Year 5 – Spring 1 – The Truth is Out There

Mechanisms: Moon Buggies

In this unit, we will be examining the design features of the Lunar Rover vehicle. We will design our own moving vehicles with an axle and build in a motorised circuit to allow out vehicles to move. We will also look at simple pulley sustems.

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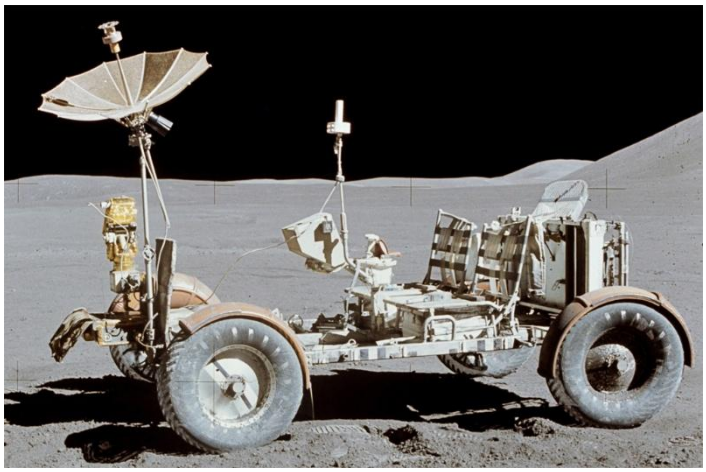
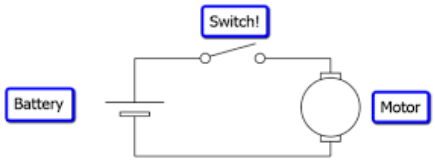
Key Questions

- What is the purpose of a moon buggy?
- What are the key features of a moon buggy?
- How can I create a motorised circuit?
- How can I design a structure including a functioning wheel and axle system?
- How does a pulley work?
- Who was Eduardo San Juan and what did he contribute to the development of the Lunar Rover?



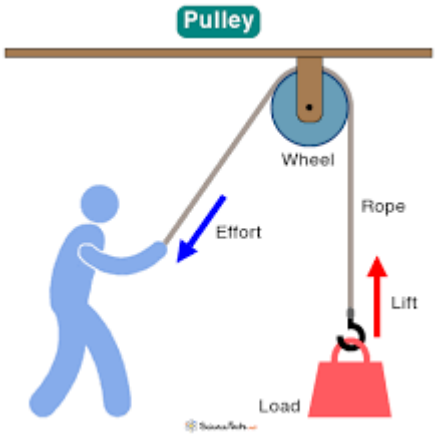
Key Vocabulary	
axle	A rod or spindle passing through the centre of a wheel
battery	A container in which chemical energy is converted to electricity
chassis	The base frame of a car or other wheeled vehicle
circuit	A complete circular path that electricity flows through
design brief	A document that sets out the details of a design project.
lunar rover/moon buggy	A vehicle designed for astronauts to use on the moon's surface
mechanism	A system of parts working together in a machine
motor	A machine powered by electricity that supplies motive power



Creating a simple circuit

In order for the vehicle to move, you will need to construct a simple circuit using a motor, battery and a switch. This can then be attached to your vehicle with the motor linked to the axle.

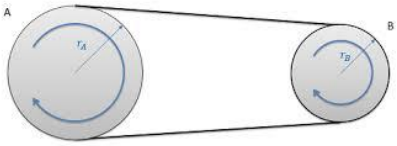
A Pulley



A pulley is a simple machine that helps move things up, down, or across by using a rope or a belt. It has a wheel with a groove around it, and the rope or belt runs through this groove. When you pull on the rope, the wheel turns, and this makes the thing you want to move go up or across.

Imagine you are lifting a bucket of water from a well. You attach the bucket to a rope that runs through a pulley at the top of the well. When you pull the rope, the pulley helps lift the bucket up with less effort than if you tried to lift it by hand.

So, in simple terms, a pulley helps you move things more easily by changing the direction of the force you use to pull!



Eduardo San Juan

Eduardo San Juan was a Filipino engineer who played a key role in the development of the Lunar Roving Vehicle (LRV), often referred to as the "moon buggy." Working for NASA in the 1960s and 70s, San Juan contributed to designing the LRV used during the Apollo missions. His innovative design allowed astronauts to travel across the lunar surface, covering more ground and conducting more experiments. The LRV was lightweight, electrically powered, and equipped with special wheels to handle the moon's rough terrain. San Juan's work was vital in making the lunar exploration more effective and efficient.

Home Learning Suggestions

1. **Create a Model of a Spacecraft or Rover:** design and build a simple model of a spacecraft or rover using materials you have at home. Research the features of real spacecraft or rovers, like the Mars Rover or the Lunar Module, and incorporate them into your models.
2. **Space Technology Timeline Project:** research key milestones in space exploration, such as the first moon landing, the development of the Hubble Space Telescope, or the launch of the Mars rovers. Create a timeline highlighting these events and explaining how the technology used in each contributed to our understanding of space.