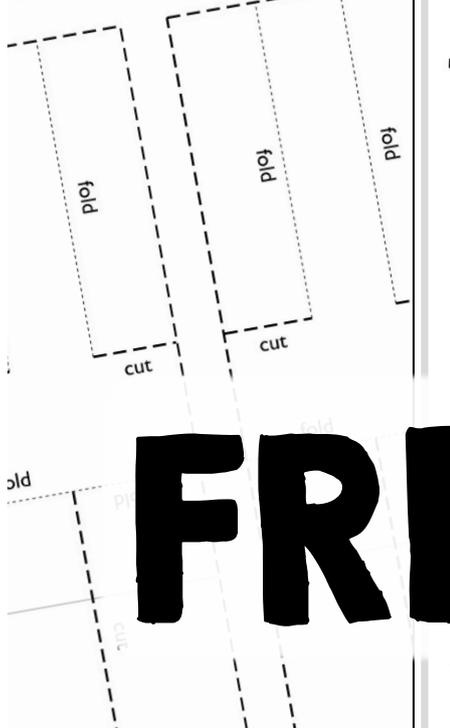


PUSH & PULL EXPERIMENTS



HELICOPTER TEST FLIGHTS



HELICOPTER TEST FLIGHTS

MATERIALS

- Helicopter templates
- Scissors

ACTIVITY

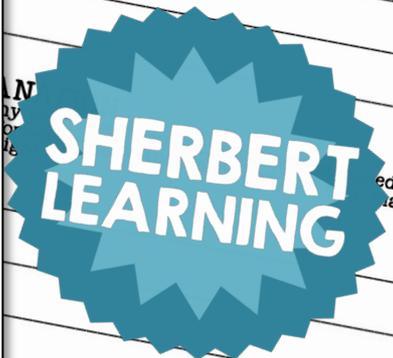
Students investigate what impacts a paper helicopter dropping to the ground and the forces involved. Students first create a paper helicopter and play with it. Discuss the forces involved.

Then students change their helicopter in some way (altering the wings) and then test their new design. Students can time how quickly their helicopters flew.

Discuss the importance of having fair tests when comparing helicopters (for example, keeping the height the helicopter is dropped the same).

SCIENTIFIC EXPLANATION

As air moves past the falling paper helicopter, it creates a spinning effect. The air pushes up each wing separately, which causes the helicopter to spin. Real helicopters can land safely if their engines fail as they are capable of a form of flight called 'autorotation', which can be described as a form of gliding. If a helicopter's engine fails, the pilot changes the angle of the blades to allow the



TEACHER GUIDE

Dive into our **FREEBIE**—a sneak peek of our comprehensive **Push and Pull Experiments Science Unit!**

This hands-on experiment introduces students to forces in motion, helping them explore how push, pull, gravity, and air resistance affect flight.

How to Use:

- **Build and Observe** – Students construct the paper helicopter using the provided template.
- **Test and Record** – They conduct multiple test flights, adjusting variables like drop height.
- **Analyze and Conclude** – Students complete the experiment worksheet, making predictions and recording observations..

[**CLICK HERE**](#)
[**FOR THE FULL RESOURCE!**](#)



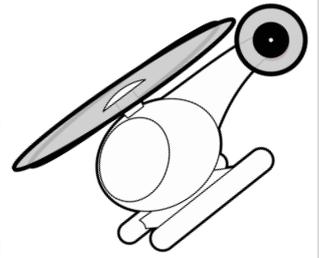
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- ✓ 8 Hands-on Push & Pull Experiments
- ✓ Forces in Motion Investigations
- ✓ Comprehensive Worksheets & Templates
- ✓ Teacher Guides with Scientific Background
- ✓ Assessment Task
- ✓ Bonus Homework Activity

Make science interactive, fun, and easy to implement—get the full resource today! 🎉



HELICOPTER TEST FLIGHTS



MATERIALS

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ACTIVITY

Students investigate what impacts a paper helicopter dropping to the ground and the forces involved. Students first create a paper helicopter and have a play with it. Discuss the forces involved.

