

Create Fake Moonlight!

Ignite your child's interest in astronomy with this simple science experiment that demonstrates the principle of luminosity and the reflection property of light. After she completes the experiment, she'll use deductive reasoning to draw a comparison between this experiment and a real-life example—the sun and moon! This experiment also helps stimulate your child's curiosity about the world around her. Once she understands how the moon shines, she'll want to investigate the science behind other everyday phenomena!

What You Need:

- Flashlight
- Bike reflector (either attached to a bike or not)
- Dark night



What You Do:

1. Turn on the flashlight.
2. Have your child shine the beam directly onto the bike reflector and observe what happens.
3. Turn the flashlight off. What happens now?
4. Ask your child why the bike reflector glowed when the flashlight was on and went dark when the flashlight was turned off. If she answers that the bike reflector lit up, ask her the following questions to help her reason out the explanation: Did the reflector need an outside force to light it up? What was the source of that light?
5. Now have your child look up into the sky and observe the moon. Ask your child how the moon relates to this experiment and where the moon's light comes from.

What Happened?

A luminous object (like the sun or the flashlight) produces its own light. A non-luminous object (like the moon or the bike reflector) can only light up by reflecting light emitted by a luminous object. The moon reflects the light from the sun just like the bike reflector reflected the light from the flashlight in the experiment.

What is luminosity? In astronomy, it is the rate at which a heavenly body emits electromagnetic radiation. We might be tempted to think of luminosity as visible light, but in reality visible light makes up a very small part of the electromagnetic spectrum. Some of the other types of electromagnetic radiation include radio waves, microwaves, infrared rays, and ultraviolet rays.

Fun Moon Facts:

Why does the moon appear to change size and shape during its different phases each month? Although half of the moon is always lit up by the sun, we can't always see the illuminated part because the angle at which we view the moon changes over the course of each month as the moon revolves around the earth. The part of the moon we see each night depends on the positions of the earth and moon relative to the sun. When we can't see the moon at all (during the new moon phase), the moon is positioned between the earth and the sun so that the bright part of the moon is facing completely away from the earth.

What is the phase of the moon called when it is between half and completely full? It's called *gibbous* from the Italian word for humpback!

