



## BUILDERS BONANZA

### Lesson: Paper Airplanes

**CURRICULUM REFERENCE:** Movement, Air and Water in the Environment

#### 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. What is the purpose of an airplane?
2. What were some of the challenges in designing and making your plane?
3. Based on what happened after you tested your plane, what might you change about it?

#### LEARNING OUTCOMES

- Investigate, through experimentation, the characteristics of air (e.g., air takes up space, has mass) and its uses (e.g., living things breathe air to stay alive; air makes certain activities possible: helps keep a kite flying and a sailboat moving).
- Identify air as a gaseous substance that surrounds us and whose movement we feel as wind.
- Assess the impact on society and the environment of simple machines that allow movement.



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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

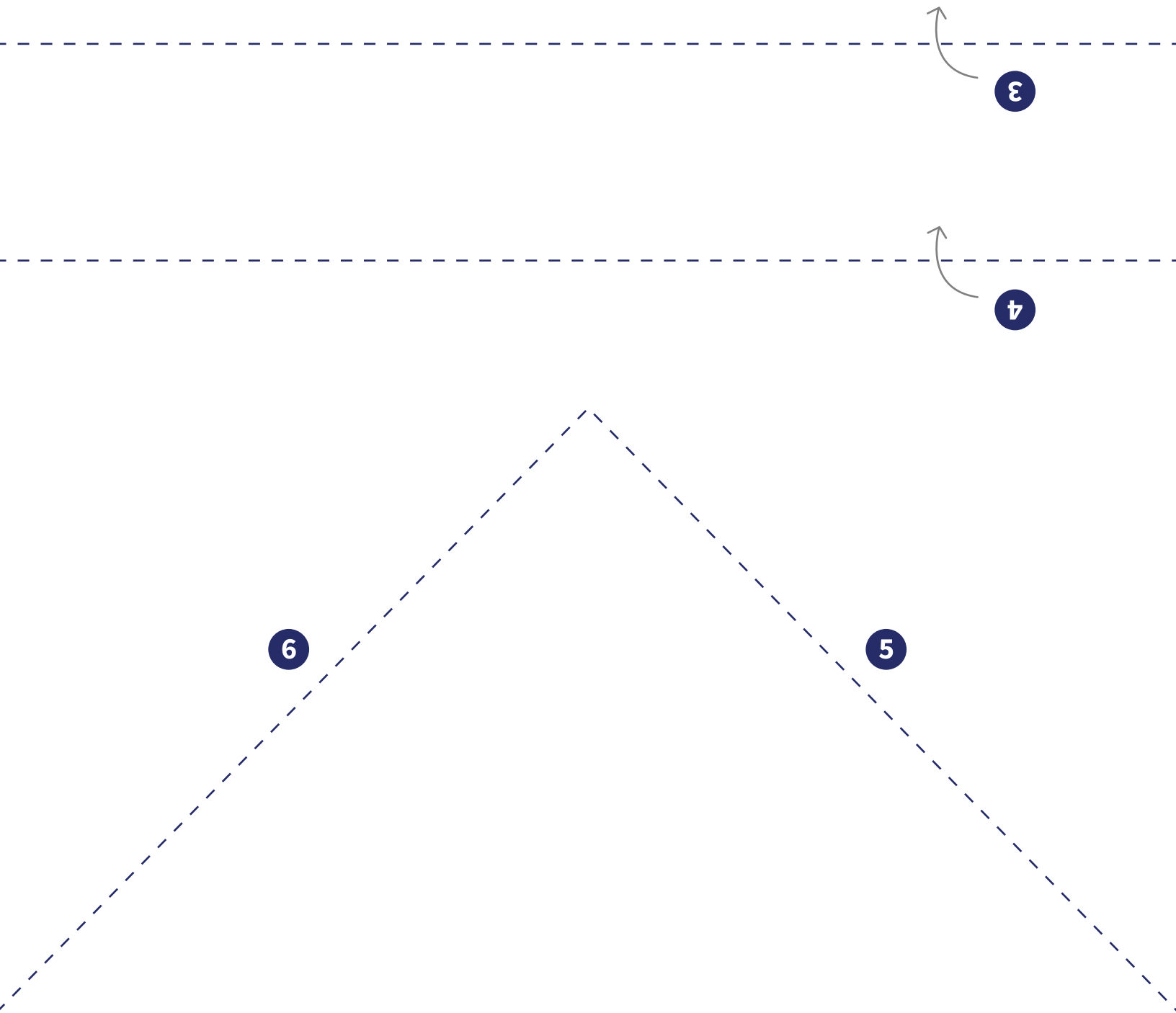
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THE  
GLIDER



# THE GLIDER