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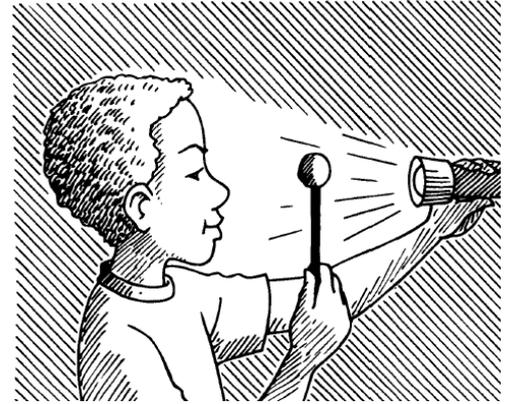
Class \_\_\_\_\_

# Phases of the Moon

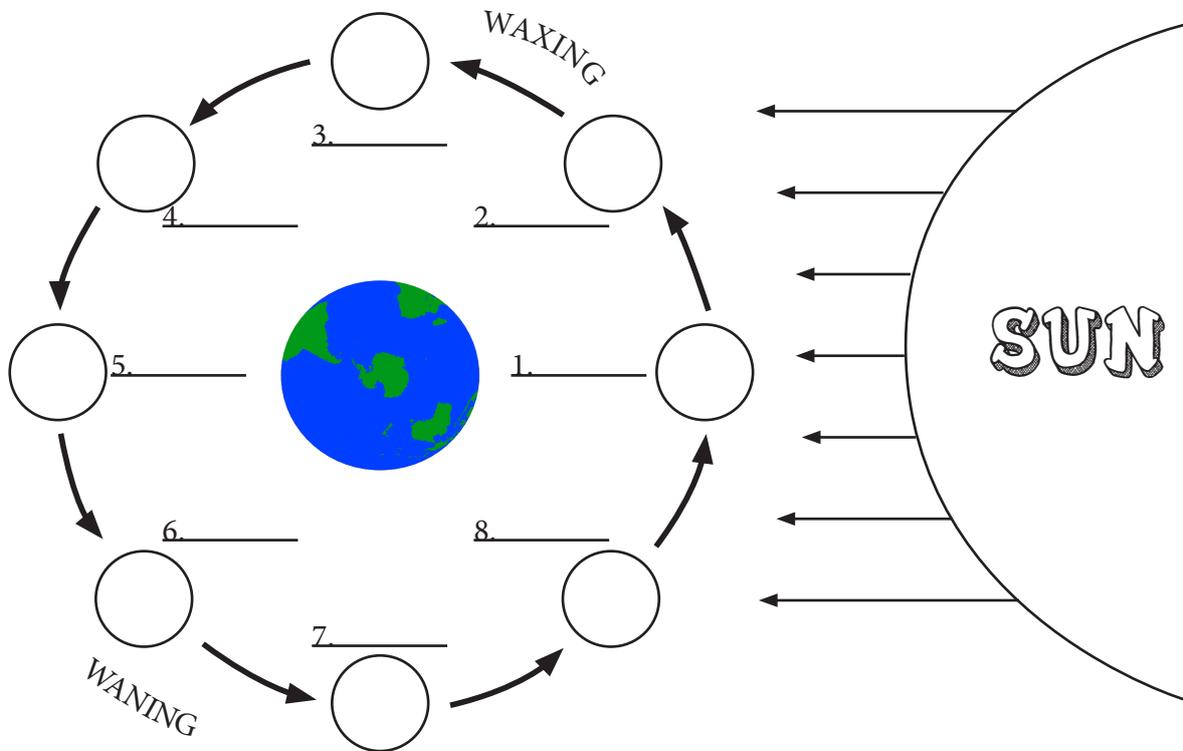
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Work with a partner on Section 1 to model the phases of the moon. Complete the rest of the worksheet on your own as per instructions.

