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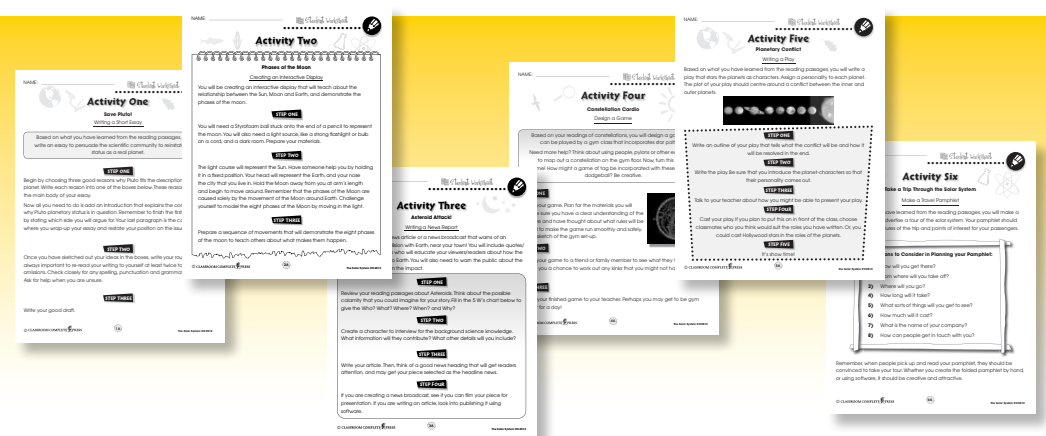
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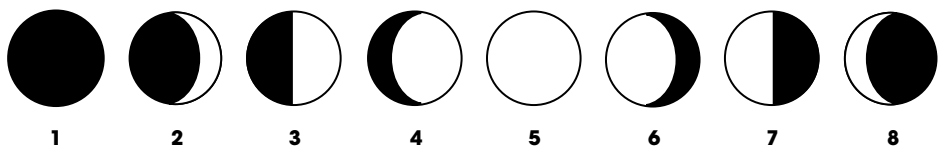
# The Moon

- Some people think that a full moon is bad luck. Why do you think that is? Write about the **superstitions** surrounding full moons in your notebook.
- Use a straight line to match each term with its meaning.

lunar	A	One part of a series of steps
phase	B	A period of time when a repeating pattern is completed once
cycle	C	A bowl-shaped cavity or pit
calendar	D	A table that shows the days, weeks and months of a year
reflect	E	to throw back light, heat or sound
crater	F	Relating to the Moon

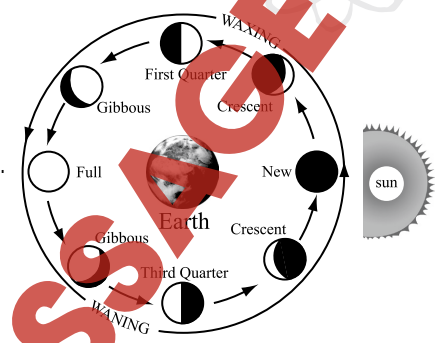
- Write the diagram number that best fits each term below.

- \_\_\_\_\_ a) full moon  
 \_\_\_\_\_ b) new moon  
 \_\_\_\_\_ c) first quarter moon  
 \_\_\_\_\_ d) last quarter moon



# The Moon

The Earth has one moon. It is called **Luna**. There is no air, water or life on the moon. There are a lot of rocks and **craters**. Craters are big holes in the surface of the moon. They were formed when big **meteorites** crashed into the moon millions of years ago. The moon's **gravity** is not as strong as the gravity on Earth, so you could jump really high on the moon.



When you look up in the night sky, the largest thing you can see is the moon. That is because the moon is our nearest neighbor in space. It is more than 238 800 miles from Earth. It looks like a bright, white ball, but the moon does not actually make its own light. It just **reflects** the light from the Sun. While the Earth orbits the Sun, the moon is orbiting the Earth. It takes the moon twenty-eight days to orbit around the Earth once. This is called a **lunar cycle**.

**STOP** MAKE A CONNECTION: Imagine there is less gravity on Earth for one day. List **THREE** ways that you would make the most of this situation, and give a reason for each one.

\_\_\_\_\_

\_\_\_\_\_

You might have wondered why the moon seems to change shape a little bit each night, from a big, bright ball to a tiny sliver, or **crescent**. The moon doesn't actually change shape; it is always round, but sometimes only parts of it are lit up by the Sun. When the moon is round and full, the Sun is shining directly on it. When you can only see a sliver of the moon lit up, the Sun is shining on the backside of it. The moon has days and nights just like the Earth. When the moon looks mostly dark you are looking at the part that is experiencing night. Look closely and you might still be able to see the dark outline of the rest of the moon. These changes in the moon's appearance are called the **phases** of the moon. The phases are: new moon, half moon (waxing), gibbous moon (waxing), full moon, gibbous moon (waning), half moon (waning), old moon. **Waxing** means growing and **waning** means shrinking. **Gibbous** means swollen on one side. A **lunar calendar** tells people what phase the moon is in every day.



