

# Let's Go To The Moon



Did you know that no human has walked on the moon since the Apollo 17 mission in December 1972? Now is the time to send Joey Scouts/Cub Scouts to the moon but your stay will be much more than just the few days of the Apollo 17 mission.

## Space Fact

There is no air on the Moon. The temperature varies from minus 233 Celsius at night to +123 Celsius in the day. No atmosphere means no protection from the Sun's harsh radiation.

## Building our Rocket Space Craft

Every space mission to the Moon required a rocket that was reliable, efficient and above all safe. They were designed to create as little air resistance as possible. The most aerodynamically efficient shape is the teardrop that has a rounded nose that tapers as it moves backward, forming a narrow tail.

Will your rocket make it to the Moon?

Straw Rockets – as per NASA straw rocket design

## Space Fact

A rocket needs to reach a speed of at least 7.9 kilometres per second in order to reach space. This corresponds to more than 20 times the speed of sound.

## Launching our rescue beacon satellite

A violent space storm has damaged a critical piece of our communication equipment and we're unable to communicate with Mission Control. Our only hope is to build a rescue beacon satellite and launch into space.

- Essentially a balloon (not blown up) is filled with rice and tied off. A crepe firey tail is attached along with a piece of string as the launch mechanism.
- To launch the satellite into space the Cub Scout swings it around in a vertical circle and let's go.

Equipment

A balloon, sting, rice, a crepe tail, sticky tape, scissors

## Keo

Keo is the name of a proposed space time capsule which was to have been launched in 2003 carrying messages from the citizens of present Earth to humanity 50,000 years from now, when it would re-enter Earth's atmosphere.

As well as personal messages, Keo was planned to carry samples of air, sea water, earth and a diamond that encased a drop of human blood.

If you were able to place 5 items in the Keo time capsule, what would they be and why did you chose those particular items?

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_

## Space Fact

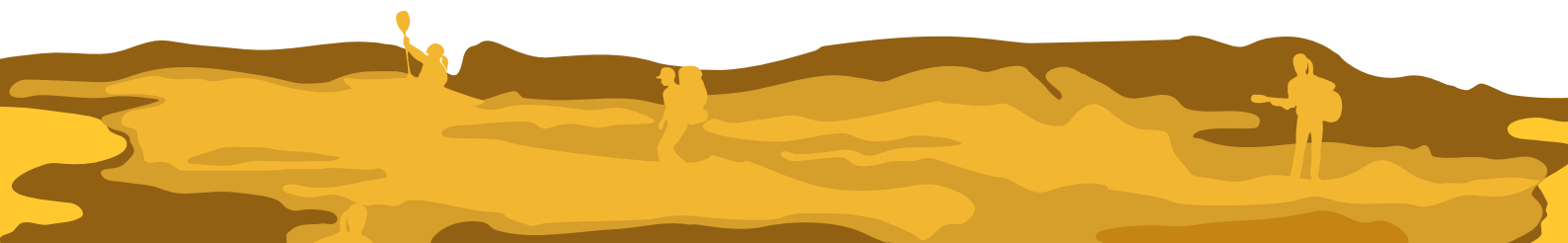
The distance from Earth to the Moon is 384, 400 kilometres. That's the equivalent of flying from Melbourne to Sydney and back 225 times!

## Communicating in Space

Can you talk in space? No, you cannot hear any sounds in near-empty regions of space. Sound travels through the vibration of atoms and molecules in a medium such as air or water. In space, where there is no air, sound has no way to travel.

Because your communication system has broken down you need to build a telephone system with what you have on hand.

Will this telephone system work in space?



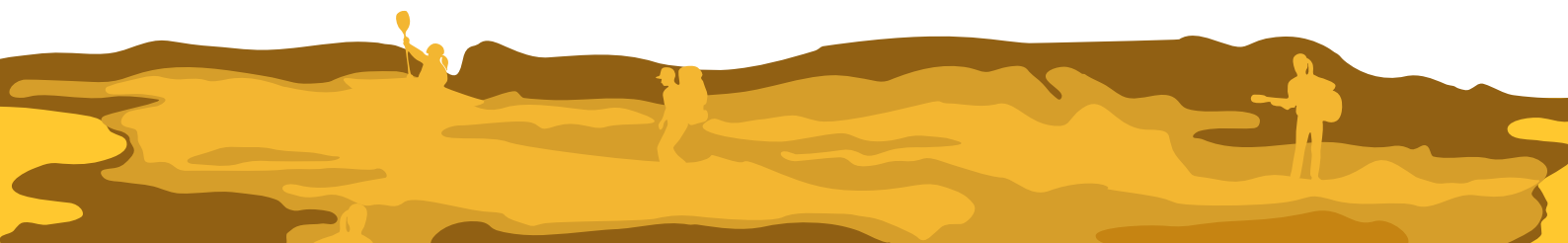
## Build a tin can telephone system

Equipment: 2 clean empty cans, hammer, nail, a good length of string

1. Wash the two empty cans and dry.
2. With the help of an adult, hammer a small hole through the middle base of each can using the nail.
3. Insert one end of the string through one of the nail holes and tie off so that the knot is inside the can.
4. Do the same with the other can so that both cans are now joined by the string.
5. To communicate with your fellow astronaut, place one tin can over your mouth. Have your fellow astronaut hold the other can over their ear making sure the string is tight but not too tight that it will break.
6. Talk away. Can the other astronaut hear your message?

### Space Fact

High tides and low tides are caused by the Moon. The Moon's gravitational pull generates something called the tidal force. The tidal force causes Earth and its water to bulge out on the side closest to the Moon and the side farthest from the Moon. These bulges of water are high tides.





K-12 Students

# Make a Straw Rocket

Create a paper rocket that can be launched from a soda straw – then, modify the design to make the rocket fly farther!

## Materials

- Pencil
- Scissors
- Tape
- Soda straw  
(plastic or reusable)
- Meter stick or  
measuring tape
- Rocket template and  
data log

### 1. Cut out and shape the rocket body

Cut out the rectangle. This will be the body tube of the rocket. Wrap the rectangle around a pencil length-wise and tape the rectangle so that it forms a tube.

### 2. Cut out and attach the fins

Cut out the two fin units. Align the bottom of the rectangle that extends between the fins with the end of the rocket body, and tape the fin to the body tube. Do the same thing for the other fin on the opposite side, making a “fin sandwich.”

### 3. Bend the fins

Bend the fins on each fin unit 90 degrees so that they are each at a right angle to each other. When you look along the back of the rocket, the fins should form a “+” mark.

### 4. Make and measure the nose cone

Twist the top of the body tube into a nose cone around the sharpened end of your pencil. Measure your nose cone from its base to its tip and record the length on the data log and on the rocket itself.

### 5. Prepare to launch!

Remove the pencil and replace it with a soda straw. Be sure your launch area is clear of people and hazards. Then, blow into the straw to launch your rocket! Record the distance the rocket travels on your data log.