**Section 1. Moon phases:** Use a torch, ball on a stick, and your head (Earth) to model the phases on the moon. One student is to hold the torch (Sun), the other student's head represents the Earth, the ball on a stick represents the Moon. See picture →



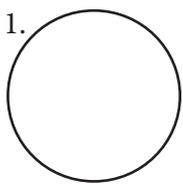
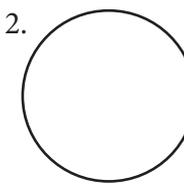
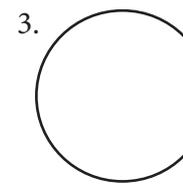
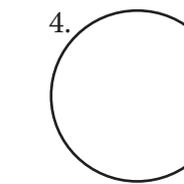
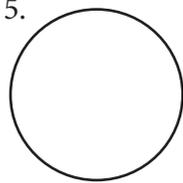
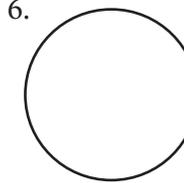
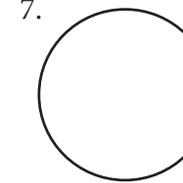
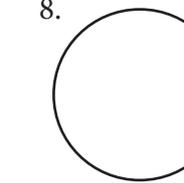
Student Sun is to stay in one spot and Student Earth/Moon is to slowly **rotate anticlockwise in one spot** keeping the Moon in front of their Earth face (unlike the boy in the picture keep your moon slightly above your head). Observe the light that reflects from the side of the moon that is facing you, and how it changes as you move. Stop at each 45° and record what you see by shading the dark parts in the circles below.



2. Complete the missing parts of the diagram above as well as below by searching online.

**Above:** Write on the lines provided what each phase is called.

**Below:** Shade in the parts of the Moon that will get no light from the sun, as we see them from the Southern Hemisphere in their different phases. Note what they are called.

1. 	2. 	3. 	4. 
_____	_____	_____	_____
5. 	6. 	7. 	8. 
_____	_____	_____	_____



Picture of a FULL MOON

# Moon

## 3. Fill in the missing words by searching online:

What keeps the Moon in orbit around the Earth? \_\_\_\_\_.

The Moon takes \_\_\_\_\_ days to complete one revolution around Earth.

The Moon takes \_\_\_\_\_ days to rotate once on its axis.

From Earth the Moon appears to rise in the \_\_\_\_\_ and set in the \_\_\_\_\_.

Why does the same side of the Moon always face the Earth? \_\_\_\_\_

\_\_\_\_\_

When half the Moon is visible, its phase is not called a half-moon but a quarter Moon. Propose reasons why. \_\_\_\_\_

\_\_\_\_\_

What is a blue Moon? \_\_\_\_\_

\_\_\_\_\_

Why can we sometimes see the moon during the day? \_\_\_\_\_

\_\_\_\_\_

Does people in the northern hemisphere see the moon differently from us here in Australia? Explain why. \_\_\_\_\_

