Position of Earth and Moon cause tides, moon phases and eclipse

## Terms

Tides –

Spring Tide –

Neap Tide –

Eclipse –

Solar Eclipse –

Lunar Eclipse –

Moon –

Gravity –

Mass –

Weight –

## Questions

1. What correlation does the amount of surface gravity have to the change in weight experienced on different planets in the solar system?

2. From your mass, determine what your weight would be on three different planets?

Task – Draw 2 different pictures. The first should be the Moon position relative to Miramichi causing a high tide. The second should be the Moon position relative to Miramichi causing a low tide.

Task – Draw the relationship of the Sun, Moon and Earth creating either a Lunar Eclipse or a Solar Eclipse.

## The Tides

Lesson 8 – How does the Moon affect the Earth? (Tides)

Read Pg 28 & 29 

* Sea levels are subject to the tides. The tides are caused by the gravitational forces of the sun and moon combined with centrifugal forces resulting from the rotations within the earth-moon system. The gravitational pull of the moon and the centrifugal force of the earth-moon rotation cause high tides on both sides of the planet.
* High and low tide follow a 28-day cycle. The greatest difference between high and low tide occurs when the sun and moon are in line with each other. When the sun and moon are at right angles to each other, the forces are less effective; high tides are rather low.
* As a moon day is 50 minutes longer than a day on earth, the time of tides vary daily.

Moon Phases

Lesson 7 – How does the Moon Move? (Moon Phases)

Read Pg 24 & 25

* The sun dominates the daytime sky, but the Moon resigns over the night. The Moon is the largest and brightest object in the night sky. Unlike the sun, the Moon does not give off its own light. **The Moon reflects sunlight.**
* To us on Earth, the Moon appears to change shape over the course of several nights. We call the different shapes the phase of the Moon.



* The Moon revolves around the Earth in an orbit, and it rotates on its axis. The Moon takes about 29.5 days to make one complete revolution around the Earth.
* This phenomenon is referred to as the phases of the moon. At new moon, the moon cannot be seen at all because no sunlight falls onto the side facing the earth. In other words, it turns its dark side to us. Then the moon waxes for 14 days and wanes again for 14 days. Full moon is when the earth is exactly between the moon and the sun. The side facing us is fully illuminated.

## Eclipse

Lesson 8 – How does the Moon Affect the Earth? (Eclipse)

Read Pg 26 & 27

* As the Moon and the Earth move in space, they sometimes block each other from the Sun’s light. When this happens, we see an eclipse. During a solar (Sun) eclipse, the moon blocks the Sun’s light from reaching Earth.



* During a Lunar (Moon) eclipse, the Earth blocks the Sun’s light from reaching the Moon.
* The earth is positioned between the sun and the moon. Its shadow reaches far out into space. A lunar eclipse occurs when the moon passes through this shadow.



## Mass and Weight

Mass is measure of how much matter in an object. Regardless of where you are in the solar system mass does not change. Weight is a measure of how much gravity pulls on an object or a body. Weight will change depending on the gravity of where you are in the solar system.

Mass on Earth 96.6kg

Weight on Earth = Mass on Earth x Gravity on Earth

Weight on Earth = 96.6kg x 1.00

**Weight on Earth = 96.6kg**

Mass on Earth 96.6kg

Weight on Moon = Mass on Earth x Gravity on Moon

Weight on Moon = 96.6kg x 0.16

**Weight on Moon = 15.456kg**