# The Moon

- Number the events from 1 to 6 in the order that they occur in the lunar cycle. (You may wish to draw sketches to help you.)

- a) **Last quarter:** The left half of the moon is illuminated.
- b) **Waxing gibbous:** Most of the moon's surface is illuminated except for a small sliver on the left side that remains in the dark. It is almost fully illuminated.
- c) **Full moon:** The entire side of the moon facing the Earth is illuminated. It looks perfectly round.
- d) **New moon:** The side of the moon facing the Earth is not illuminated. We cannot see the moon at this phase.
- e) **First quarter:** The right half of the moon is illuminated. In the next phase, the moon will seem even larger.
- f) **Waning crescent:** Only a small sliver of the moon is still illuminated on the left side. It is just about to "disappear" completely.

- Cross out** the words that are not related to the lunar cycle.

waxing gibbous gravity new crater crescent

- Circle** the words that describe conditions on the moon.

dry windy hot rocky bumpy fiery

- Underline** the words that describe what the moon looks like at different phases of its cycle.

sliver crescent pie octagonal orb star



# The Moon

Answer each question with a complete sentence.

- Why is it that astronauts have **less** weight on the moon than they have on Earth?  
 \_\_\_\_\_  
 \_\_\_\_\_
- Describe the positions of the **Earth, Sun** and **Moon** when the moon is full.  
 \_\_\_\_\_  
 \_\_\_\_\_
- Why is the moon so bright on a clear, cloudless night?  
 \_\_\_\_\_  
 \_\_\_\_\_

## Research & Extensions

- We say that there is a **new moon** when the moon is between the Earth and the Sun. When this happens, we cannot see the lit side of the Moon, so the moon is dark in the night sky. Another time the moon is dark is when there is a **lunar eclipse**.
  - Research eclipses, and create a model or diagram to show the difference between lunar and solar eclipses.
  - In China, people believed that when there was a lunar eclipse a Dragon had swallowed the Moon. Research this legend, and recount it either as a comic strip, short story or poem.
  - Have you ever heard the expression, "Once in a Blue Moon"? Research **Blue Moons** to see if they actually exist. If they do, explain what they are.
  - Design a model that will effectively teach the phases of the lunar cycle and lunar eclipses.

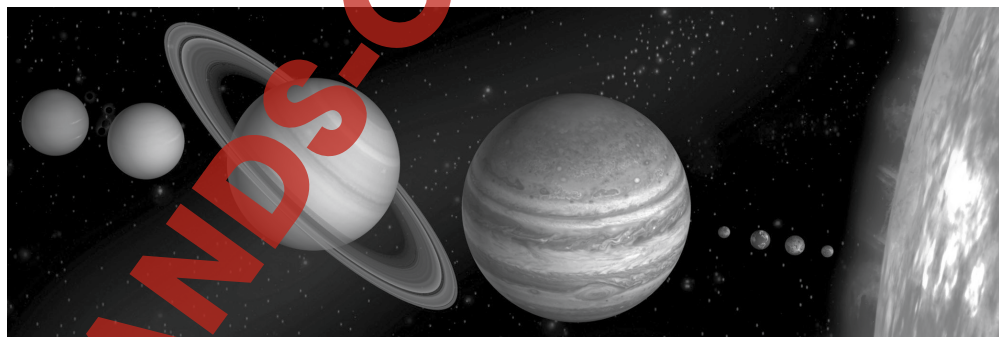


# Build It!

## SOLAR SYSTEM MODEL

Create a model of the solar system that shows all of the planets in relation to the Sun, according to their size and position. There are a few ways that you can do this.

- 1) Create a diorama - Paint the inside of a shoebox black and stand it on its side. Make planets using plasticine and hang them with thread from the top of the box.
- 2) Create a mobile - Use a cardboard circle as a base for your mobile. Paint Styrofoam balls to represent the planets, and then hang them through cut-out circles in the base.
- 3) Create a model - Use straws or skewers to connect painted Styrofoam balls at appropriate distances from each other.
- 4) Your own idea



Prepare an oral presentation on your model to deliver to the class for your presentation.



# Crossword Puzzle!

### Word List

- Asteroid
- Constellation
- Craters
- Geysers
- Gibbous
- Hydrogen
- Luna
- Meteor
- Navigation
- Nebula
- Orbit
- Rings
- Rotate
- Supernova
- Yellow dwarf



### Across

1. To travel in a circular path around an object
4. To spin around on an axis
6. These spring up hot gases from Neptune's moon
7. This moon and Earth are known as "double planets"
8. The surface of the Moon has big holes called \_\_\_\_\_
11. The Sun is known as this type of star (2 words)
13. A group of stars that make up a picture
14. Stars can be used to help humans with \_\_\_\_\_

### Down

2. A piece of space rock that orbits the Sun
3. One of the gases that the gas planets are made of
5. Saturn is surrounded by \_\_\_\_\_ made of rock, dust and ice
10. The birth place of a star
12. A star explosion
15. This is also known as a shooting star



# Comprehension Quiz

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### Part A

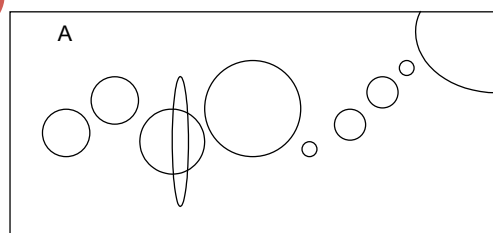
Circle the word **TRUE** if the statement is TRUE or Circle the word **FALSE** if it is FALSE.