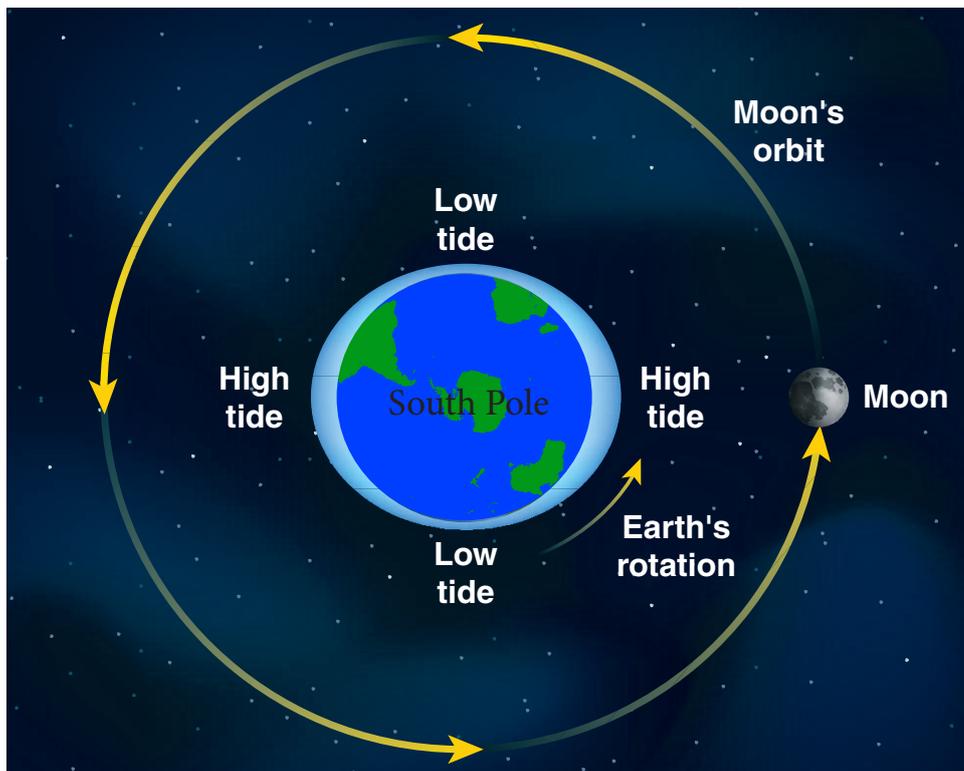
\_\_\_\_\_

\_\_\_\_\_

# Tides

5. Read the text below and with reference to your textbook PS7 Chapter 9.2, p.337 and the diagram complete the sentences and questions below:

Tides in the ocean are caused mostly by the pull of the moon on Earth. The Moon's gravity pulls up water which is directly beneath it, creating a buldge that we call high tide. Another high tide occurs on the other side of Earth since the moon pulls the solid Earth away from the water. As the Earth turns, high tide occurs at every beach, along each coast, twice a day.



1. The \_\_\_\_\_ of the \_\_\_\_\_ affects the \_\_\_\_\_ by dragging all the water in the oceans towards it, causing a buldge on the side of the \_\_\_\_\_ that faces the Moon. (See picture)

2. High tides happen every \_\_\_\_\_ hours. Each high tide is followed by a \_\_\_\_\_.

3. Why do the tides go in and out? \_\_\_\_\_  
\_\_\_\_\_

4. What would happen if the Moon did not exist? \_\_\_\_\_  
\_\_\_\_\_

5. State how many tides will be experienced every day at the docks in Freemantle, Western Australia. \_\_\_\_\_

## Word Bank (Q.1-2)

12

tides

Earth

low tide

gravity

Moon

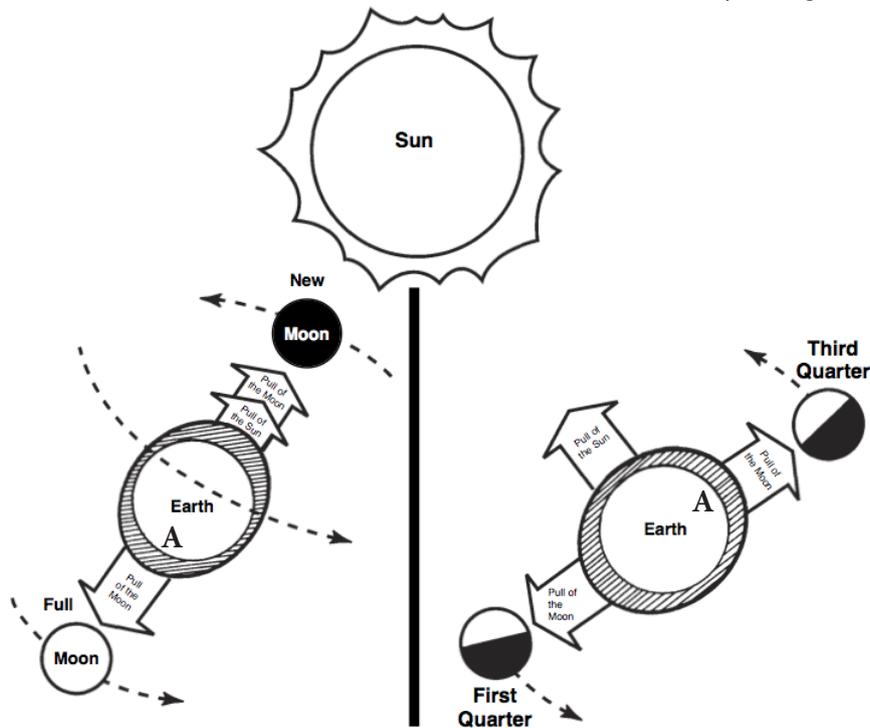
6. Read the text below and examine the two diagrams that show Spring and Neap tides. Look closely at the positions of the Sun, Earth and the Moon in each diagram.

**Spring Tides**

Spring tides are extremely high and extremely low. This is created when the sun and moon pull together. These occur twice each month near the full and new moons.

