

YEAR 5 DESIGN AND TECHNOLOGY

Week beginning 11th May

(I'm setting this as a project over 2 weeks, as you might need to save your recycling from the first week to get the materials you need!)

L.O.: I can understand the key features of a lunar rover and create my own.

This week, we are going to be learning about 'Lunar Rovers', or you might know them as moon buggies!

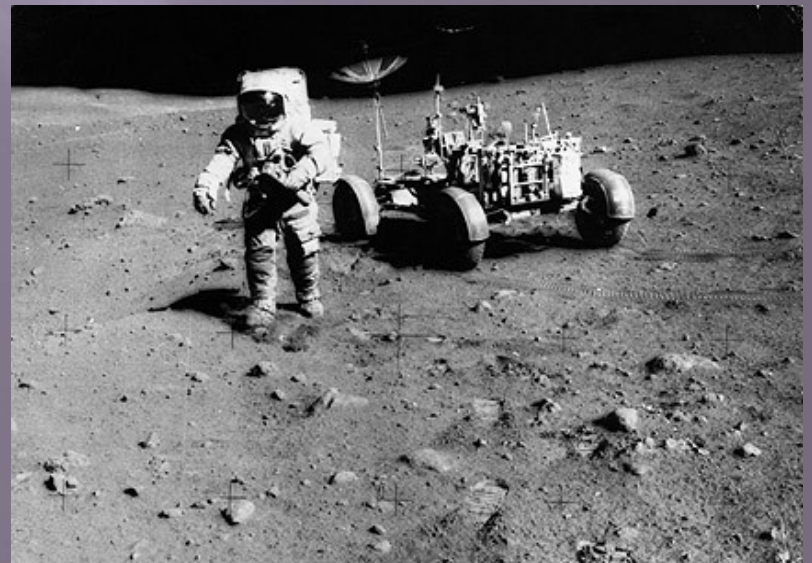
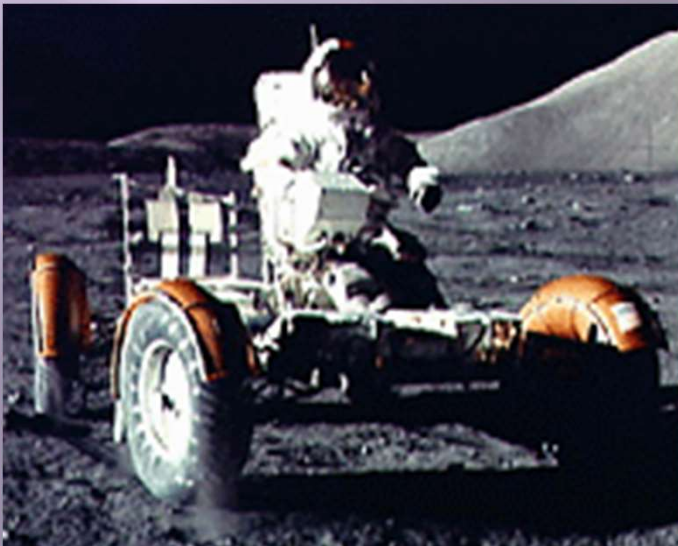
They were designed to help Astronauts explore further on the moon. Think about why they would need a vehicle rather than walking...

- Astronauts can't walk very far in their bulky spacesuits.
- The surface of the moon is dusty and rocky so difficult to walk on.

