



Does the Moon Rotate?

Is there really a dark side of the Moon?

About the Activity

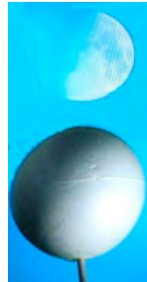
Make a 3 dimensional model of the Earth and Moon. Using the Sun's light, discover that the Moon does rotate, in the same amount of time it takes to make one orbit.

Topics Covered

- The rotation of the Moon
- Rotation and orbits

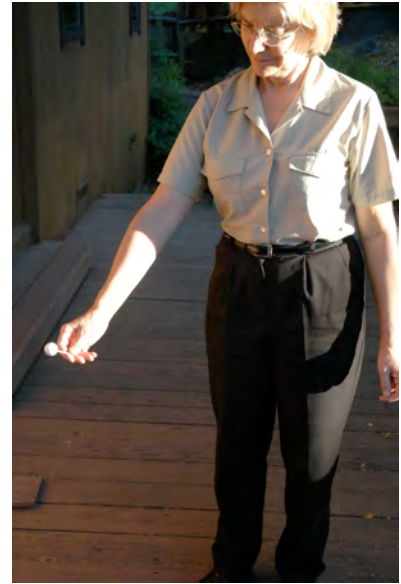
Participants

Use this activity with families, the general public, and school or youth groups ages 7 and up.



Location and Timing

This should be done outside while the Sun is shining. The best time is a few hours before sunset or after sunrise. It takes about 10 minutes.



Materials Needed

- "Moon balls" for your audience members. 1"-2" dylite balls work well. *See Helpful Hints for more information.*
- A few toothpicks
- Earth Globe **four times the diameter** of the Moon balls
- (Optional) Sticky note

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Detailed Activity Description

Does the Moon rotate?

Leader's Role	Participants' Role (Anticipated)
<u>Presentation tip:</u> This must be done outside in the daytime when the Sun is in the sky – the best time is within two hours of sunset or within two hours after sunrise.	
<u>To Say:</u> People sometimes wonder if the Moon rotates. To us on Earth, the Moon always has the same face pointed toward us. So the Moon might not seem to rotate. But to someone on the Moon, it certainly does – the Moon experiences day and night, but each day lasts about 14 Earth days, as does each night on the Moon. <u>To Do:</u> Put a person holding the Earth above their head in the center of a circle. Place a sticker on the Earth where you live. Another person is holding a Moon ball. Stick a toothpick in the side of the Moon ball facing the Earth. Everyone else stands outside the Moon's orbit.	
<u>To Ask:</u> Does Earth rotate? <u>To Do:</u> Have person in center slowly rotate the Earth. <u>To Say:</u> Watch the sticker – does it go into shadow, then into light as the Earth rotates? Does that place on Earth have day and night? Earth's rotation is why we have day and night. <u>To Do:</u> Put Moon person in orbit around Earth, always facing the toothpick toward Earth. <u>To Say:</u> Everyone else watch the toothpick sticking out of the Moon. Imagine you are standing where the toothpick is. Do you go into shadow, then into light as the Moon orbits the Earth? Does that place on the Moon have day and night? Is the Moon rotating?	Yes. Yes. Yes. Yes!



Leader's Role	Participants' Role (Anticipated)
<u>To Do:</u> Move the toothpick to the side of the ball opposite the Earth and have the Moon continue orbiting the Earth. <u>To Say:</u> Now imagine you lived over here. If you lived on the other side of the Moon – would you know that Earth existed?	Wow. No – I'd never see it. I'd always be faced away from Earth.

Background Information

Moon Phases

For a photo mosaic of the phases of the Moon:

<http://www.astro.virginia.edu/class/oconnell/astr130/im/moon-phases-lrg-cidadao-sm.jpg>

Moon's Rotation

Does the Moon rotate? Why does the Moon always keep the same face to Earth? What does the other side of the Moon look like?

A discussion of these topics can be found here:

<http://www-spod.gsfc.nasa.gov/stargaze/SMoon.htm>

Helpful Hints

There are many options for "Moon Balls" but the dylite balls work by far the best. Most importantly, the balls need to be smooth and white. It is useful to be able to mount them on skewers or toothpicks.

- 1–2" (3–5 cm) dylite/polystyrene balls: <http://plasteelcorp.com/>. You might also find polystyrene balls at arts and craft stores, but be sure you are using polystyrene, *NOT styrofoam*. The material is also called "dylite".
- Ping-pong balls with hole: sporting goods – you need to poke your own small hole with a pencil. Beware, kids love to smash these.