



How Do Rockets Leave Earth?

An Ethan & Oliver "Stop & Learn" Printable Day 9 at Kennedy Space Center

From the Book:

What Stopped Everyone Cold The boys stood beneath the Saturn V rocket and simply looked up. It stretched the full length of the building...taller than a 30-story building laid on its side.

"That thing went to the moon?" Ethan whispered.

"Yes," Dad said. "And it carried people."

"Real people," Oliver said.

"Real people. With families. And fears. And a job to do."

What Does It Take to Reach the Moon?

Fact

Number

Distance to the Moon

~239,000 miles

Saturn V height

363 feet

Saturn V weight at launch

6.2 million pounds

Fuel burned in first 2.5 minutes

4.4 million pounds

Time to reach the Moon

~3 days

The Four Forces of Flight

In Space On Earth, a plane needs wings to create lift.

In space there is no air, so rockets work differently.

Newton's Third Law: For every action, there is an equal and opposite reaction.

 Rocket fuel burns


↓


 Hot gases shoot DOWNWARD at enormous speed

↓

 Equal force pushes rocket UPWARD

↓

 Rocket leaves Earth

 The rocket doesn't push against the ground. It pushes against its own exhaust.

🌍 The Moon Rock Near the back of the exhibit sat a small gray rock behind glass.

Oliver leaned close until his breath fogged it.

"It looks like any other rock."

"That's what makes it remarkable," Ethan said slowly. "It's not trying to look like anything.

It just is what it is."

Oliver said: "So even if some people don't believe it happened, this rock is still from the moon."

Dad: "Evidence doesn't need our permission to be true."

🌳 What Is a Moon Tree?

The seeds that grew into the Moon Tree at Kennedy Space Center traveled to the moon on Apollo 14 and came back to Earth.

They were planted across America. They look like ordinary trees. But they have been to the moon.

"Exploration doesn't just change where we go," Mom said. "It changes what we bring back."

Notebooking Prompt

PLAN: Draw Newton's Third Law in action – rocket pointing up, exhaust pointing down, arrows showing direction of force.

BRIEF: If the Saturn V weighed 6.2 million pounds at launch, how much thrust did it need to leave the ground?

EXECUTE: Draw the curve of the Earth from space – the way the simulator showed it.

Blue, white, fragile against the black.

DEBRIEF: Mom said truth stands whether people accept it or not. What is one thing you know is true even if some people disagree?

Faith Connection "The heavens declare the glory of God; the skies proclaim the work of His hands." – Psalm 19:1



Exploring space didn't make God smaller. Every star mapped, every orbit calculated, every moon rock brought home is another way of reading what He wrote. The universe invites exploration because the God who made it made minds capable of wondering.

Parent Tip

Younger kids → the balloon rocket experiment: blow up a balloon, hold the end closed, let go. Watch it shoot across the room. That's Newton's Third Law.

Older kids → research the difference between chemical propulsion (Saturn V) and ion propulsion (newer spacecraft). Why does deep space travel need something different?

Critical thinking tie-in: Mom's flat earth conversation. Ask your kids: How do we know something is true? What counts as evidence?

 Ethan & Oliver Mission  Find one thing at Kennedy Space Center that existed before you were born and still matters today. Write what it is and why it still matters.