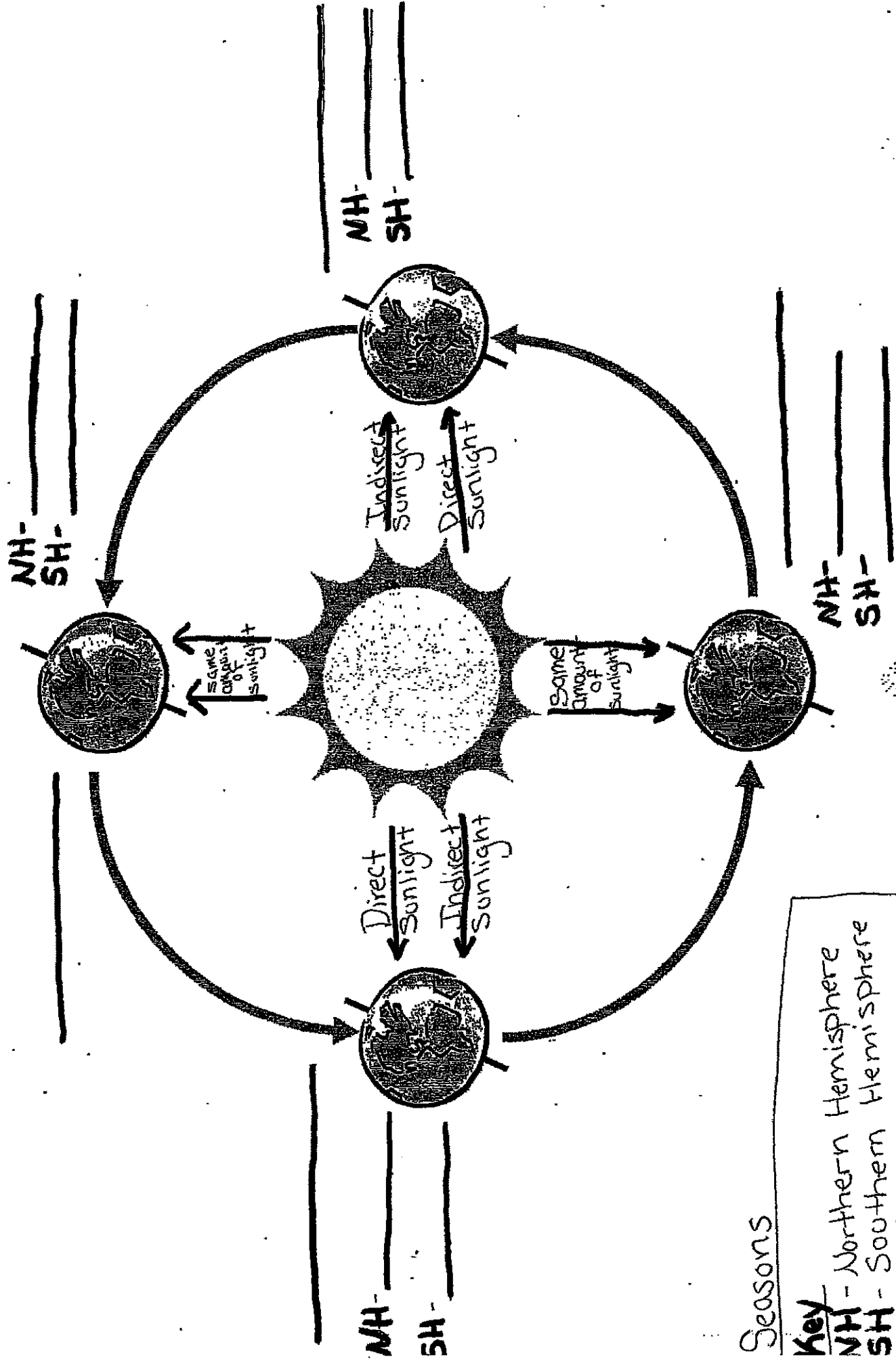


Name: _____



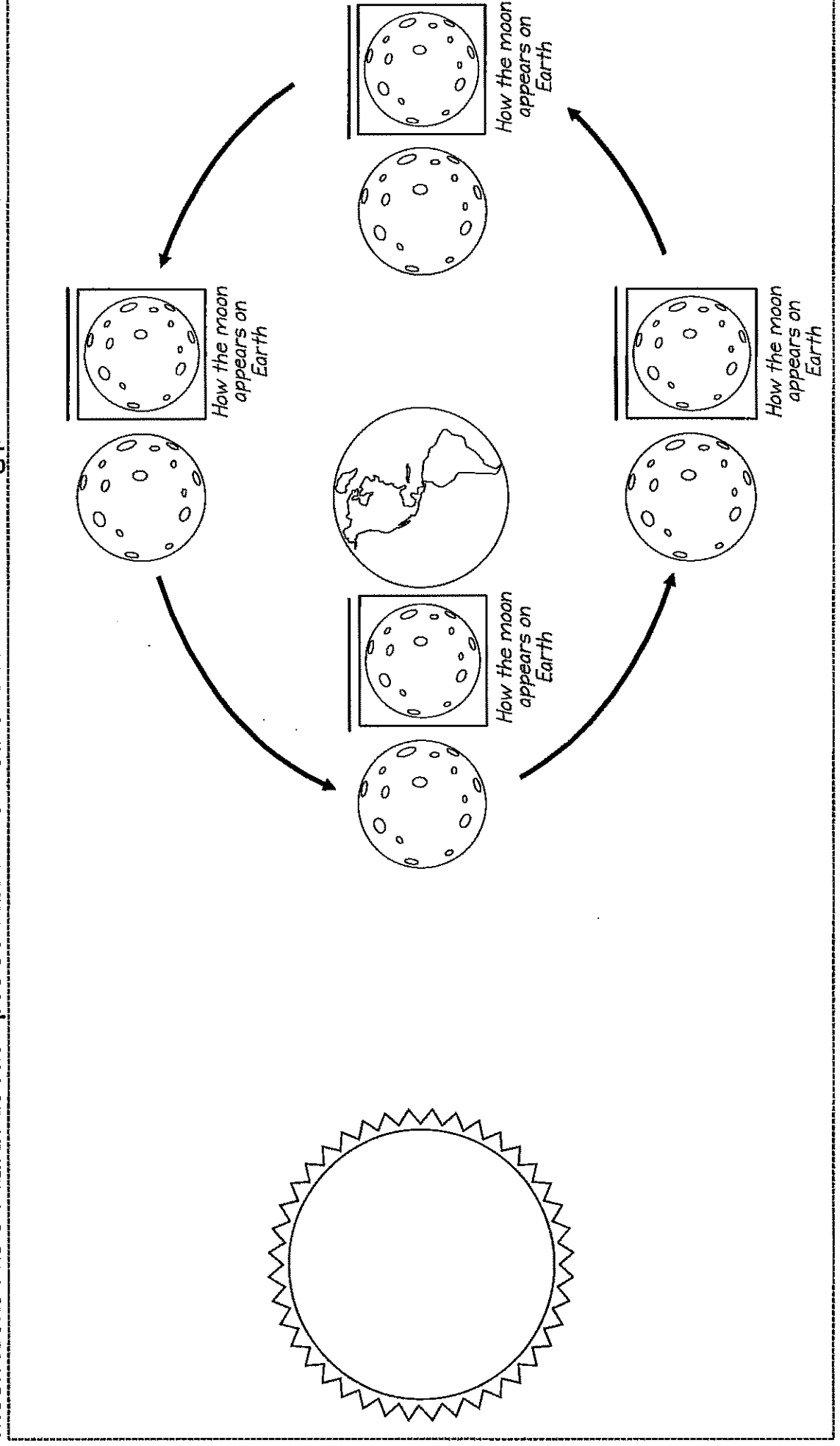
Seasons

Key
NH - Northern Hemisphere
SH - Southern Hemisphere

● Chapter 12: Lunar Phases

INB Activity #1

Directions: Cut out the illustration. First, shade the half of the moon that does not receive sunlight from the sun. Draw arrows to show how sunlight reflects off the moon onto Earth. Shade the moon in the box to show what the moon looks like on Earth at each position around the sun. Label the 4 defining phases of the moon.



Chapter 13: Eclipses

Input Page/Notes

MS-ESS1-1

Chapter 13: Eclipses

The Moon's Revolution around Earth

- The moon revolves around Earth. Its revolution does not occur on a flat plane. Its revolution occurs on a slant or tilt.
- During the moon's revolution, sometimes the moon casts a shadow and blocks light from reaching Earth. Sometimes the Earth casts a shadow on the moon and blocks sunlight from reaching the moon. These instances are called eclipses.

There are two kinds of eclipses: solar eclipses and lunar eclipses.