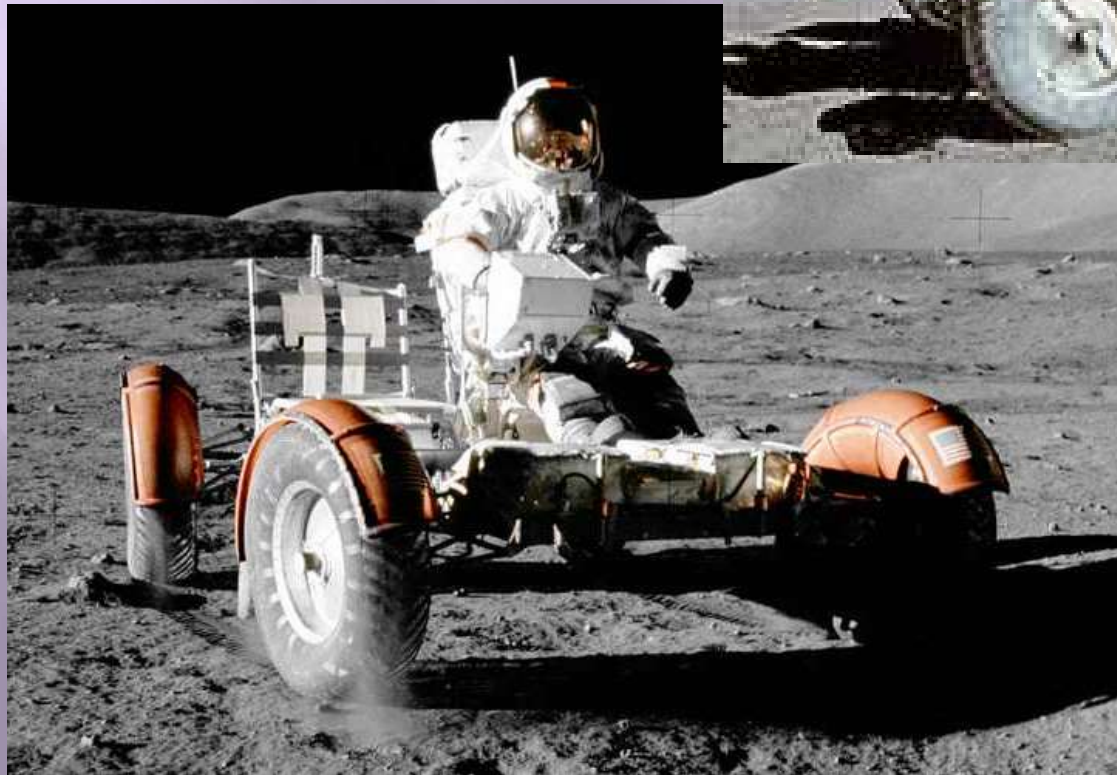
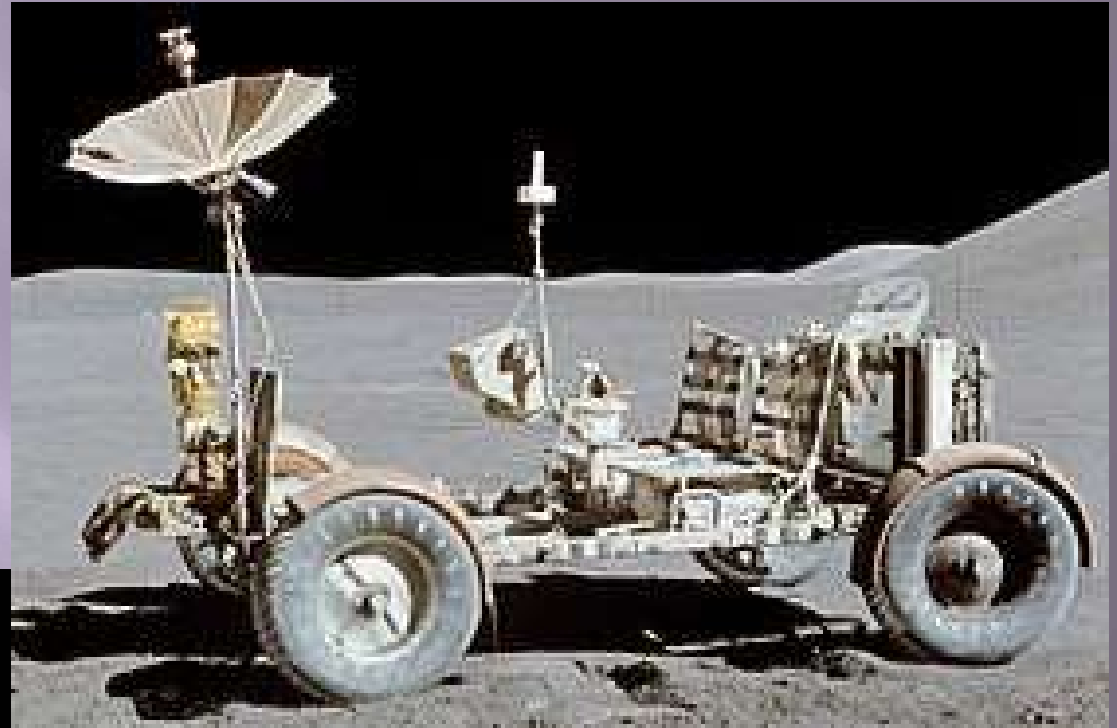
Three Lunar Rovers have been taken to the moon and left there!

