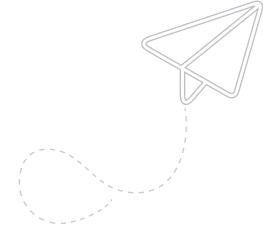


Aviation

L1 Custom Kites



Set the Stage: [Making a simple kite](#), video: 2 minutes, 29 seconds

Resources: [How do kites fly in the sky?](#) video: 3 minutes, 47 seconds

Activity: How do Kites Work?

Procedure: After the intro video – Engage Let’s make our kites! You may want to play the video again and pause for each step. Let’s go outside and fly!

Questions to ask after flying kites:

- How does the kite stay in the air? (Wind pushing it)
- What causes lift? (Upward air pushing from below)
- Does the size of your kite affect how it flies (larger or smaller, what works best?)
Answers will vary.

On day 2:

- Help your child make alterations to their kites that they think will help enhance its flight capabilities.
- If you have more than one child, you can create a competition to see who can make a kite that stays in the air the longest.

Standards

Standards addressed by this activity - BSB – The Do Place: Academic Standards: SC8/1/3.B, SC8/1/3.C, SC8/4/3.A, SC8/1/4.3.C, National Standards: ISTE – 4A, Benchmark: B/E2, 4B/E4, 3B/M4B, and NGSS: 3-5-ETS1.B.3, 3-5-ETS1.C.1, MS ETS1.B.3, 4-ETS1.B.2, 3-5-ETS1.B.1, MS-ETS1.B.6, MS-ETS1.B.1, and K-2-ETS1.C.1.

Materials

Computer and access to the Internet

Per Child:

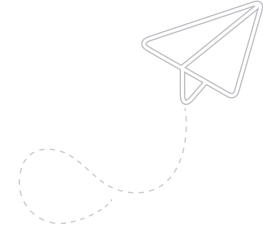
- One sheet of colored construction paper
- A bamboo skewer
- String ball
- Colored Streamers
- Pair of scissors
- Tape

Note to parents – You may choose to play the videos in reverse order, i.e. – Learning why kites fly, and then playing and stopping as needed the kite construction video.



Aviation

L2 Yaw, Roll, and Pitch



Set the Stage: [The Paper Airplane Guy](#), video: 11 minutes and 3 seconds, a jaw dropping video!

Resources: Paper Plane Designs, a static webpage of plane designs. Attached plane designs.

Activity: What is Yaw, Roll, and Pitch and how do they affect flight??

Procedure: After the intro video – Use the link above in the resource section to view paper plane designs. They are organized into hard, medium, and easy levels.

- Help your child customize and build their paper airplane with markers. As the students are creating their planes you can replay the “Paper Airplane Guy” video above if needed.
- After your child creates their paper airplane, give them time to test.
- Instruct your child to cut 1 flap on each wing. Flap sizes will vary depending on students’ designs.
- Have your child attempt to mimic, yaw, pitch, and roll.

Materials

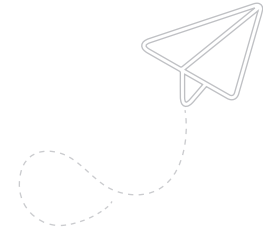
- Computer and access to the Internet
- Printer Paper
- Markers

Standards

Standards addressed by this activity - BSB – The Do Place: Academic Standards: SC8/1/3.B, SC8/1/3.C, SC8/4/3.A, SC8/1/4.3.C, National Standards: ISTE – 4A, Benchmark: B/E2, 4B/E4, 3B/M4B, and NGSS: 3-5-ETS1.B.3, 3-5-ETS1.C.1, MS ETS1.B.3, 4-ETS1.B.2, 3-5-ETS1.B.1, MS-ETS1.B.6, MS-ETS1.B.1, and K-2-ETS1.C.1.

Aviation

L3 Balloon Rockets



Resources: [Balloon Rocket Science Experiment](#), video: 4 minutes, 39 seconds

Activity: What Pushes the Balloon Forward?

Procedure: After the intro video – Engage

Position two chairs about 10 feet apart and grab a piece of string.

Set up:

- Tie one end of the string to one of the objects. Make sure it is securely fashioned.
- Next, get a straight plastic drinking straw. If the straw is one of the “bendy” straws with the flexible piece, cut off the flexible part so you are left with a straight straw.
- Place two pieces of tape on the straw. Note: Be sure to position the two pieces of tape near the middle of the straw. If you put them near the ends of the straw it will bend when you blow up the balloon and the rocket won’t move as quickly.
- Thread the string through the straw. Tie the loose end of string to the back of your second object and make sure the string is tight. If the string isn’t tight, move the objects farther apart until it is.