Solar Eclipse

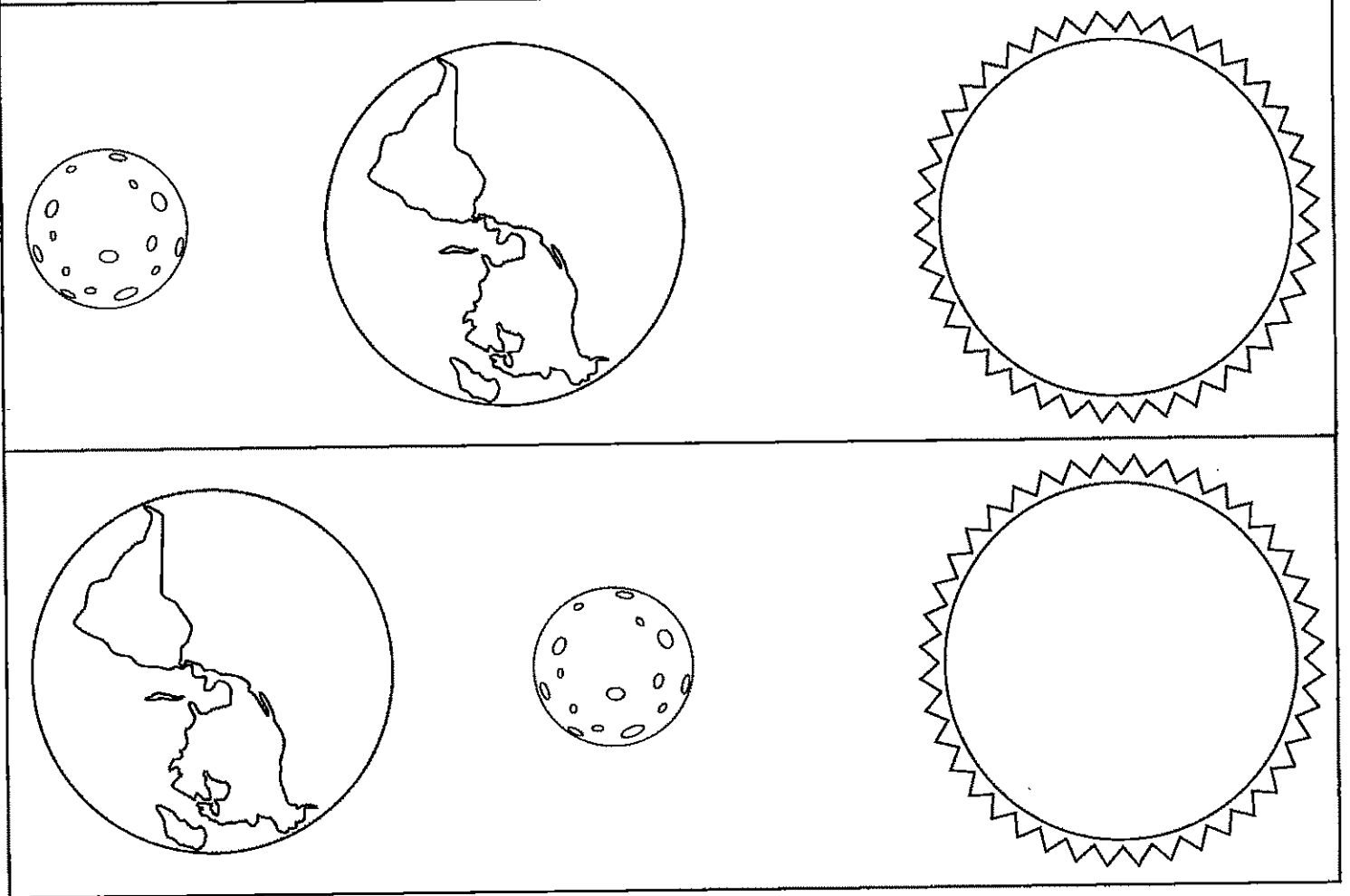
- A solar eclipse occurs when the moon passes between the sun and Earth. The moon casts a shadow on Earth.
- A solar eclipse ONLY occurs during a new moon.
- A solar eclipse does NOT occur every new moon because the moon revolves around the Earth on a tilt. The moon must be lined up just right so to block the sun.
- Only the locations on Earth that fall under the moon's shadow will experience a solar eclipse when the moon is lined up just right.
- During a solar eclipse, the moon blocks all or some light from the sun. A total solar eclipse occurs when the moon blocks all the light on Earth. Observers on Earth will see the sun's "disc" completely covered during a total solar eclipse.
- Solar eclipses are rare events. They occur approximately twice a year.

Lunar Eclipses

- A lunar eclipse occurs when the moon passes through Earth's shadow. Earth blocks sunlight from reflecting off the surface of the moon.
- A lunar eclipse ONLY occurs during a full moon.
- A lunar eclipse does NOT occur every full moon because the moon revolves around the Earth on a tilt. The moon must be lined up just right so that the Earth blocks light from reflecting off the moon.
- During a lunar eclipse, the Earth blocks all or some of the light from reaching the moon. A total lunar eclipse occurs when the Earth blocks all light from reaching the moon. Observers on Earth will observe a red moon during a total lunar eclipse. The moon appears red because some light is scattered in Earth's atmosphere, causing the moon to appear red. This phenomenon explains why the sun appears red at sunset as well.
- Lunar eclipses are rare events, but more common than solar eclipses. They occur two to four times a year.