The Lunar Rover uses the sun to help it navigate where to go.

• Watch this 2 minute video to find out more about the design of real lunar rovers! <https://youtu.be/zsftnWljYnA>



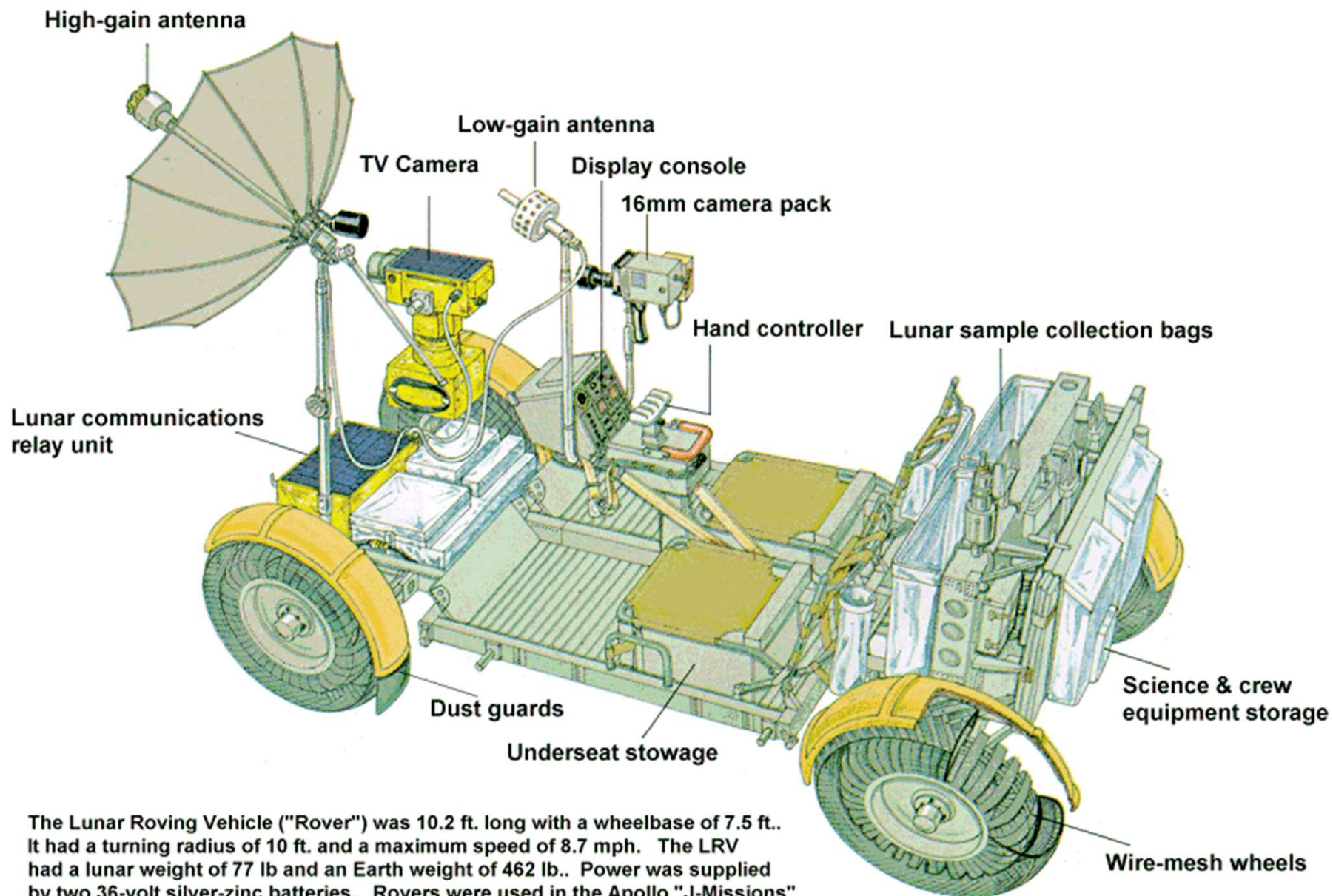
Look at these images of Lunar Rovers. What features do they have that make them suitable for their purpose of driving across rocky, dusty and uneven surface of the moon?



