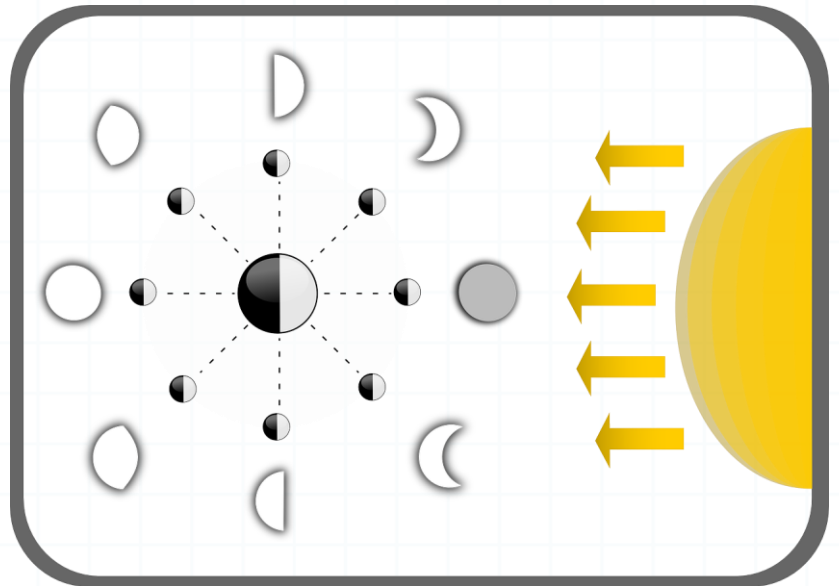


Play Dough Moon Phases

What is the objective? Make a diagram to show the cycle of moon phases.

What you need:

- A 2 oz. container of play dough
- Round drinking glass or plastic cup with a round mouth
- Plastic knife or butter knife
- Round object (ball or orange)



What to do:

- Split play dough into four even chunks.
- Flatten each chunk out using your hand, about $\frac{1}{4}$ inch thick.
- Using the top of the glass, cut one circle out of each chunk.
- Set one circle to the side. Use the plastic knife to cut another circle in half.
- Using the glass, cut $\frac{1}{4}$ off of each of the remaining circles.
- These will all be your moon phases. The play dough represents the visible part of the moon.
- Use the diagram above to arrange your moon phases in order. Drape them on your ball to see the moon in 3D.
 - *Hint: New moon will not have any play dough. Use your cup as a place holder.*
- The circle that was set aside will be the full moon, the one cut in half makes the two quarter moons, and the two that were cut at $\frac{1}{4}$ make up 4 different phases: waxing crescent, waxing gibbous, waning crescent and waning gibbous.
- Do you know what order to place the shapes in?
 - *The phrase "wax on, wane off" should help!*



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Notes for adults:

- If one of the waxing or waning phases doesn't look right, try flipping it over or turning it upside down.
- You may need to help your learner cut out the crescent and gibbous shapes since they are not straight lines.
- For younger learners, consider labeling the shapes with paper and pencil, or marking the play dough with the knife.

STEM connection:

- We see the different phases as the moon reflects different amounts of sunlight. We see moon phases in 2D, but the moon is 3D.
- Astronauts on the International Space Station use the moon phases to gather data for the new Artemis mission, which will send people to the moon by 2024.

Take it further:

- The moon is not flat like your dough is. Use other tools to add craters to your moon phases.
- For older learners: shuffle all the phases and time yourself to see how quickly you can reassemble the phases of the moon in order.
- Think about: Why is half a circle called a quarter moon?

