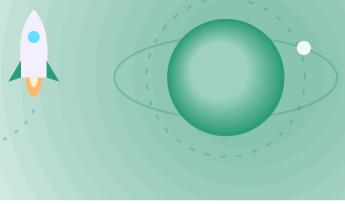
LESSON E-01 · ELEMENTARY LESSONS (K–5)

Push & Pull

ELEMENTARY (K–5)



Name _____ Date _____ Class / Period _____

Let's launch a rocket!

A rocket's engine pushes it up. Gravity pulls it down. When the push is bigger than the pull, the rocket climbs. Today you will see what a bigger push does.

Mission goal: find out which push sends the rocket higher.

Standards practiced: 3-PS2-1 · Words to know: force, push, height, throttle

1 LOOK

OBSERVE BEFORE YOU TOUCH A CONTROL

Which push goes higher?

- Look at the rocket on the launch pad. Its engine is at the bottom.
- The rocket's weight pulls it down with _____ newtons. A big push (full throttle) is _____ newtons. A small push (half throttle) is _____ newtons.

Write the numbers shown in the sim in the blanks above, then record what you notice:

2 PREDICT

COMMIT TO A HYPOTHESIS FIRST

Prediction 1. If we fly one rocket with a small push and one with a big push, which one goes higher?

Hint: The engine's push is called its throttle. Half throttle is a small push. Full throttle is a big push.

□ The small push (half throttle)

□ The big push (full throttle)

Because...

3 EXPERIMENT

CHANGE ONE VARIABLE AT A TIME

Step 1. Press **[Space]** to light the engine. Press **[Z]** for the big push (full throttle). Watch the rocket climb past 5 kilometres. Then press **[X]** to cut the engine.

Trial	What I changed	What I measured / saw	Matched my prediction?
1			Yes · No · Partly
2			Yes · No · Partly

3			Yes · No · Partly

4 EXPLAIN

CLAIM · EVIDENCE · REASONING

Claim — What did you find out? (answer the mission goal in one sentence)

Evidence — Which numbers or observations from the sim support your claim?

Reasoning — Which science idea connects your evidence to your claim?

Self-check: □ I made a prediction before experimenting □ I used numbers from the sim □ I explained *why*, not just *what*