

WORKSHOP 1

Sun, Earth, Moon

ACTIVITY 1: Light & Shadow

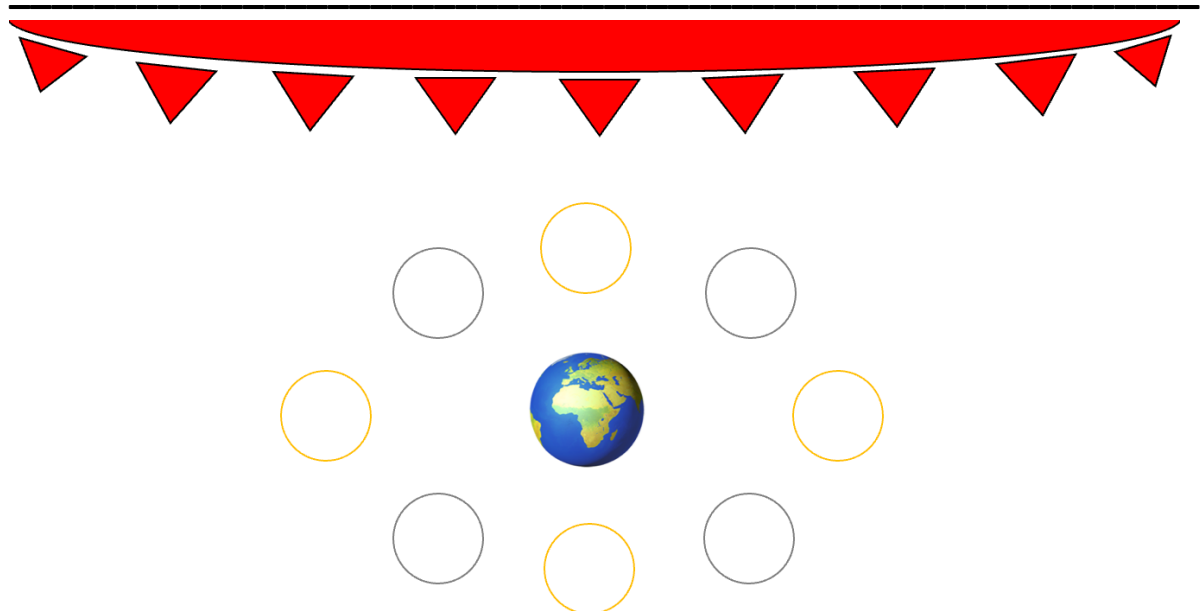
Why do we have shadow?

Light goes straight in clear medium. Some objects can absorb light, and some can reflect light. If the object blocks the way it travels, there will be the shadow of the object.

ACTIVITY 2: Make a model: Sun, earth, moon

Why do we see different shapes of the moon?

My hypothesis:



Let's make a model to explore!

What do we need?

- 1x design paper
- 1x cardboard
- 1x press button
- 3x spring clips
- 1x LED
- 1x paper clip
- 1x hard paper
- 1x toothpick
- 2x foam
- 1x foam ball
- 1x clear plastic ball
- Air clay

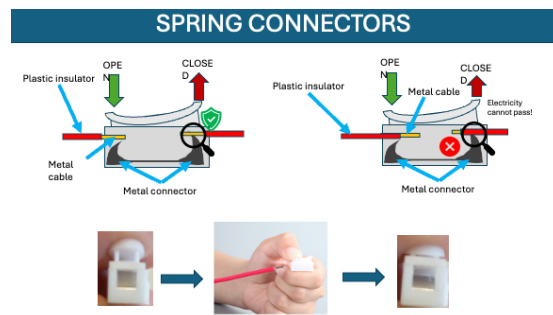
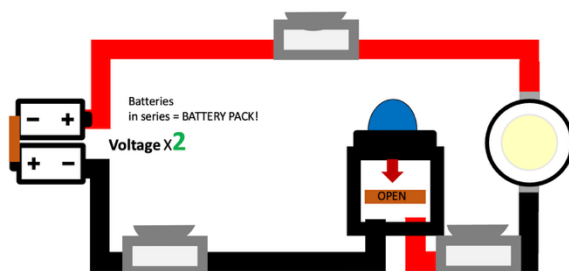
SAFETY NOTES!

- 1) Do not attempt to do electronics on your own without the supervision of a knowledgeable adult.
- 2) We will be using paper clips to make holes, do not put your finger under the place that you want to make the hole when trying to stab the clips through the paper/cardboard.
- 3) If you are not sure about how to do things/having trouble making holes, ask the responsible person in the room!

BUILDING STEPS!

A) MAKING A CIRCUIT

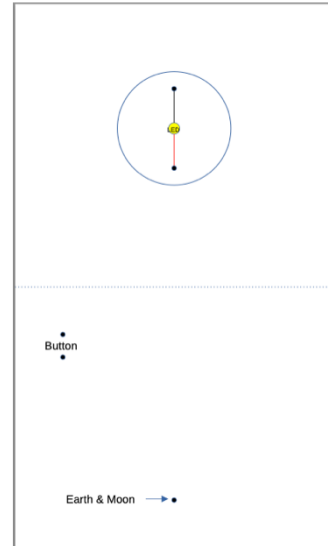
1. Put 2 batteries in the battery holder
2. Use a spring connector to connect the battery holder with LED
 - RED cable from the holder -> connector -> RED cable from LED
3. Connect LED with the button.
4. Connect the button with the holder
5. Test.