What features do they have that makes them suitable for taking into space on a rocket?

Features of a Lunar Rover

- The Lunar Rover was specially designed to travel in low gravity on the soft surface on the moon- it was tested on sand!
- 4 rovers were built altogether – costing \$38 million!
- It was designed to carry two astronauts, equipment and moon rock samples.
- A Lunar Rover is 3 metres long and 1 metre high.
- It is powered by two 36V batteries.
- The Lunar Rover was designed to travel at 8 miles per hour, but the astronauts raced it to 11mph on it's last journey!
- It was folded up to fit in to the rocket which took it to the moon.
- It has a colour video camera to record.
- It has a large dish antenna to send pictures back to Earth. The buggy can also be controlled by NASA Mission Control.
- It is steered by pulling a handle forward, back, left and right.



The Lunar Roving Vehicle ("Rover") was 10.2 ft. long with a wheelbase of 7.5 ft.. It had a turning radius of 10 ft. and a maximum speed of 8.7 mph. The LRV had a lunar weight of 77 lb and an Earth weight of 462 lb.. Power was supplied by two 36-volt silver-zinc batteries. Rovers were used in the Apollo "J-Missions" (15, 16 and 17) to greatly extend the lunar surface area explorable by the astronauts.

Lunar Rovers in the Future

NASA are planning to send a team of astronauts to the moon again in 2024! They have promised the team will include at least one female, who will become the first woman to go to the moon. The crew will set up a base that can be travelled to again and again!

NASA are currently testing a new Lunar Rover to be used on the Artemis mission. The prototype they have built is pictured below.



Your task is to design a Lunar Rover suitable for exploring the moon. Look at the next page for more information. Who knows – maybe your design will be chosen by NASA and make it to the moon!!
(I'm setting this as a project over 2 weeks, as you might need to save your recycling from the first week to get the materials you need!)

Design a Lunar Rover

Ideally, build your Lunar Rover out of items you have at home. **Recycled items would be great**, but you might want to add in some Lego, K'nex or similar. Also do a quick sketch and label its features. Most of you should be able to find an old egg box, milk bottle, cardboard, bottle tops etc in your recycling, but if you really don't have anything to build it out of then you can draw a detailed picture of your design and label its features.

Success criteria for your Lunar Rover design. It must:

- ✓ have at least 4 wheels
- ✓ have at least 2 seats
- ✓ have space for storing equipment
- ✓ have at least 2 antennae
- ✓ have some sort of steering mechanism (steering wheel, handles etc)
- ✓ be sturdy enough to travel over something bumpy (maybe set up your own 'moon surface' using a towel laid over different items)

Good luck! Don't forget to send me photos of your finished rovers and designs! admin@fleet.camden.sch.uk