1. The planets in our solar system are classified as rocky or gas planets.  
TRUE      FALSE
2. In our solar system, all eight planets orbit the Sun.  
TRUE      FALSE
3. The inner and outer planets are divided by a *meteor shower*.  
TRUE      FALSE
4. Earth has one moon, and the other planets have many moons or no moons at all.  
TRUE      FALSE
5. The Sun is just one of many stars in our solar system.  
TRUE      FALSE
6. The moon has many phases that are tracked on a lunar calendar.  
TRUE      FALSE
7. When an asteroid hits the Earth it forms a crater in the surface.  
TRUE      FALSE
8. Scientists believe they may be able to send humans to live on Venus one day.  
TRUE      FALSE

### Part B

1. Label the diagram by filling in the blanks below.

- A \_\_\_\_\_
- B \_\_\_\_\_
- C \_\_\_\_\_
- D \_\_\_\_\_
- E \_\_\_\_\_
- F \_\_\_\_\_
- G \_\_\_\_\_
- H \_\_\_\_\_



2. Use the diagram above to answer the questions.

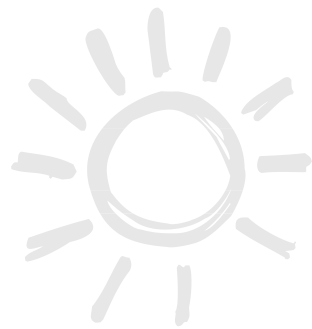
- a) If you were to include the asteroid belt in the diagram, between which two letters would it go? \_\_\_\_\_ and \_\_\_\_\_
- b) With which letter would a geyser be placed? \_\_\_\_\_
- c) With which letter would Luna be placed? \_\_\_\_\_

# Our Planets





# The Outer Planets



Answer each question with a complete sentence.

2. What causes Uranus to rotate on its side?

\_\_\_\_\_

3. What do scientists believe is the cause of the red spot on Jupiter?

\_\_\_\_\_

4. How do scientists think the rings around Saturn were formed?

\_\_\_\_\_

## Research & Extensions

5. The gas giants are so different than Pluto that it's not surprising people have asked if Pluto should even be considered a planet at all. There was great debate from scientists around the world before it finally lost its planetary status in 2006. Create a T-chart in your notebook to outline the case for Pluto to lose its planetary status. On the other side of the chart, outline the case for Pluto to remain as a planet. You may need to research some points. When you are done, pretend you are a lawyer who is arguing for or against Pluto. Write an argument that you would deliver to a judge in court to state your case.

6. Create a **comic book hero** based on each of the four gas planets, and their small friend, Pluto. Include as much detail as you can about each planet in their superhero persona. (For example, Nasty Neptune may be able to ward off her opponents with her steamy geysers.) Illustrate each superhero, and give a description of their powers written below.

7. Research the New Horizons mission to see it's path. Create a timeline of it's travels.



### WEB CONNECTION

To learn more about the New Horizons mission to the end of the solar system, visit the NASA Missions web page at: [www.nasa.gov/mission\\_pages/newhorizons/main/index.html](http://www.nasa.gov/mission_pages/newhorizons/main/index.html)

**2.**  
The gravitational pull of other planets

**3.**  
A very large storm that has been blowing for hundreds of years

**4.**  
Gravity pulled in objects that came too close to the planet and they got stuck in orbit around it

**5.**  
Answers will vary

**6.**  
Answers will vary

**7.**  
Accept any answers that can be verified

22

**1.**  
Answers will vary

**2.**  
lunar - F

phase - A

cycle - B

calendar - D

reflect - E

crater - C

**3.**  
a) 5

b) 1

c) 3

d) 7

23

Answers will vary

24

**1.**  
a) 5

b) 3

c) 4

d) 1

e) 2

f) 6

**2.**

a) ~~Cross out:~~ gravity, crater

b) **Circle:** bumpy, dry, rocky

c) **Underline:** sliver, crescent, orb

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**3.**  
The force of gravity is weaker on the Moon.

**4.**  
The Earth is between the Sun and the Moon.

**5.**  
It reflects the light from the Sun better because there are no clouds in the way.

**6.**  
a) Answers will vary

b) Answers will vary based on resource used

c) Answers will vary based on resource used

d) Answers will vary

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EASY MARKING

ANSWER KEY