🚀 Science in the Movies: October Sky (1999)

Grade Level: 7–10
Topics: Physics · Engineering Design · Perseverance · Scientific Inquiry
Scene: Homer and his friends successfully launch their first homemade rocket.
Approx. Timestamp: 01:25:00–01:28:00

🌱 Before You Watch

Think–Pair–Share:

1. What does it take to build something that can fly?
2. What forces are involved in a rocket launch?
3. How can curiosity lead to scientific discovery?

💭 Prediction Time!

What challenges do you think the boys will face when testing their rocket designs?

🧪 A. Science Connections

1. What scientific principles make a rocket lift off the ground?
2. How does Newton's Third Law ("For every action, there is an equal and opposite reaction") apply to rocket motion?
3. What materials and safety measures were important for the boys' experiments?
4. How does trial and error play a role in their success?

📊 B. Data & Analysis

1. If the rocket travels upward at **60 m/s** for **4 seconds** before its engine burns out, how high will it go before gravity slows it to a stop? *(Ignore air resistance.)*
2. What variables could the boys change to improve flight height and stability?
3. What would happen if the mass of the rocket doubled but the thrust stayed the same? Explain your reasoning.

🌎 C. Real-World Connection

1. How did Homer Hickam's real-life story influence future scientists and engineers?
2. How do modern rocket scientists test and refine their designs today?
3. Research one NASA or SpaceX innovation inspired by experimentation and persistence.

💡 D. Reflection

- What does *October Sky* teach us about perseverance and curiosity in science?
- Why is failure an important part of the engineering design process?
- ✨ *Complete:* "Science helps us reach new heights by..."

📺 Did You Know?

The movie is based on the true story of **Homer Hickam**, a coal miner's son who taught himself rocketry and became a NASA engineer.
His experiments followed the **engineering design process** — *Ask, Imagine, Plan, Create,* and *Improve* — long before it became part of STEM education.

💭 *"A rocket won't fly unless someone lights the fuse." – Homer Hickam*

🎯 Extension (Optional)

Design your own **Mini Rocket Experiment!**
Draw or describe a small rocket using classroom-safe materials (like paper, straws, or baking soda).
Label each part, explain what makes it move, and describe how you would measure its height or speed.
