.*

## STEP 3 CONNECT IT

*Why is the MathWhiz revelation significant beyond the embarrassment of being caught? What does it FORCE Lucy to do that she had been successfully avoiding?*

## STEP 4 USE IT

*Use revelation in a sentence that describes what changes for Lucy after the MathWhiz reveal — not just what is discovered, but what that discovery demands of her.*

SESSION 8 — THE ADOPTION EVENT

SESSION 8 | The Adoption Event

PERSUASIVE

*per-SWAY-siv*

Able to convincingly change someone's mind or move them to action — through evidence, logic, or emotional appeal.

STEP 1 SAY IT

Say it together: *per-SWAY-siv*. Say it like you're about to make an argument you're going to win.

STEP 2 DEFINE IT

Persuasive comes from Latin *PER* + *SUADERE* — thoroughly urging someone. Persuasion uses three tools: *LOGOS* (logic and evidence), *PATHOS* (emotion and story), and *ETHOS* (credibility). Lucy's campaign uses primarily *logos* — data. Windy adds *pathos*. Together they're more persuasive than either alone.

STEP 3 CONNECT IT

Think about the most persuasive argument you've ever heard or made. What made it work? Was it data? Emotion? The person's credibility? All three?

STEP 4 USE IT

Use persuasive in a sentence that argues which element — *logos*, *pathos*, or *ethos* — is most essential to Lucy's campaign.

✂ cut here

SESSION 8 | The Adoption Event

COLLABORATE

*kuh-LAB-or-ate*

To work together toward a shared goal, each person contributing something the others can't.

STEP 1 SAY IT

Say it together: *kuh-LAB-or-ate*. Say it like a team right before a big moment.

STEP 2 DEFINE IT

Collaborate comes from Latin *COM* (together) + *LABORARE* (to work). Real collaboration is more than dividing tasks — it requires trust, complementary skills, and the belief that the result will be better because of what each person brings.

STEP 3 CONNECT IT

What does each person contribute to the Pet Hut collaboration that the others couldn't provide alone? Be specific — what would be missing if any one of them wasn't there?

STEP 4 USE IT

Use collaborate in a sentence that explains what made *THIS* collaboration work — what conditions had to be in place first?

✂ cut here

SESSION 8 | The Adoption Event

# INITIATIVE *ih-NISH-uh-tiv*

Taking action independently — starting something without being told to, or taking the first step in a plan.

## STEP 1 SAY IT

Say it together: *ih-NISH-uh-tiv*. Say it like you just decided to go for it.

## STEP 2 DEFINE IT

Initiative comes from Latin INITIUM — a beginning. To take initiative is to begin on your own authority. For Lucy, taking initiative at the Pet Hut is significant: it's the first time in the book she starts something social without being pushed into it by Nana.

## STEP 3 CONNECT IT

What's the difference between following someone else's initiative and taking your own? What does it feel like to take initiative when you might fail or be judged for it?

## STEP 4 USE IT

Use initiative in a sentence that shows how Lucy taking initiative here is different from how she acted at the start of the novel.

✂ cut here

SESSION 8 | The Adoption Event

# SYSTEMATIC *sis-teh-MAT-ik*

Done according to a fixed, organized plan or method — following a clear system, step by step.

## STEP 1 SAY IT

Say it together: *sis-teh-MAT-ik*. Say it like someone who has a plan and is executing it.

## STEP 2 DEFINE IT

Systematic comes from Greek SYSTEMA — an organized whole. Being systematic means you have a method, you follow it, and you can explain each step. Lucy's approach to the Pet Hut is entirely systematic: she identifies the question, collects the data, analyzes it, draws conclusions. This is the scientific method.

## STEP 3 CONNECT IT

Is Lucy's systematic approach the most important thing she brings to the project? Or is it one ingredient among several? What would happen if someone systematic but completely lacking empathy ran this project?

## STEP 4 USE IT

Use systematic in a sentence that connects Lucy's approach to the Pet Hut to what good data analysis actually looks like.

✂ cut here

# CULMINATION *kul-mih-NAY-shun*

The highest or final point of something — the peak that everything before has been building toward.

## STEP 1 SAY IT

*Say it together: kul-mih-NAY-shun. Say it like you're describing the top of a mountain you've been climbing.*

## STEP 2 DEFINE IT

*Culmination comes from Latin CULMEN — peak or summit. A culmination is when everything that has been building finally arrives at its highest point. The adoption event is the culmination of Lucy's year at East Hamlin.*

## STEP 3 CONNECT IT

*What were the three most important events before this one that made the culmination possible? What had to happen first for this moment to be meaningful?*

## STEP 4 USE IT

*Use culmination in a sentence that argues WHY the adoption event is the culmination — not just the climax, but the EARNED peak.*

SESSION 9 — MISCALCULATIONS

SESSION 9 | Miscalculations

RESILIENCE

reh-ZIL-ee-ence

The ability to bounce back from difficulty — not the absence of struggle, but the capacity to recover from it.

STEP 1 SAY IT

Say it together: reh-ZIL-ee-ence. Say it like you've been knocked down and you're getting up anyway.

STEP 2 DEFINE IT

Resilience comes from Latin RESILIRE — to spring back. Like a rubber band: you can stretch it, but it returns to shape. Resilience is NOT the absence of pain — it's the capacity to recover from it. Lucy's year is a story of resilience.

STEP 3 CONNECT IT

Here's the important distinction: resilient doesn't mean unaffected. What's a moment in Ch. 37–40 where Lucy shows resilience — not by being fine, but by choosing to keep going despite NOT being fine?

STEP 4 USE IT

Use resilience in a sentence that shows it means recovery, not invulnerability — capture both the difficulty AND the bounce-back.

✂ cut here

SESSION 9 | Miscalculations

RECALCULATE

ree-KAL-kyoo-late

To calculate again — to revise your thinking or approach when the first answer was wrong.

STEP 1 SAY IT

Say it together: ree-KAL-kyoo-late. Say it like a GPS that just found a better route.

STEP 2 DEFINE IT

Recalculate literally means to do the math again. In life, it means to reassess and adjust your approach when what you're doing isn't working. Lucy recalculates her understanding of people throughout this novel — each time something doesn't go as expected, she gathers new data and tries again.

STEP 3 CONNECT IT

What is the most significant recalculation Lucy makes in Ch. 37–40 — not a math one, but a people one? What was her original calculation, what went wrong, and what did she recalculate to?

STEP 4 USE IT

Use recalculate in a sentence — either literally (math) or figuratively (how Lucy revises her understanding of something or someone).

✂ cut here

SESSION 9 | Miscalculations

# PROFOUND proh-FOWND

Very deep — having great emotional, intellectual, or philosophical depth. More than just important: foundational.

## STEP 1 SAY IT

Say it together: *proh-FOWND*. Say it like something just hit you in a way you weren't expecting.

## STEP 2 DEFINE IT

Profound comes from Latin *PRO* (into) + *FUNDUS* (bottom or foundation). Something profound goes all the way to the bottom — it reaches the foundation of things. A profound idea changes how you see everything after it. Lucy's year is not just significant — it's profound.

## STEP 3 CONNECT IT

What is the most profound realization Lucy arrives at by Ch. 40? Not the most surprising plot event — the insight that most changes who she is.

## STEP 4 USE IT

Use *profound* in a sentence about the novel's ending that shows you understand it means something deeper than just 'important.'

✂ cut here

SESSION 9 | Miscalculations

# NEUROPLASTICITY nyoo-roh-plas-TIS-ih-tee

The brain's ability to physically reorganize itself by forming new connections in response to learning, experience, or injury.

## STEP 1 SAY IT

Say it together: *nyoo-roh-plas-TIS-ih-tee*. Feel all seven syllables: *neu-ro-plas-TIS-ih-tee*.

## STEP 2 DEFINE IT

Neuroplasticity: *NEURON* (nerve) + *PLASTICUS* (able to be molded). The brain is plastic — like clay: it can be shaped and reshaped. Every time you learn something, your brain builds new connections. Lucy's brain was changed by lightning. ALL brains change by living.

## STEP 3 CONNECT IT

Connect neuroplasticity directly to Lucy's story: in what ways has Lucy's brain changed over the course of this year? What new pathways might she be building?

## STEP 4 USE IT

Use *neuroplasticity* in a sentence that argues Lucy's year at East Hamlin was neurologically necessary.

✂ cut here

MISCALCULATION *mis-kal-kyoo-LAY-shun*

An error in calculation or judgment — a wrong assessment of a situation, person, or outcome.

STEP 1 SAY IT

Say it together: *mis-kal-kyoo-LAY-shun*. Say it like you just realized you were wrong about something important.

STEP 2 DEFINE IT

Miscalculation — the word literally in the title — means a calculation that went wrong. In math, it's arithmetic. In life, it's a judgment error: misjudging a person, a situation, or your own ability to handle something. The title works on both levels simultaneously.

STEP 3 CONNECT IT

Name Lucy's three most significant miscalculations across the whole novel — people or situation errors, not math ones. Then: which one was the most valuable? Why?

STEP 4 USE IT

Use miscalculation in a sentence that connects the word to the novel's central argument.

SESSION 10 — FOR THE LOVE OF PI

SESSION 10 | For the Love of Pi

SEQUENCE *SEE-kwence*

An ordered list where each element follows a rule — each thing comes because of what came before it.

STEP 1 SAY IT

Say it together: *SEE-kwence*. Say it deliberately — like each syllable is a step in a pattern.

STEP 2 DEFINE IT

Sequence comes from Latin *SEQUI* — to follow. The Fibonacci sequence (1, 1, 2, 3, 5, 8, 13...) is the most famous in nature — each number is the sum of the two before it. It appears in sunflowers, shells, hurricanes, and galaxies.

STEP 3 CONNECT IT

Think about this program as a sequence — each session building on what came before. What was the rule? What did each session add that made the next one possible?

STEP 4 USE IT

Use sequence in a sentence that connects the Fibonacci sequence to Lucy's year — show how her growth follows a pattern, each step building on the last.

✂ cut here

SESSION 10 | For the Love of Pi

INFINITE *IN-fih-nit*

Without limit or end — going on forever.

STEP 1 SAY IT

Say it together: *IN-fih-nit*. Say it like you're looking at something that keeps going.

STEP 2 DEFINE IT

Infinite comes from Latin *IN* (not) + *FINITUS* (finished). Without end. The digits of pi are infinite — they never repeat, never stop, no pattern has ever been found. Lucy finds comfort in this: math contains things that go on forever, which means there's always more to discover.

STEP 3 CONNECT IT

What in this program — or in this book — has felt infinite to you? Not literally, but in the sense that you keep finding more in it the longer you look?

STEP 4 USE IT

Use infinite in two sentences: one about the mathematical infinite (pi, Fibonacci) and one as a metaphor for something from this program or this book.

✂ cut here

# LEGACY LEG-uh-see

What you leave behind — the lasting impact of your actions, choices, or presence on the world or on other people.

## STEP 1 SAY IT

Say it together: LEG-uh-see. Say it like something that will outlast the room.

## STEP 2 DEFINE IT

Legacy comes from Latin LEGATUS — an ambassador, a messenger. A legacy is the message you leave when you're gone. Lucy leaves a legacy at the Pet Hut: a system that keeps working after she created it. She also leaves a legacy with Windy and Levi: evidence that they were worth connecting to.

## STEP 3 CONNECT IT

What legacy — honestly — do you think this program leaves for each of you? Not what it was supposed to do, but what actually happened over these 10 sessions.

## STEP 4 USE IT

Use legacy in a sentence about Lucy's year at East Hamlin — what does she leave behind that will outlast her time there?

✂ cut here

# SYNTHESIS SIN-thuh-sis

The combination of different elements into a unified whole — bringing separate things together to create something new.

## STEP 1 SAY IT

Say it together: SIN-thuh-sis. Say it like pieces clicking into place.

## STEP 2 DEFINE IT

Synthesis comes from Greek SYN (together) + TITHENAI (to place). To synthesize is to bring things together into something unified and new. Lucy at the end of this novel is a synthesis: math genius + willing friend + caring advocate, all at once.

## STEP 3 CONNECT IT

This whole program has been a synthesis — literacy AND STEAM, Lucy's story AND your lives, individual sessions AND a 10-week arc. What new thing was created by bringing all of those together that couldn't have existed separately?

## STEP 4 USE IT

Use synthesis in a sentence that describes what THIS program — this specific 10 sessions — synthesized into.

✂ cut here

# TRANSFORMATION *trans-for-MAY-shun*

A deep, thorough change — not just getting better, but fundamentally becoming different.

## STEP 1 SAY IT

Say it together: *trans-for-MAY-shun*. Say it like something has just permanently changed.

## STEP 2 DEFINE IT

Transformation comes from Latin *TRANS* (across) + *FORMARE* (to form). To transform is to be reshaped completely. A caterpillar doesn't just grow — it transforms into something that shares almost nothing with what it was. Lucy doesn't just improve at social skills; she transforms into someone who no longer sees connection as a problem to be solved.

## STEP 3 CONNECT IT

Final question of the program: How is the Lucy on the last page different from the Lucy on page 1? Which transformation was most significant — in math, in friendship, or in how she sees herself?

## STEP 4 USE IT

Use transformation in your final sentence of the program. Make it about Lucy, about yourself, or about both. Make it true.

# LIGHTNING AWARD

This award is presented to

\_\_\_\_\_

for being a member of the Miscalculations of Lightning Girl Book Club

\_\_\_\_\_

Date

\_\_\_\_\_

Teacher

# LIGHTNING AWARD

This award is presented to

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Date

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Teacher