SUGGESTED ACTIVITIES

(*Observing and Studying Space*)

From *Invitations to Science Inquiry 2nd Edition* by Tik L. Liem:

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What Causes the Phases of the Moon?	405	Phases of the moon
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From Internet Source:

Activity	Concept
Constellation in a Canister	Constellations

WHAT CAUSES THE PHASES OF THE MOON?

A. Question: *What causes the phases of the moon?*

B. Materials Needed:

1. A large show box, carton paper or other black paper.
2. A Styrofoam ball (about 5 cm in diameter).
3. A small strong flashlight, masking tape, black thread.

C: Procedure:

1. Cover the inside of the shoe box with black paper by gluing or placing small rolls of masking tape between the paper and the box.
2. Suspend the Styrofoam ball from a black thread of about 2 cm long, and tape the thread against the center of the lid.
3. Cut a hole the size of the flashlight at the end of the box and seal any space around it with masking tape.
4. Make five holes in the sides of the box: two on each long side and one at the end of the box obliquely under the flashlight.
5. Put the lid with the suspended ball on the box and seal the edges around it with masking tape.
6. Look through the eye holes and observe the ball (with the flashlight on) in the order numbered in the sketch.

D: Anticipated Results:

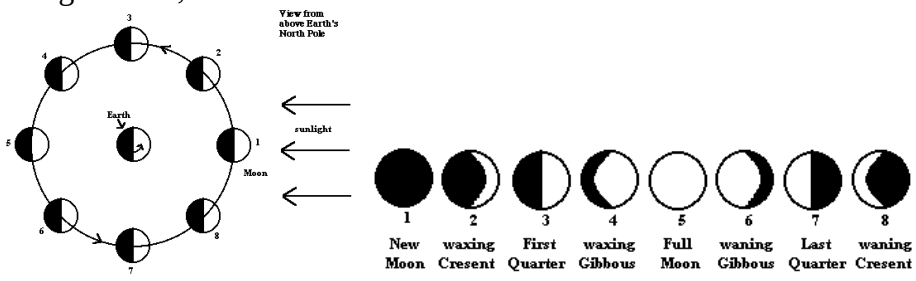
Students should observe the phases of the moon.

E: Thought Questions for Class Discussion:

1. What do you see when you look through the eye holes?
2. Turn the flashlight off; what do you see through the eye holes?
3. Looking through which of the holes gives you a similar picture as looking at the new moon?
4. What is it that causes the phases of the moon?

F: Explanation:

Perhaps the best way to explain seeing the eight different phases of the moon is the illustration below. A quarter new moon would correspond with looking through hole 1, half moon and three quarter moon with looking through hole 2, full moon with looking through hole 3, etc.



WHAT CAUSES AN ECLIPSE?

A. Question: *What are the conditions for a solar eclipse to occur?*

B. Materials Needed:

1. A strong flashlight, slide projector, or another light source.
2. A large (20cm diameter) solid color sphere.
3. A small (5cm diameter) rubber or styrofoam ball.
4. A knitting needle.

C: Procedure:

1. Stick the knitting needle into the small ball, so that you can hold it between the light source and the large ball without casting a shadow of your hand.
2. Hold the smaller ball between the light source and the large sphere and adjust the distance from the sphere, such that the small ball casts a dark shadow in the center and grayish shadow on the edges.

D: Anticipated Results:

Students should observe a representation of an eclipse.

E: Thought Questions for Class Discussion:

1. What does it mean if something is eclipsed?
2. For a solar eclipse to occur, how must the earth, sun, and moon be positioned in relation to each other?
3. Would all people on earth be able to see a solar eclipse when it occurs?
4. At what time (day or night) can a solar eclipse be observed?
5. How must the earth, sun, and moon be positioned in relation to each other, in order for a lunar eclipse to occur?
6. What are safe ways to observe a solar eclipse?

F: Explanation:

The light source represents the sun, the large sphere the earth, and the small ball the moon. In order for a solar eclipse to occur, the moon must be positioned between the earth and the sun. For a lunar eclipse to occur, the earth must be between the sun and the moon. Only those people living in the eclipse path can see either a partial (those in penumbra) or a total eclipse (those living in the umbra).

CONSTELLATION IN A CANISTER

www.nasa.gov/audience/forkids/activities/A_Constellation_in_Canister.html

People have looked at the stars for many, many years, They could imagine pictures of stars. Those pictures are called constellations. After you do this activity, see if you can find the constellations in the night sky.

