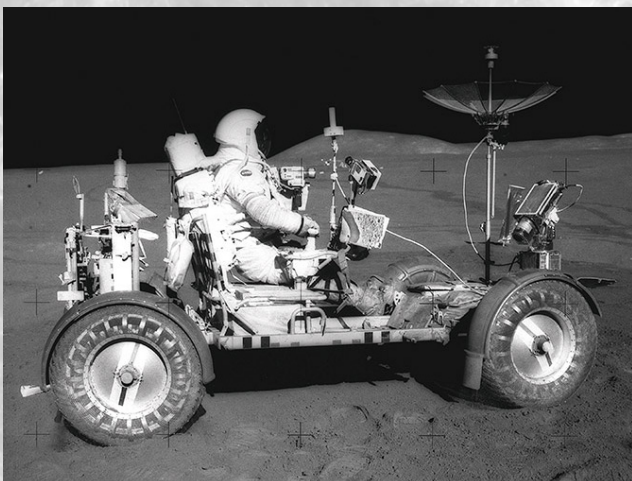


Let's Go for a Ride!



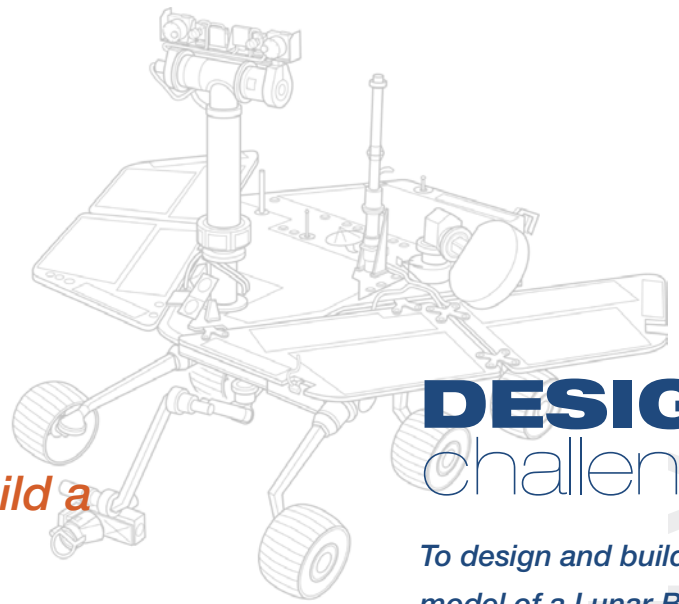
During the first set of activities, you have spent some time thinking about how to get to the Moon. Now you need to think about landing on the Moon, and how to deliver cargo to the Moon. Astronauts will need a mode of transportation in order to investigate different areas of the Moon. During the Apollo missions, astronauts drove a Lunar Buggy several kilometers away from their spacecraft. Today you get to be the engineers designing a new Lunar Buggy that can perform functions the Apollo Lunar Buggy could not. Your challenge is to build a model of a Lunar Buggy that astronauts will eventually use to carry astronauts and cargo on the Moon.



THE CHALLENGE:

Each team must design and build a Lunar Buggy with the following constraints:

- 1. The Lunar Buggy must carry one plastic egg snugly. The egg may not be taped or glued into place. (The egg represents the cargo hold.)*
- 2. The Lunar Buggy must be able to roll with the cargo hold carrying 10 pennies (or washers).*
- 3. The Lunar Buggy must have room for two “astronauts”. You may use plastic people provided to you or make your own. Your astronauts may not be taped or glued into place.*
- 4. The Lunar Buggy must roll on its own down a ramp for a distance of approximately 100 cm in a straight line beyond the ramp.*
- 5. The Lunar Buggy must be able to hold cargo and astronauts must stay in place and in tact as the Buggy rolls down the ramp.*



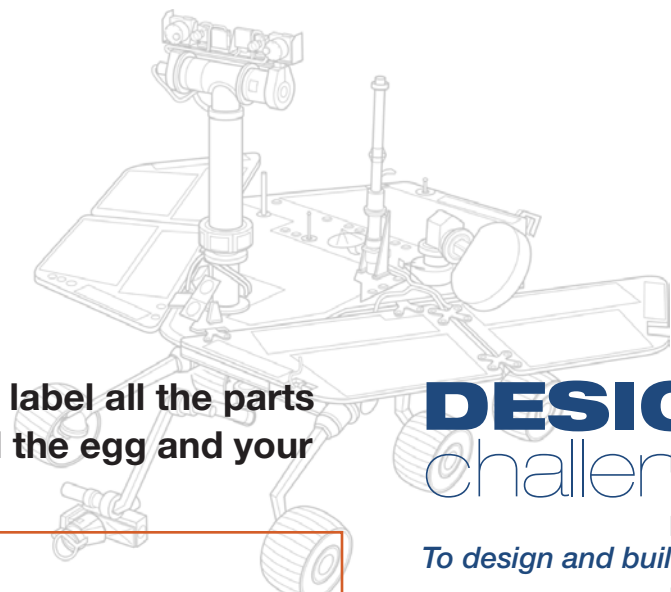
DESIGN challenge

To design and build a model of a Lunar Buggy that will carry equipment and astronauts on the surface of the Moon as well as determine the best slope of ramp for the rover to travel the farthest distance.

Design a
Lunar Buggy
Student page

ASK IMAGINE & PLAN

What questions do you have about today's challenge?



Draw your Lunar Buggy. Make sure to label all the parts of your Buggy, including what will hold the egg and your astronauts in place.

DESIGN challenge

To design and build a model of a Lunar Buggy that will carry equipment and astronauts on the surface of the Moon as well as determine the best slope of ramp for the rover to travel the farthest distance.



Design a Lunar Buggy
Student page

Approved by: _____

Experiment & Record



1. Use a digital scale to measure the mass of 10 pennies (or whatever else you use as cargo) and record it here:

2. Test your Lunar Buggy on three different styles of the landing ramp, adjusting the height of the ramp (from the floor) each time. Measure the distance the Buggy travels down the ramp with that cargo mass.

Lunar Buggy Distance Data Table

Trial	Ramp Height (cm)	Distance Travelled (cm)
1		
2		
3		

3. Now try using a different cargo mass to see if your Lunar Buggy can travel even farther.

Cargo Mass = _____

How far did your Lunar Buggy travel with the above mass? _____

4. Draw the ramp design that worked best for your Buggy, making sure to label the height and length of the ramp in centimeters:



DESIGN challenge

To design and build a model of a Lunar Buggy that will carry equipment and astronauts on the surface of the Moon as well as determine the best slope of ramp for the rover to travel the farthest distance.

Design a
Lunar Buggy
Student page

