



BUILDERS BONANZA

Lesson: Paper Airplanes

CURRICULUM REFERENCE: Form and Function

LESSON OBJECTIVE

Fold your own paper airplane to see how planes fly using thrust, drag, lift, and gravity.

THE SCIENCE BEHIND

A plane's wing is a kind of air deflector: the wing pushes air down and, in return, the air pushes the wing up. We call this lift, one of the four things a plane needs to fly. The three other things are weight, thrust and drag. Wings stay balanced during a flight because of how the weight is distributed. Thrust is the force that moves the plane forward and drag slows the plane down. Think about the feeling when you're walking against a strong wind—that's drag.

VIDEO: <https://youtu.be/DNTMmZWkN6g>



FOLLOW-UP QUESTIONS

1. How do forces work for or against a plane?
2. When should these forces come into effect?
3. Do the forces all work at the same time?

LEARNING OUTCOMES

- Design, construct, and use physical models to investigate the effects of various forces on structures.
- Investigate methods used by engineers to ensure structural safety.
- Distinguish between external forces (e.g., wind, gravity, earthquakes) and internal forces (tension, compression, shear, and torsion) acting on a structure.



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MATERIALS (PER PERSON)

- 8.5 x 11 white (letter-sized) paper

INSTRUCTIONS

The Commando Paper Airplane

1. Fold the paper in half (the hot dog way).
2. Unfold the half and fold both top corners into the centre line to make a “house-like” shape.
3. Fold the outer edges of the previous fold into the centre line and press to make crisp edges down the new outer edges.
4. Fold the plane in half along the center line.
5. Fold the outer edges (wings) to the bottom edge of the plane’s body. Do this on both sides.

VIDEO DEMO: <https://youtu.be/hRqniWlk28g>

The Glider

1. Fold the paper in half.
2. Unfold the paper and then fold the top edge about 5 cm (2 in).
3. Fold the top edge again to meet the previous fold line.
4. Repeat this step again so you have 2.5-cm (1-in) rigid section of paper.
5. Fold the corners away from you back to the center line on the other side then the folds.
6. Fold the plane in half to create wings and fold over the top edge to create speed.

VIDEO DEMO: <https://youtu.be/r7AypWhe0Zg>



3

2

1

6

COMMANDO

COMMANDO

4

8

5

7

EXPLORE
CORE



1

2

8

8

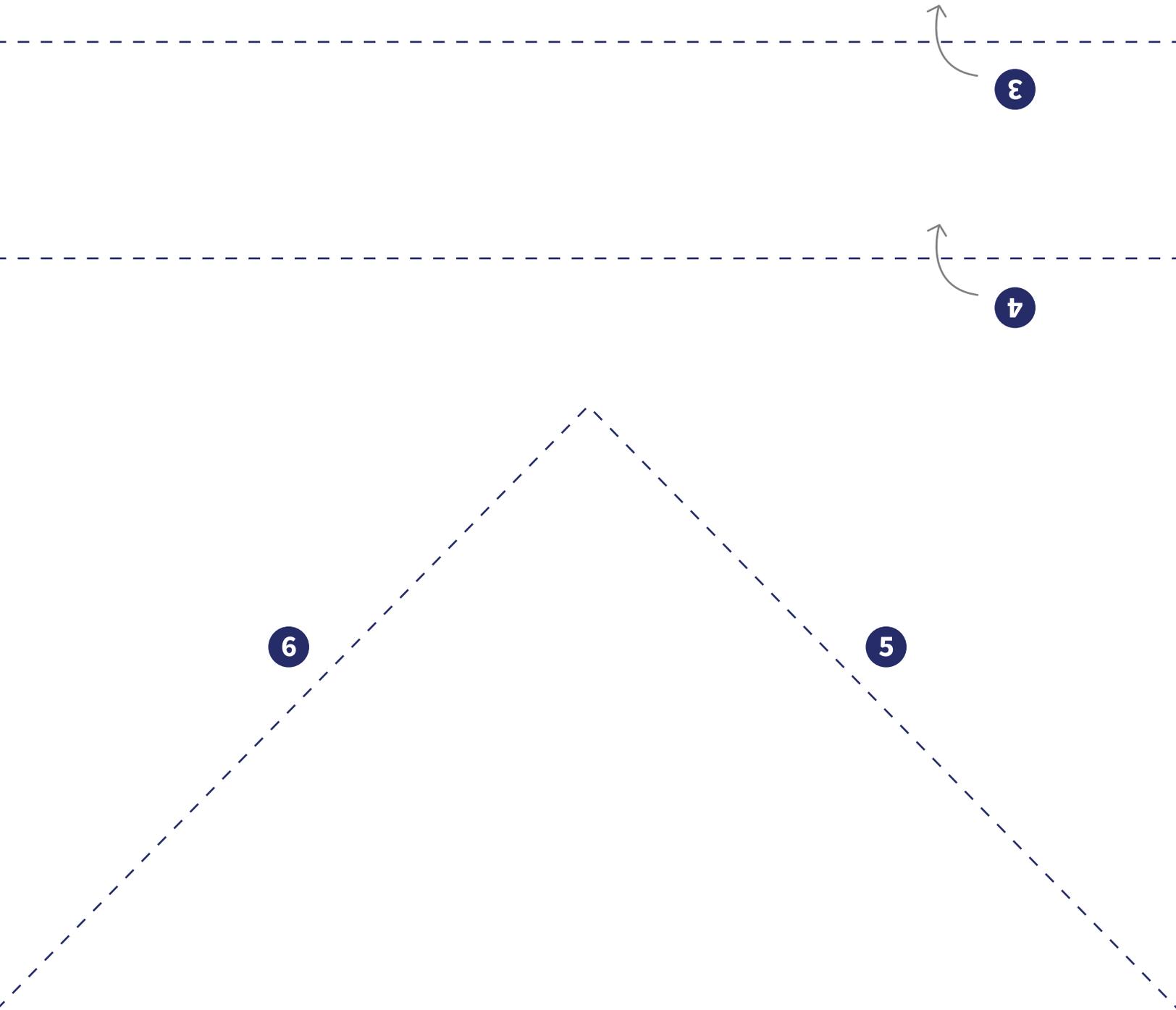
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THE
GLIDER



THE GLIDER