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SCIENTIFIC EXPLANATION

When objects fall through air, they accelerate due to the pull of gravity before reaching a constant rate of fall called terminal velocity. Terminal velocity is reached when the gravitational force pulling an object downwards is equal and opposite to the air resistance pushing it upwards and there is no more acceleration.

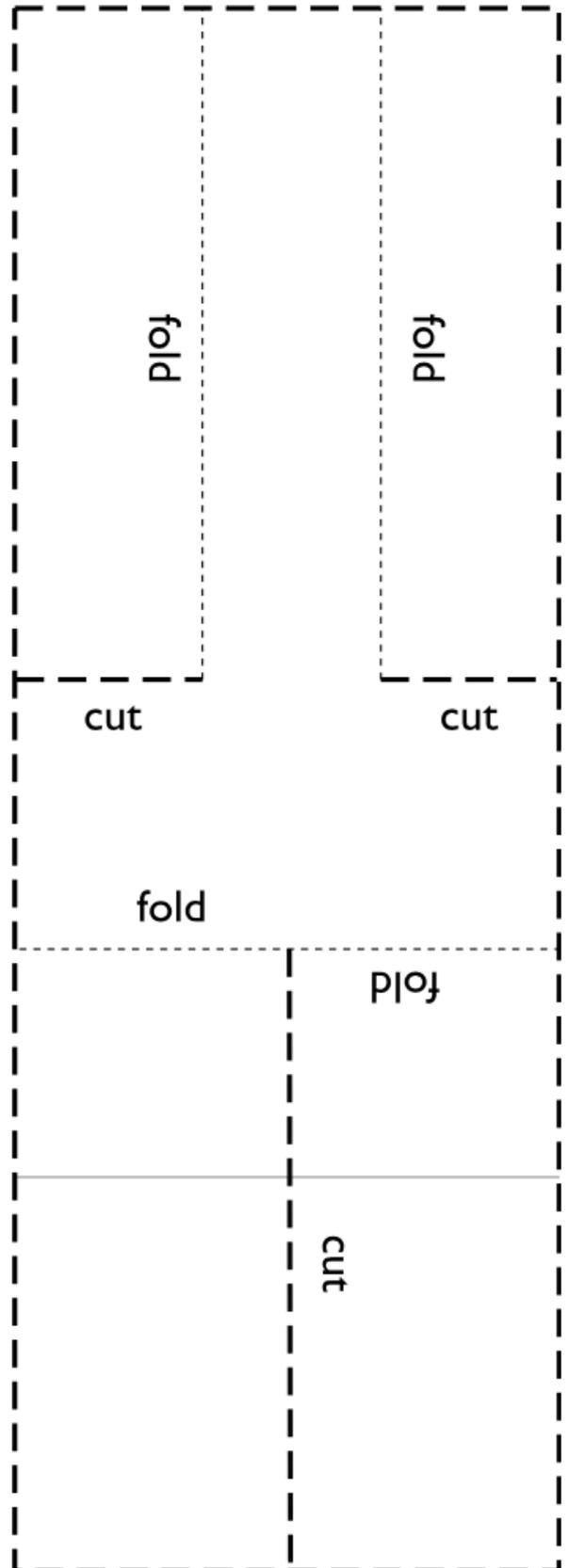
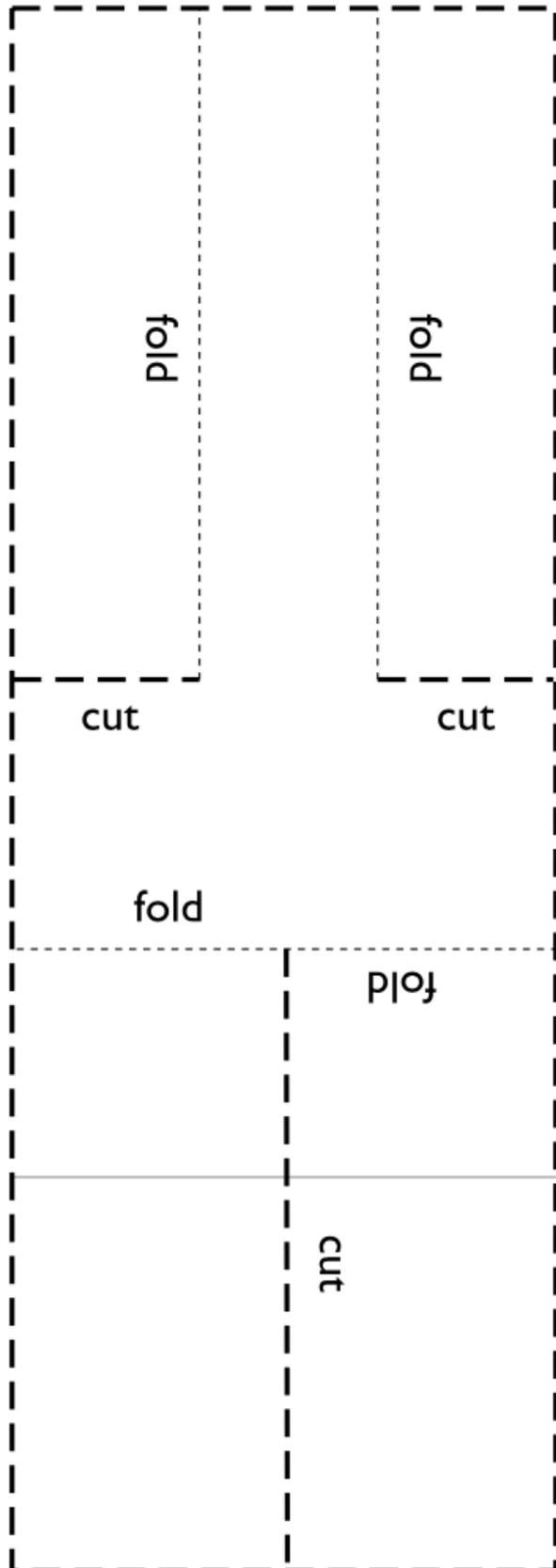
Parachutes increase a skydiver's air resistance, or the upward push they receive from the air. This reduces their terminal velocity to a safe level.

