MADE WITH LITTLE STORYBOOK

How Rockets Fly: Push, Burn, and Go

Visual lesson



The Wild Balloon

Blow up a balloon, let it go, and it zips across the room in a wild loop. You didn't push it forward, the air shooting out the back did. That tiny chaotic balloon is doing the same thing a rocket does.





Inside the Engine

A rocket carries fuel and an oxidizer, a chemical that lets fuel burn even with no air. They mix in a combustion chamber and burn explosively, making super-hot gas. That gas has only one way out: a narrow nozzle at the bottom.

TALK ABOUT IT

Which way will the hot gas blast out?

Gas Down, Rocket Up

The gas blasts out downward at incredible speed. Because of Newton's Third Law, every push has an equal push back. Burning gas goes down, rocket goes up. That is the whole engine.

TALK ABOUT IT

Find what is moving downward in the picture.





No Air Needed

Many people think rockets push against the air to climb. But rockets work perfectly in space where there is zero air. Sit in a rolling chair and throw a heavy book forward, you roll backward. Just two things pushing apart.

> TALK ABOUT IT
> A rocket needs air to push against to fly.

A Flying Fuel Tank

Here is the wow fact: a rocket at launch is about 90 percent fuel by weight. Engineers build a flying fuel tank that burns itself lighter every second. Next launch you see, say it out loud: gas goes down, rocket goes up.



Check your wonder

1 **What actually pushes a rocket upward?**

- A. Hot gas blasting downward
- B. The rocket pushing against the air
- C. Wind from the sky

2 **Why does a rocket carry an oxidizer?**

- A. So fuel can burn where there is no air
- B. To make the rocket heavier
- C. To cool the engine down

3 **About how much of a rocket at launch is fuel?**

- A. About 90 percent
- B. About 10 percent

ANSWERS 1-A 2-A 3-A

1. Yes! Gas goes down, rocket goes up. 2. Right! Oxidizer lets the fuel burn even in space. 3. Wow yes, a rocket is basically a flying fuel tank!

THE END

Visual lesson

Put your child in this story

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LITTLE STORYBOOK

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