

# Four Forces of Flight



Read the passage. Then answer the questions in full sentences.

Name \_\_\_\_\_ Date \_\_\_\_\_

Four forces act on an airplane while it flies: weight, lift, drag and thrust. A force is a push or a pull in one direction.

Weight pulls the airplane down, toward the center of the Earth. To beat its weight, an airplane needs lift, a force that pushes it up. The airplane makes lift by moving through the air, and most of its lift comes from the wings.

The air pushes back against anything that moves through it. That push is called drag, and it slows the airplane down. To beat drag, an airplane needs thrust, a force that pushes it forward. An airplane's engines give it thrust.

The engines do not lift an airplane; the wings do. That is why a glider can fly with no engine at all. A paper airplane is a glider. Your throw gets it moving, so that its wings can make lift.

1. What are the four forces that act on an airplane while it flies?

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2. Which part of an airplane makes most of its lift?

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3. Why can a glider fly with no engine?

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4. You tape a paper clip to your paper airplane. Which of the four forces gets bigger? What do you think will happen when you fly it?

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# Answer key

## Four Forces of Flight

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1. What are the four forces that act on an airplane while it flies?  
**Weight, lift, drag and thrust.**
2. Which part of an airplane makes most of its lift?  
**The wings.**
3. Why can a glider fly with no engine?  
**The wings, not the engines, lift an airplane. A glider only needs a push to get it moving.**
4. You tape a paper clip to your paper airplane. Which of the four forces gets bigger? What do you think will happen when you fly it?  
**Sample answer: its weight, because the plane now carries more. Fly it and see: with too much weight, a paper airplane drops to the ground instead of gliding.**