**Neap Tides**

Neap tides do not rise as high nor fall as low as normal tides. They occur twice a month when the moon is near its first and last quarters and are caused by the moon and sun pulling at a right angle.



The position of Australia is marked with capital A in both diagrams above.

What type of tide is Australia likely to be experiencing in the diagram on the LEFT and why? In your own words explain what is happening?

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What type of tide is Australia likely to be experiencing in the diagram on the RIGHT and why? In your own words explain what is happening?

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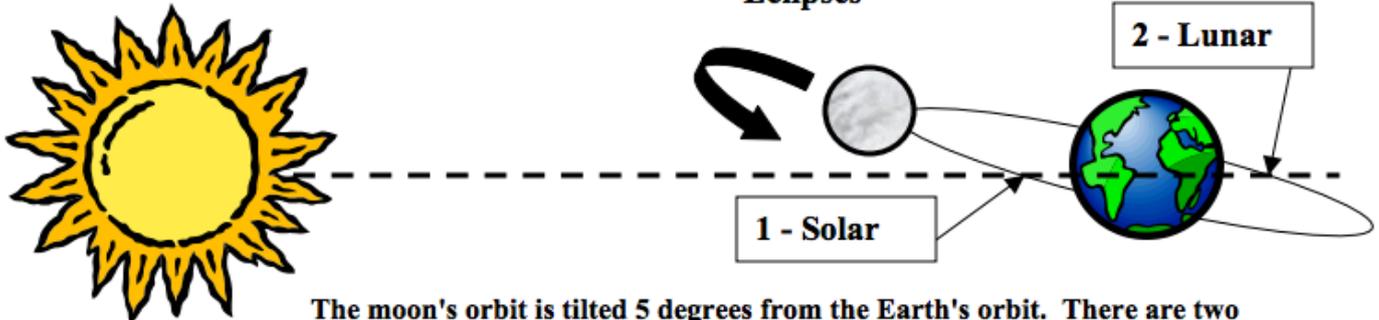
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# Eclipses - Solar and Lunar Eclipse