Chapter 13: Eclipses INB Activity

Directions: Cut out the boxes and tables. Arrange the boxes correctly on the solar and lunar eclipse table. Draw the shadows cast by the Earth or moon during the eclipses on the diagrams.



Occurs when the moon passes between the sun and Earth. The moon casts a shadow on Earth

Occurs when the moon passes through Earth's shadow. Earth blocks sunlight from reflecting off the surface of the moon.

Occurs only during a full moon, but not every full moon, because the moon revolves around the Earth on a tilt.

Occurs only during a new moon, but not every new moon, because the moon revolves around the Earth on a tilt.

Occurs usually twice a year.

Occurs two to four times a year.

SOLAR ECLIPSE

Glue the diagram here

What is it? Glue the answer here.

During what moon phase does it occur? Glue the answer here.

How often does it occur? Glue the answer here

LUNAR ECLIPSE

Glue the diagram here

What is it? Glue the answer here.

During what moon phase does it occur? Glue the answer here.

How often does it occur? Glue the answer here

Place the outside corner, the corner away from the dotted line, in the corner of your copy machine to copy onto letter-size paper.

Tides

Review and Reinforce

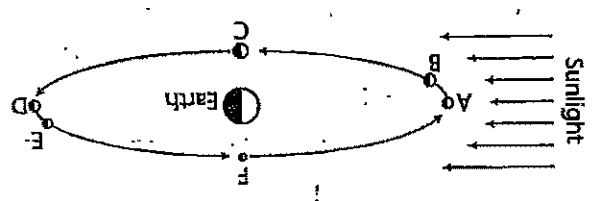
MS-ESS1-2

Name _____ Date _____ Class _____

Understanding Main Ideas

Use the diagram at right to answer Question 1 in the spaces provided.

1. What kind of tide will occur when the moon is at positions A, C, D, and F?



Building Vocabulary

Fill in the blank to complete each statement.

2. A(n) _____ tide occurs when the sun is at right angles to the line between Earth and the moon.
3. Differences in the moon's and sun's pull on different sides of Earth cause _____.
4. A(n) _____ tide occurs when the sun, Earth and the moon are nearly in a line.
5. _____ pulls all objects in the universe, including the moon and Earth and the sun and Earth, toward each other.
6. The term _____ comes from an Old English word, *springen*, meaning "to jump."

Period: MS-ESS1-3

Period: MS-ESS1-3

Period: MS-ESS1-3

Period: MS-ESS1-3

- Period: MS-ESS1-3

Period: MS-ESS1-3

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Period: MS-ESS1-3

Scale Size of the Planets

Directions: In this activity you will create a model of the sizes of the planets against Pluto's size. You need your research pages from the other day, a piece of white construction paper, and colored pencils.

You know now that Pluto was demoted to a Dwarf Planet because it is so small. The diameter of Pluto is as big as the distance from Boston, MA to Miami, FL. We are now going to see how many "Plutos" we can fit across all the planets' diameters.

$$Pluto = 2,377 \text{ km diameter}$$

In the table below, fill out the diameters of all the planets in our Solar System and then figure out how many "Plutos" we can put on the diameter. You will do this by taking the planet's diameter $\div$ 2377. Round the number to the nearest whole number. Earth has already been done for you.

Planets	Column 1 Planets' Diameter	Column 2 Write the Equation	Column 3 How Many "Plutos" Fit
Mercury			
Venus			
Earth	12,742 km		5
Mars			
Jupiter			
Saturn			
Uranus			
Neptune			

On the construction paper:

1. Make a key on the bottom right of your paper by drawing a box.
 - a. The Title of the key is "Scale Size of Pluto".
 - b. Draw 1 small circle and color it in any color your partnership chooses. **Do not make it too large because this the size of the circles you will be drawing to represent "Pluto" for all planets.**
 - c. Put your names under your "Pluto" in the box.
2. At the top, title your construction paper, **How Many "Plutos" Fit on a Planets Diameter?**
3. Draw the amount of circles from the "How Many "Plutos" Fit" column above, for the smallest planet by the top of your page.
4. When you are done drawing and coloring your circles, label it by the planet's name and put down the amount of "Plutos" from the "How Many "Plutos Fit" column above, that fit on the diameter of that planet.
5. Repeat step 3 and 4 for the rest of the planets in the order of **SMALLEST to LARGEST** planets.