B) MAKING THE MODEL

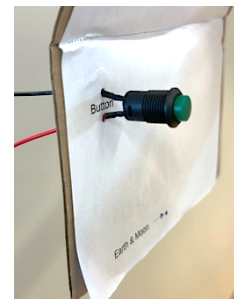
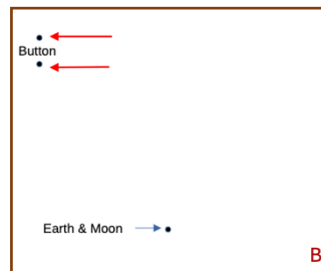
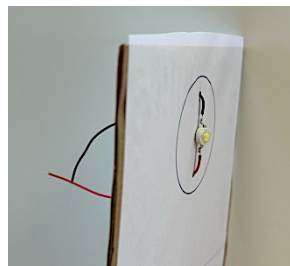
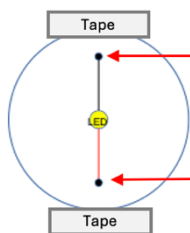
1. Design:

- 1) Stick the design paper with the cardboard.
- 2) Fold the cardboard according to the dot line.



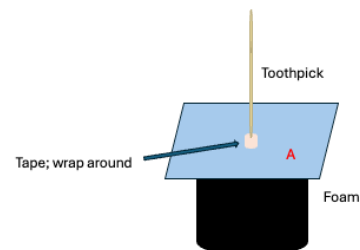
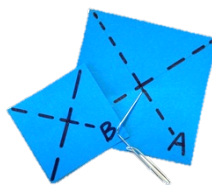
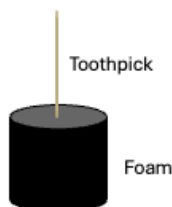
2. Make - Sun

- 1) Disconnect the LED.
- 2) Make 2 holes on the cardboard A for the LED.
- 3) Put the wires of the switch through the holes.
- 4) Connect the LED back and test.
! Black - Black ! Red - Red !
- 5) Use tapes to stick the clear ball on the cardboard to cover the circle.



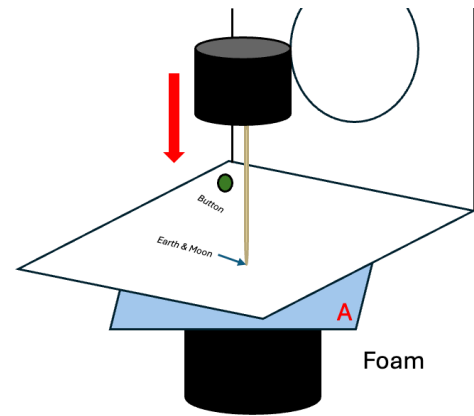
3. Make - Earth & Moon: Base

- 1) Make a hole on the cardboard B.
- 2) Use toothpick to make a hole in the centre of a foam. Don't go through.
- 3) Cut a 6cm x 6cm square Hard paper A. Make a whole in the centre.
- 4) Put Hard paper A on the foam.
- 5) Use tapes to make sure it's attached to the toothpick.



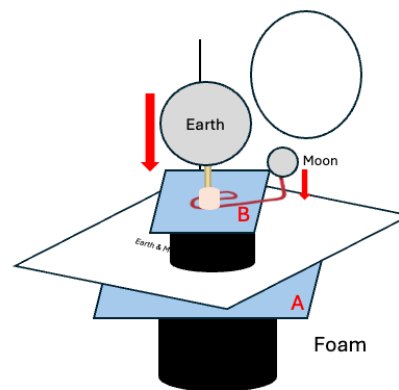
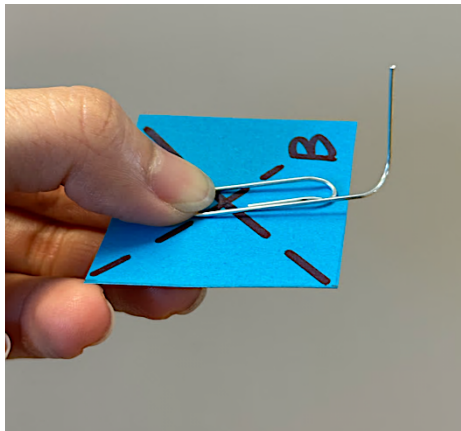
4. Make - Earth & Moon: Middle

- 1) Put Cardboard B on top of Hard paper A.
- 2) Put another foam on top of cardboard B. Make sure the hole is in the centre of the foam.
- 3) Cut a 4cm x 4cm square Hard paper B.
- 4) Use a paperclip to make a hole in the centre.



