



Rovers to Sink Your Teeth Into!



What is a mars/moon rover?

A **rover** is a space exploration vehicle designed to move across the surface of a planet or other astronomical body.

What makes up a rover?

Subsystems that work together to help the rover achieve its mission!

Body: A structure that protects the rovers' "vital organs". Like a car body, the rover body is a strong, outer layer that protects the rover's computer, electronics, and batteries

Brains: Computers to process information. The communication interface that enables the main computer to exchange data with the rover's instruments and sensors is called a "bus".

Neck and Head: A mast for the cameras to give the rovers a human-scale view. Essentially, the mast assembly enables the rover to see in the distance. The higher one stands, the more one can see.

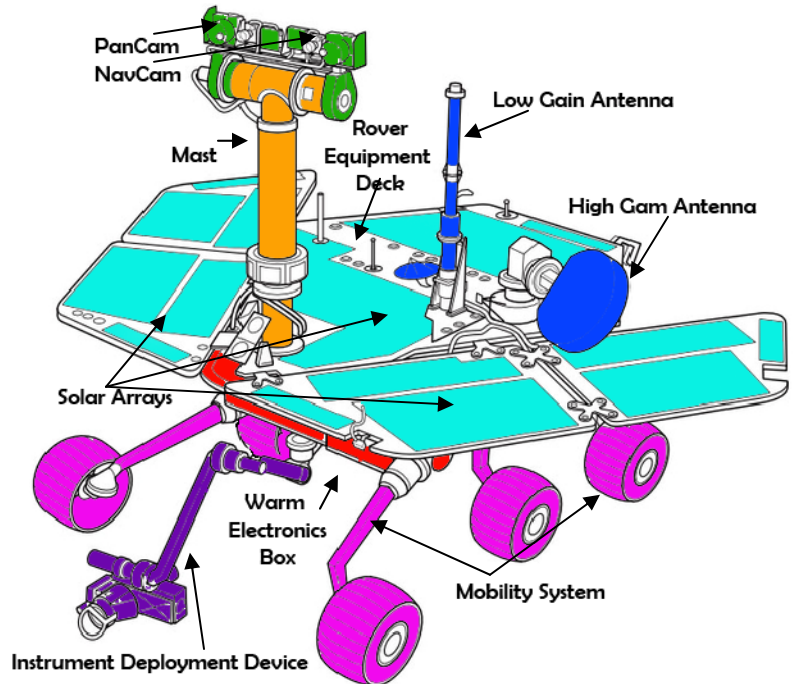
Eyes: Cameras and instruments that give the rovers information about their environment. Panoramic cameras show the details of rocks, terrain, and even color. Navigational cameras allow the rover to see where it is going. Mounted on the neck, these cameras provide information to the scientists on Earth; allowing them to see what the rover is seeing!

Arm: A way to extend its reach. Much like a human arm, rovers use these robotic instruments to investigate and grasp objects.

Wheels and Legs: Parts for mobility. How does your rover move? Rovers are usually outfitted with several wheels than can handle rough terrain.

Energy: batteries and solar panels. The rover needs power in order to run. The main source of power for each rover comes from a multi-panel solar array. They look almost like "wings," but their purpose is to provide energy, not fly. Batteries are also used to store and provide power when the rover is in the dark.

Communications: antennas for "speaking" and "listening". The rover has a low-gain and a high-gain antenna. The low-gain antenna is omnidirectional (which means it send or receives signals equally in all directions), and transmits data at a low rate to Deep Space Network (DSN) antennas on Earth. The high-gain antenna is directional and steerable, and can transmit data to Earth at a higher rate.



Body

Brains (internal)

Head and Neck

Eyes

Arm

Wheels and Legs

Energy

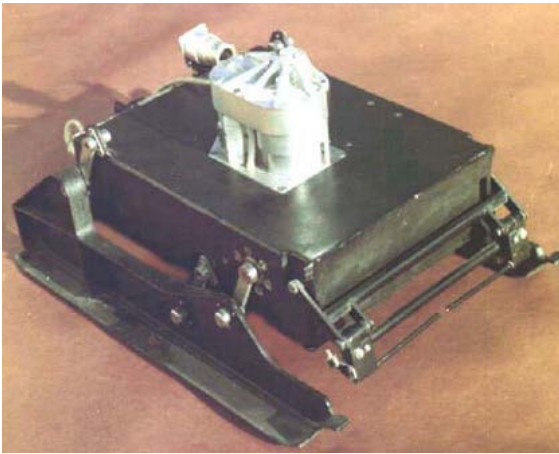
Communications

* See back for pictures of different rovers

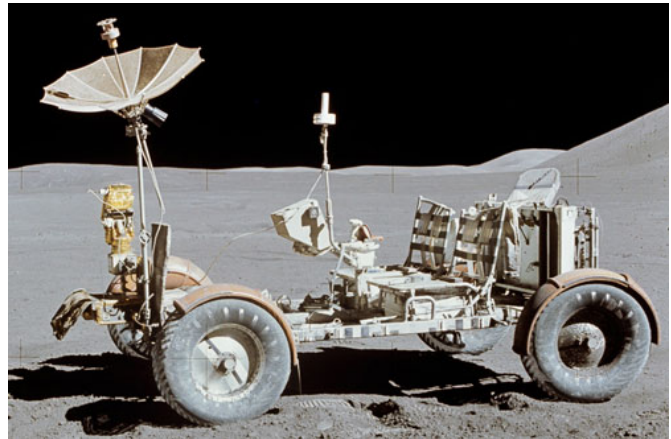
Ideas for building your rover

Rover part	Solar panels/body	Arms	Wheels	Communication Dish
Edible Part	Graham crackers	Licorice	Circular candy	Marshmallows

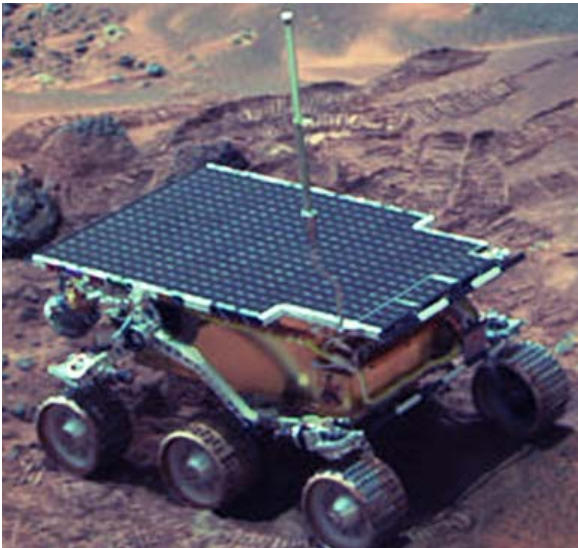
Use frosting to hold it together



Mars 2 and 3



Apollo Lunar Roving Vehicles



Sojourner



Spirit and Opportunity



Curiosity

Thank you NASA for information on the Mars Rover