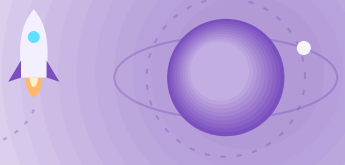
LESSON T1-02 · TIER 1 · ANATOMY, FORCE & STABILITY

# Rocket Anatomy Relay

MIDDLE SCHOOL (6–8)



Name _____ Date _____ Class / Period _____

## Meet your rocket

Every part of a rocket has a job. The engine pushes, the tank holds the fuel, the fins keep it straight and the parachute brings it home. The parts are joined together, and fuel can only flow through those joints.

**Mission goal: fly the rocket up past the marker height, then bring it back down safely.**

**Standards practiced:** MS-PS2-2 · Words to know: rocket-anatomy, attachment, resource-path, recovery

## 1 LOOK

OBSERVE BEFORE YOU TOUCH A CONTROL

### Step 1 · Follow the fuel

- Our rocket weighs _____ kg and carries _____ kg of fuel in one tank. The engine is joined right under the tank.
- The engine pushes with _____ N. The marker height is _____ kilometres above the ground.

### Step 2 · The order of the jobs

- You lit the engine and climbed past the marker. One job is left: getting the rocket back down in one piece.
- Look at the Staging box on the left. It lists the stages, and one of them says PARACHUTE.

**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.** Our rocket has a fuel tank, an engine, a parachute and fins. Which tank can feed the engine?

*Hint: Fuel only flows along parts that are joined together, like water along a pipe.*

□ Any tank on the rocket, wherever it is

□ Only a tank that is joined to the engine

**Because...**

**Prediction 2.** A flight has three jobs: light the engine, climb past the marker height, and open the parachute. In which order do they happen?

*Hint: Think about what the rocket needs first, and what it needs last when it comes back down.*

□ Open the parachute, climb past the marker, light the engine

□ Light the engine, climb past the marker, open the parachute

□ Climb past the marker, light the engine, open the parachute

**Because...**

## 3 EXPERIMENT

CHANGE ONE VARIABLE AT A TIME

**Step 1.** Press **[Space]** to light the engine and **[Z]** for full throttle. Climb past _____ kilometres. Watch the Rocket mass number: it drops as the engine burns fuel from the tank.

**Step 2.** Press **[X]** to cut the engine. Then press **[Space]** once or twice, until the parachute opens, and keep falling until you land.

| 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*