5. Make - Earth & Moon: Top

- 1) Put them on the foam. Use tapes to attach Hard paper B to the toothpick.
- 2) Put the foam ball on the toothpick.
- This is your earth!
- 3) Make a mini ball with air clay and put it on the paper clip.
- This is your moon!
- 4) Test if the moon turns when you move Hard paper A.

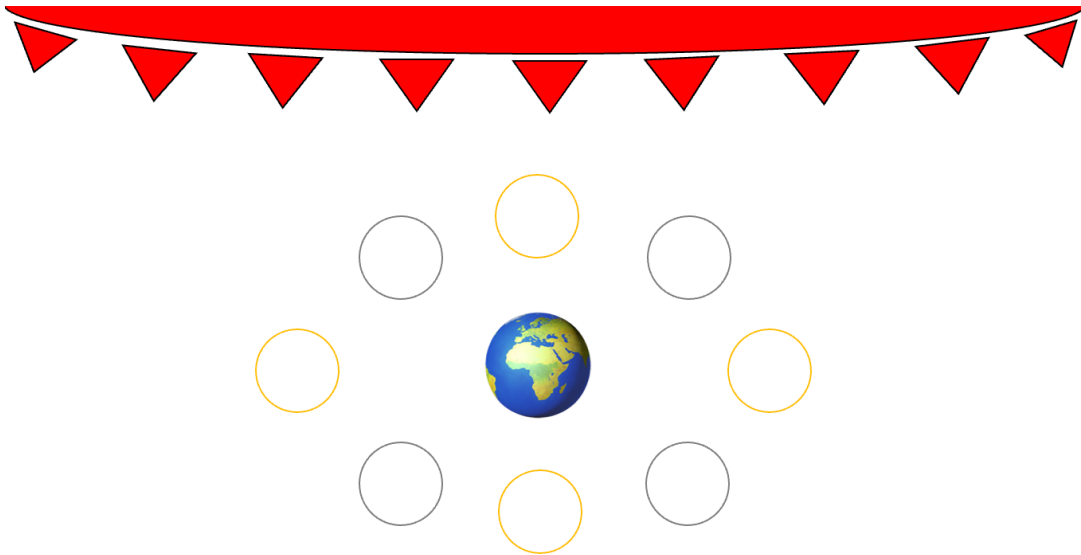


6. Test & Decorate!

ACTIVITY 3: Explore & Discuss

Move the moon around the earth. Observe and think for yourself:

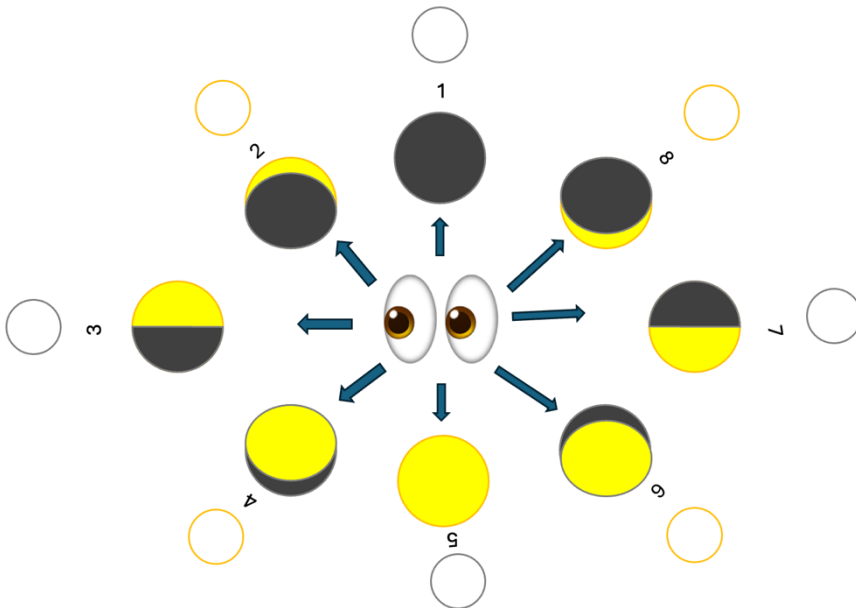
- 1) Where is the shadow part in the moon? Where is the bright part?



→ Discuss in group!

Share ideas in group. Do you have the same conclusion? Who is correct? Modify your findings and confirm your conclusion!

- 2) What shape of the moon do people see from the earth?



Number	Shape	Name of the moon phase
1		New Moon
2		Waxing Crescent
3		First Quarter
4		Waxing Gibbous
5		Full Moon
6		Waning Gibbous
7		Last Quarter
8		Waning Crescent



TRY FIVE +



→ To explore more...

Fun fact of the moon

There are lots of stories, poems, festivals and other art and cultural facts about the moon. I did some research about it and here are the fun facts I discovered:

My questions about the universe

I have so many questions about the universe! Why do we have day and night? Why do we have seasons? How will the day and night be like in the lunar space station?...
I picked one question and did some research about it. My question is:

My finding is:

