

Unit 2 Overview

This unit comprises three related sections. The underlying concept is: safely landing a rover on the Moon.

Activity 5: Build the Lunar Transporter Rover. Determine the slope of the ramp that optimizes the distance the rover can roll on its own (slope constraint, affects Landing Pod design). The rover must hold a plastic egg, and there must be places for two plastic people to also be inside the rover.

Activity 6: Build the Landing Pod into which the rover will fit. The combined mass of the rover + pod must be no more than 300 grams (mass constraint). Test the Landing Pod to ensure that it will open after the landing.

Activity 7: The teacher/facilitator will formally “launch” the Landing Pods with the Lunar Transporter Rovers inside. The students must demonstrate that they can open their Landing Pod, that the egg has not popped open, and that the Lunar Transporter Rover can safely roll down a ramp from the Landing Pod on its own. The students have a chance to IMPROVE the design if necessary. The SUMMARY worksheets are filled out on this day.

Set the Context: The Story

Let's Go For A Ride!

Over the past weeks, we have spent some time thinking about how to get to the Moon. Now we need to think about landing on the Moon, and what we are going to do once we get there. NASA has two very famous rovers on Mars already. They're names are ***Spirit*** and ***Opportunity***. They landed on Mars in a very interesting fashion: they fell out of the Martian sky and bounced on the surface until they came to a stop! How did they do that? They were inside a landing pod made of...AIR BAGS! (Here's a good place to show the movie about the Entry, Decent and Landing of the Mars Exploration Rovers, called “Six Minutes of Terror.”) Wasn't that a clever idea?

Now it's your turn! Now your job over the next three weeks is to build a model of a Lunar Transporter Rover. The rover's job will be to carry people and cargo on the Moon. You also have to figure out a way to land your Lunar Transporter Rover safely on the surface by designing and building a Landing Pod. Once the landing is complete, you will open the Landing Pod, place your ramp in front of it, and roll your Lunar Transporter Rover down the ramp.

(The “landing” is simulated by the facilitator. Suggestions: toss it out of a second story window, or toss it across the classroom. Just be sure the students know ahead of time what they are designing for.)