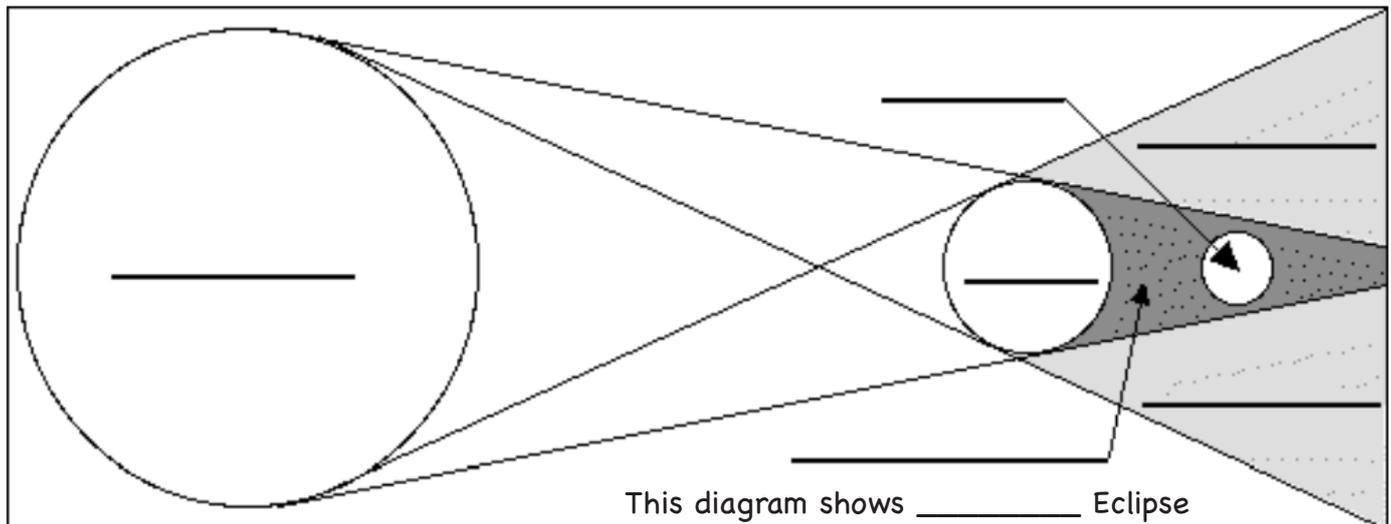
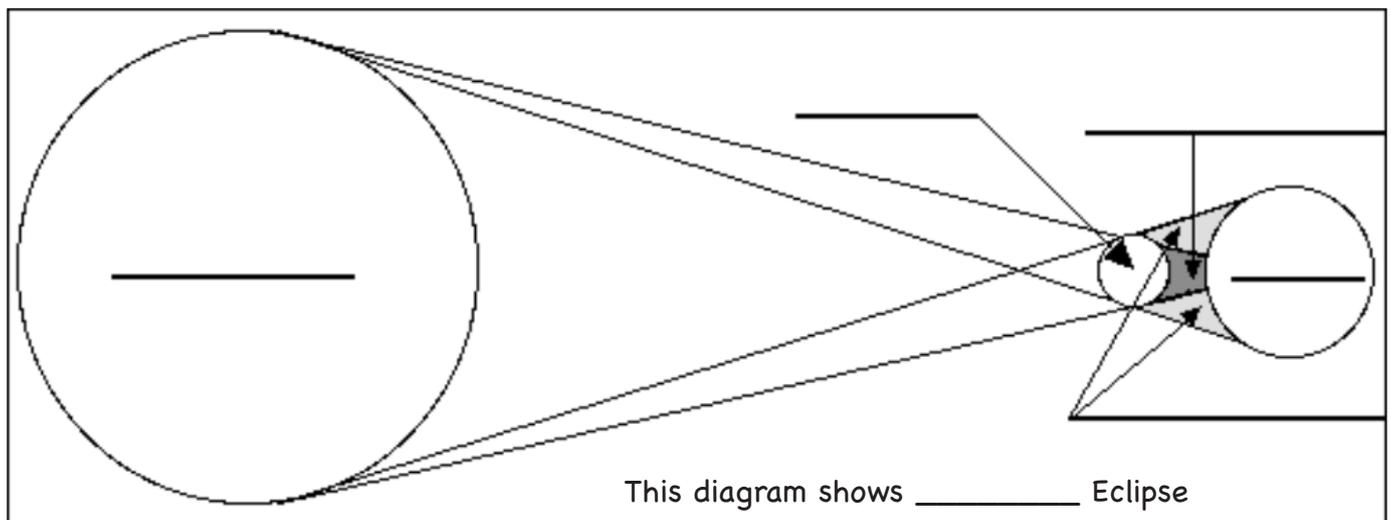
7. Sometimes the orbits of the Moon around Earth and Earth around the Sun cause all three bodies - SUN - EARTH - MOON to align so that:

- a) the Moon blocks sunlight from reaching the Earth, or
- b) the Earth blocks sunlight from reaching the Moon.

When this happens an eclipse occurs.



The moon's orbit is tilted 5 degrees from the Earth's orbit. There are two points in this orbit that can cause an eclipse to occur.



Use your text PS7 Chapter 9.2 page 339-340 and fill in the blanks in the diagrams above using this word bank:

**Earth** - the planet on which we live.

**Moon** - the natural satellite of the Earth.

**Sun** - the star in our Solar System.

**Penumbra** - (light grey) the area in which the shadow of an object (the Moon or the Earth) is partial (less dense), and the area in which a partial solar eclipse is experienced.

**Umbra** - (dark grey) the area in which the shadow of an object (the Moon or the Earth) is total (full and dark), and the area in which a total solar eclipse is experienced.

## **Eclipses Discussion Questions:**

Look at the diagrams (you filled out earlier) showing the positions of the Moon, Earth and Sun during a lunar and a solar eclipse and answer the following questions:

### **During a lunar eclipse:**

Which bright object is in shadow?

Which object is casting the shadow?

Does everyone in the world see a lunar eclipse?

Who can't see a lunar eclipse?

What is the phase of the moon during a lunar eclipse?

Do you see lunar eclipses at night or during the day?

Why don't we see a lunar eclipse during every full moon?

### **During a solar eclipse:**

Which bright object is covered up?

Which object is blocking the sunlight?

Does everyone in the world see a solar eclipse?

Who can't see a solar eclipse?

What is the phase of the moon during a solar eclipse?

Do you see solar eclipses at night or during the day?

During a solar eclipse, what would you see if you stood on the Moon and looked at Earth?

Do other planets have eclipses?