The same forces affect a paper helicopter—the larger the wings and the lighter the helicopter, the slower it will fall. Adding weight, such as, adding paper clips to the stem, or using heavier paper will make the helicopter fall faster because of the increased pull of gravity. Increasing its wing size will make it fall more slowly because of increased air resistance on the larger surface area.

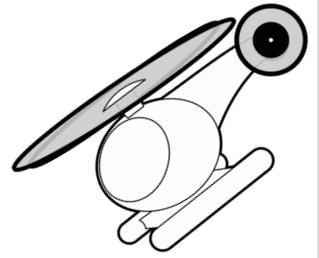
As air moves past the falling paper helicopter, it creates a spinning effect. The air pushes up each wing separately, which causes the helicopter to spin.

Real helicopters can land safely if their engines fail as they are capable of a form of flight called 'autorotation', which can be described as a form of gliding. If a helicopter's engine fails, the pilot changes the angle of the blades to allow the airflow to keep them spinning at an appropriate speed. To achieve this, the helicopter must be in a descent so a landing area must be found quickly, but the pilot still has some control over the rate of descent. When the helicopter is close to the ground, the pilot 'flares' the helicopter to 'wash off' forward speed. This also increases the speed of the spinning rotors. Before the touchdown, the speed of the spinning rotors is sacrificed by the pilot who changes the angle of the blades once more to cushion the touchdown.

HELICOPTER TEST FLIGHTS



HELICOPTER TEST FLIGHTS



OBSERVATION

Write a summary of what happened during the experiments.

EXPLANATION

Explain why your results and observations happened? Think about the forces acting on the planes and how they may have impacted flight.



THANK YOU FOR YOUR PURCHASE!

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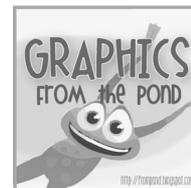
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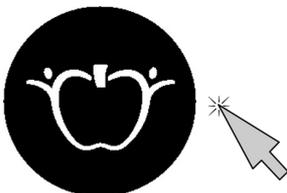


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