



Launch It KS3 duration: 30 minutes

How do rockets make it all the way into space? Discover the story of Yuri Gagarin, the first person to travel into space. With whizzes, bangs and rockets, this loud and exciting show investigates forces and explosions.

Key Words:

Forces. Space. Rocket science. Balanced and unbalanced forces. Gravity. Friction. Air resistance. Newton.

Learning objectives. Students will:

- Learn about the forces, gravity, air-resistance, friction and the principles of rocket motion
- Recognise that gravity pulls our mass towards the center of Earth resulting in a downward force
- Understand an object will only change its current speed and direction unless an external force acts on it (Newton's first law)
- Observe that for every reaction there is an equal and opposite reaction (Newton's third law)
- Observe that friction results in heat which can be observed through an infrared camera
- Recognise that in a rocket, there must be sufficient thrust to overcome the force of Earth's gravity
- Appreciate the significance of the first human being in space

Content. Students will:

- Discover the story of Yuri Gagarin, the first person to travel into space
- Investigate the force of gravity with a force plate and high-speed camera
- Observe air resistance demonstrated with a wind turbine and smoke machine
- Explore friction using an Infrared camera
- Have the opportunity to volunteer for many activities, including standing on the force plate, being a test pilot in a purple truck and launching a vitamin C rocket
- See a hydrogen balloon reaction with oxygen and release lots of energy
- Experience a hydrogen rocket launch
- Engage in discussion and volunteer answers to questions

Curriculum Links:

Physics: Forces

- Forces as pushes and pulls arising from the interaction between two objects
- Balanced and unbalanced forces, represented using force arrows
- Forces associated with friction between surfaces, resistance to motion of air and water
- Forces measured in Newtons
- Forces being needed to cause objects to stop or start moving, or to change their speed or direction of motion

Potential Hazards and accessibility

- Students are seated at a safe distance from the various loud bangs and explosions from a hydrogen rocket.
- Possible trip hazard for volunteers stepping onto the force plate.
- Some volunteer students will be pushed in small trucks.

Related activities

Planetarium Seasonal Stargazing, Exploring the Galaxy, We Are Aliens, Phantom of the Universe: The Hunt for Dark Matter

Exhibits Space Gallery