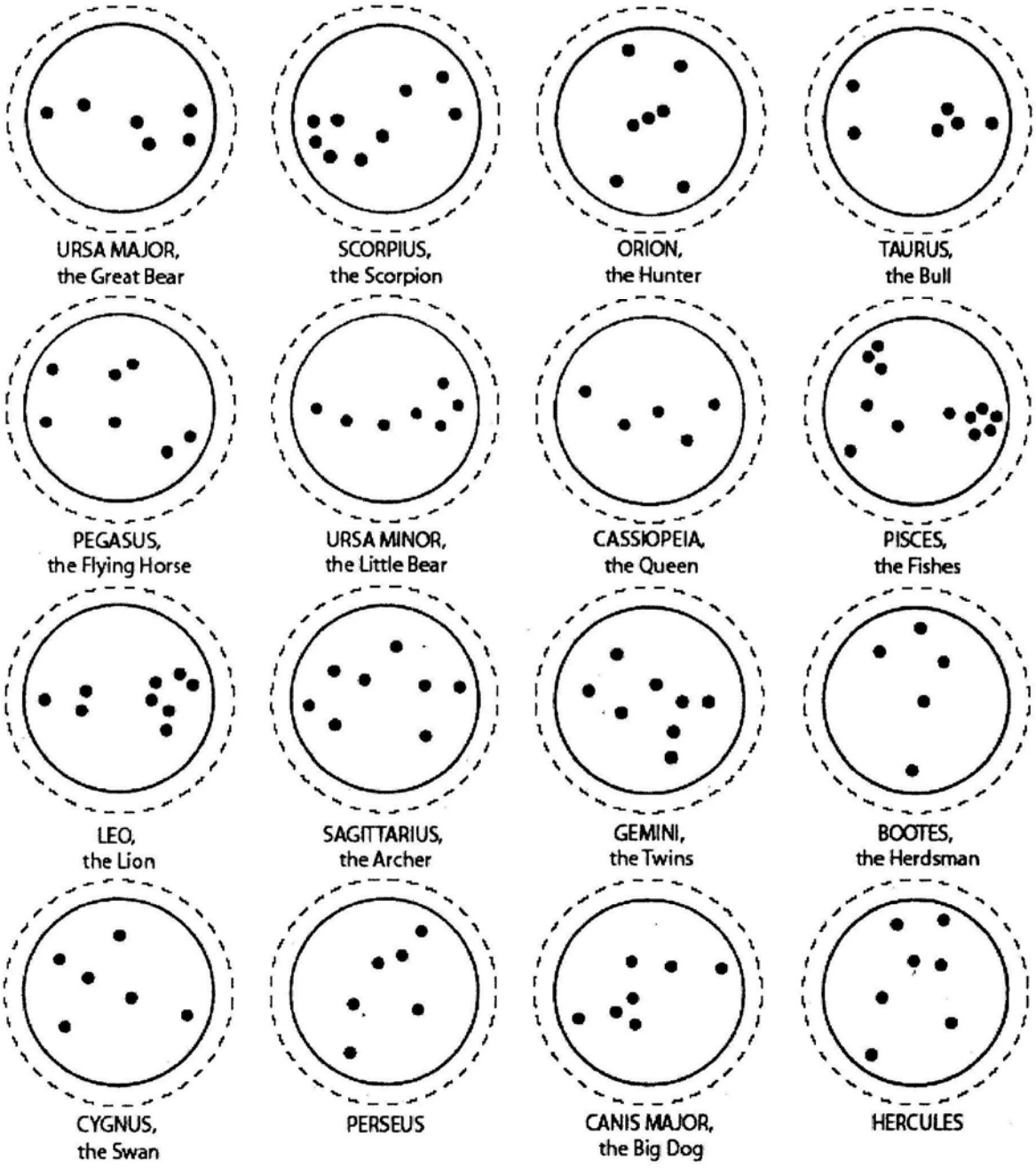
Material Needed:

1. 16 black 35mm film canisters
2. Scissors
3. Tape
4. Pushpin
5. Patterns + View patterns

Procedure:

1. Put a piece of tape on the side of each canister. Write the name of a constellation on it.
2. Cut out a constellation pattern on the dotted lines.
3. Put the pattern on the canister with the correct name on it.
4. Put a pattern over the bottom of the film canister. Line the dark circle up with the inside rim of the canister. Tape the circle into place.
5. Punch a small hole through the paper and the canister for each star in the pattern.
6. Hold the film canister up to the light. Look through it to make sure that you have punched the holes all the way through. You should see light through each hole.
7. Take the paper pattern off the canister.
8. Repeat steps 2-8 for the rest of the constellation pattern.
9. Choose one of the canisters and read the name. Look through it to try to remember the pattern. Slowly turn the canister and observe.
10. Try to learn the constellations without looking at the names.
11. Look outside to find the patterns in the sky at night.

See next page for patterns.


URSA MAJOR,
the Great Bear
SCORPIUS,
the Scorpion
ORION,
the Hunter
TAURUS,
the Bull
PEGASUS,
the Flying Horse
URSA MINOR,
the Little Bear
CASSIOPEIA,
the Queen
PISCES,
the Fishes
LEO,
the Lion
SAGITTARIUS,
the Archer
GEMINI,
the Twins
BOOTES,
the Herdsman
CYGNUS,
the Swan
PERSEUS
CANIS MAJOR,
the Big Dog
HERCULES