Let’s Practice! Blow up the balloon and hold the end so the air can’t escape and use the two pieces of tape to secure the balloon to the straw. Move the straw and balloon to one end of the string. And once you are ready, Let go of the balloon and watch as it rockets across the string! Reinflate the balloon again and repeat again and again.

Why does the balloon fly along the string? The thrust of the air leaving the balloon pushes it forward along the string.

Standards

Standards addressed by this activity - Academic Standards: SC8/1/3.B, SC8/1/3.C, SC8/4/3.A, SC8/1/4.3.C, National Standards: ISTE – 4A, Benchmark: B/E2, 4B/E4, 3B/M4B, and NGSS: 3-5-ETS1.B.3, 3-5-ETS1.C.1, MS ETS1.B.3, 4-ETS1.B.2, 3-5-ETS1.B.1, MS-ETS1.B.6, MS-ETS1.B.1, and K-2-ETS1.C.1.

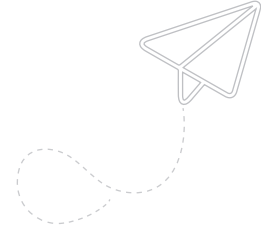
Materials

- Computer and access to the Internet
- Balloon
- Drinking Straw
- String
- 2 Chairs
- Tape



Aviation

L4 Other Forms of Flight



Set the Stage: [How do helicopters work?](#), video: 8 minutes, 07 seconds; might need to stop and talk

Resources: Attached file, "FETCH Hang Time," helicopter cut out pattern.

Activity: How do Helicopters Work?

Procedure: After the intro video – use the handout above "FETCH Hang Time"

Paper Helicopter - Next, using the helicopter cut out pattern, students make and then fly paper choppers.

- Make your copter. Cut out the copter printed on this page. Cut along the dotted lines. Assemble it as shown.
- Launch your copter. Hold your copter as high as you can. Let go and watch as it falls. Does it spin to the ground?
- Add the fan. ASK – What changed?
- **Have a competition! Best hang time wins!**

Materials

- Computer and access to the Internet
- Stopwatch
- White printer paper or graph paper (kids can count the squares)
- Scissors
- Paper clips; one large and one small
- Fan or ceiling fan

Standards

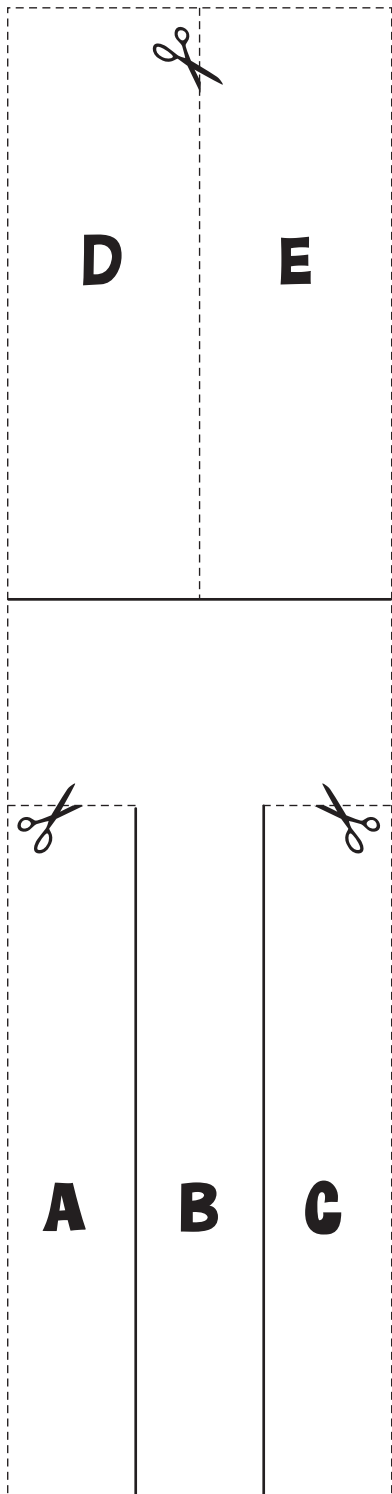
Standards addressed by this activity - Academic Standards: SC8/1/3.B, SC8/1/3.C, SC8/4/3.A, SC8/1/4.3.C, National Standards: ISTE – 4A, Benchmark: B/E2, 4B/E4, 3B/M4B, and NGSS: 3-5-ETS1.B.3, 3-5-ETS1.C.1, MS ETS1.B.3, 4-ETS1.B.2, 3-5-ETS1.B.1, MS-ETS1.B.6, MS-ETS1.B.1, and K-2-ETS1.C.1.



Tiempo de vuelo



Todo queda en el aire. ¡En serio! Arma un par de helicópteros y hazlos competir. El ÚLTIMO en tocar el suelo gana. ¡Suerte!

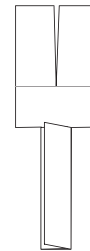


Qué hacer

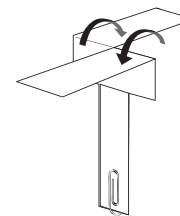
- 1 Esto es lo que necesitas.**
 - Varias hojas de papel
 - Tijeras
 - Dos clips (1 grande y 1 pequeño)
- 2 construye el helicóptero.** Recorta el helicóptero que ves acá a la izquierda. Recorta por las líneas punteadas y ármalo según las instrucciones.
- 3 Lanza el helicóptero.** Levanta el helicóptero al punto más alto que puedas alcanzar. Suéltalo y obsérvalo al caer. ¿Va dando vueltas mientras cae?
- 4 cambia de helicóptero.** Construye otro de tu propio diseño. Esta vez, cámbiale algo, digamos el tamaño del helicóptero o la forma de las palas. Aumenta o reduce el número de clips. Después, lanza el helicóptero original junto con el nuevo, y compáralos en su manera de caer. ¿Qué consecuencias tuvo el cambio que hiciste?



Dobla la tira A sobre la tira B.



Dobla la tira C sobre la tira B.



Dobla las palas D y E en sentidos contrarios. Ponle un clip al extremo.

Másticalo bien

Al dejar caer el helicóptero, sus palas se mueven contra el aire, desplazándolo. El aire responde ejerciendo un impulso sobre las palas y dándole a cada una un leve empujón. Observa que las dos palas no están precisamente alineadas. Así, mientras una pala impulsa un lado del helicóptero para que gire, la otra pala impulsa el lado contrario. Estos dos impulsos se combinan para hacer girar el helicóptero alrededor de su eje central. Al girar, las palas chocan contra mucho aire mientras el helicóptero va cayendo, y ese aire responde con el impulso que ejerce sobre las propias palas. Cuanto mayor sea la cantidad de aire que choca contra las palas (es decir, mientras más fuerte el impulso que ejerce el aire sobre las palas), más lenta será la caída del helicóptero.

ESCARBEMOS

- * Experimenta con el tamaño del helicóptero. ¿Qué tan grande o qué tan pequeño puede ser sin que deje de girar mientras cae?
- * ¿Gira el helicóptero siempre en el mismo sentido? Marca una de las palas con un color vivo. Después, obsérvalo mientras cae. Luego, procura que gire en el sentido contrario.
- * Pégale un hilo a la tira B y corre con el helicóptero detrás de ti, como si fuera una cometa o un papalote.
- * ¿Te gustan las cosas que giran mientras vuelan? Acepta el reto *Hoop Glider* en la sede de ZOOM en Internet, en pbskids.org/zoom/activities.



Veamos FETCH! en PBS KIDS GO! (consulta el horario local). Visita la sede de FETCH! en pbskidsgo.org/fetch.

Ay, ay, ay. ¡Ese viajecito casi me quitó el hambre! Con estos mareos, no sé si podré comerme las empanaditas. Bueno, quizás no. ¡Tan ricas que son!



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Doblar

Fetch!

Tiempo de Vuelo


¿Cómo fue que se me ocurrió hacer *snowboard*? ¡Este cerro está muy empinado! Y ahora, ¿cómo lo vuelvo a subir? ¿A pie? Tiene que haber otra forma... ¡ah, ya sé! Constrúyeme un helicóptero que me lleve hasta la cima. Me urge porque allá hay un restaurante que sirve unas empanaditas riquísimas. Ay, cómo me encantan...

vAMOS FETCH!



Hang Time



FETCH!
with  Ruff
Ruffman™



greendog

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