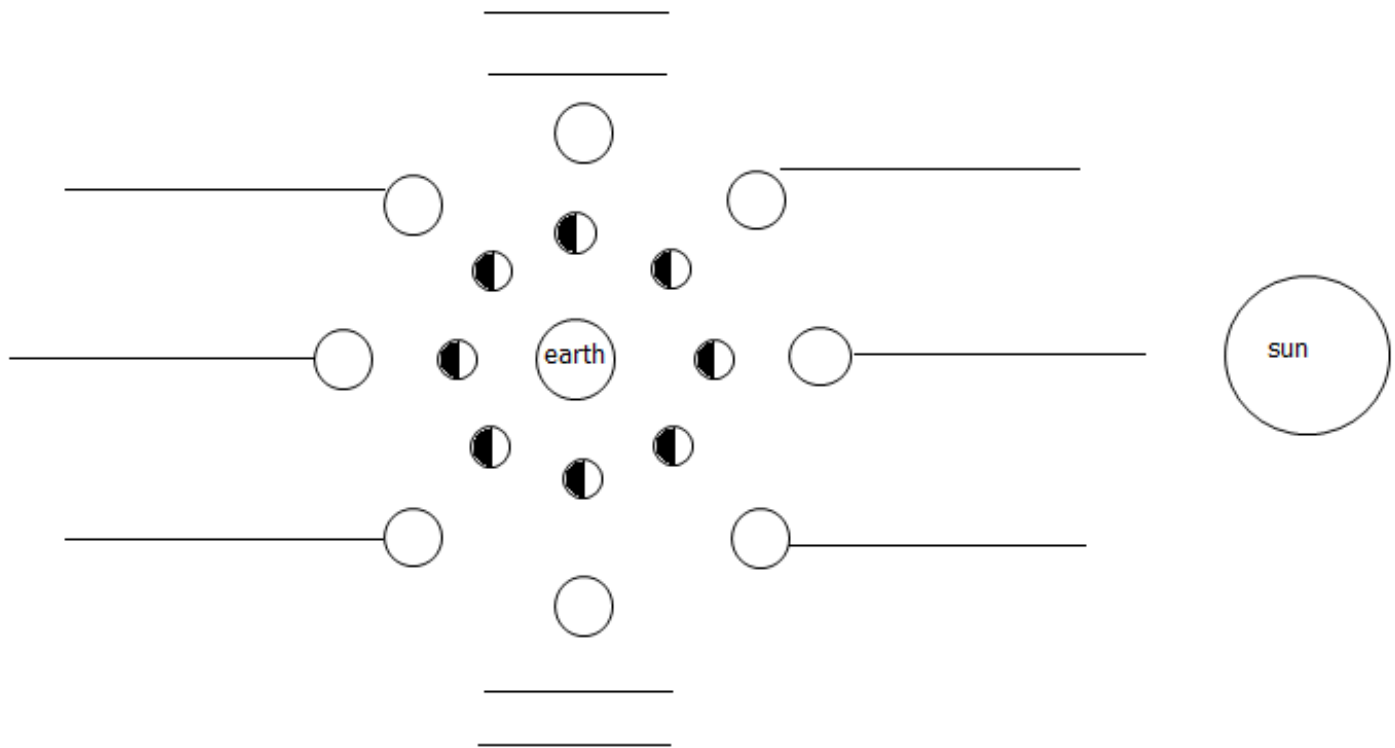


MOON NOTES 2024

MOON --- named LUNA

A. PHASES

- a. PHASES -- caused by moon's orbit around earth causing us to see different amounts of the lighted side of the moon. This view is looking down at the north pole of earth. Large circles are what we see from earth. Small circles are where the moon is positioned.



- b. Same side of the moon faces earth at all times because moon is heavier on one side than the other [weebils wobble, punching bag]
- c. Moon is always $\frac{1}{2}$ lit up, but we only see portions of the lit side depending on our view from earth

B. ECLIPSES

- a. Eclipse—when one object blocks another object so it's out of view
- partial—part of object is blocked from view
 - total—all of object is blocked from view
- b. types of eclipses
- lunar —when earth's shadow blocks out the view of the moon
 - lasts 2 hours
 - everyone on the dark side of earth (night time) sees it
 - safe to view with no special glasses

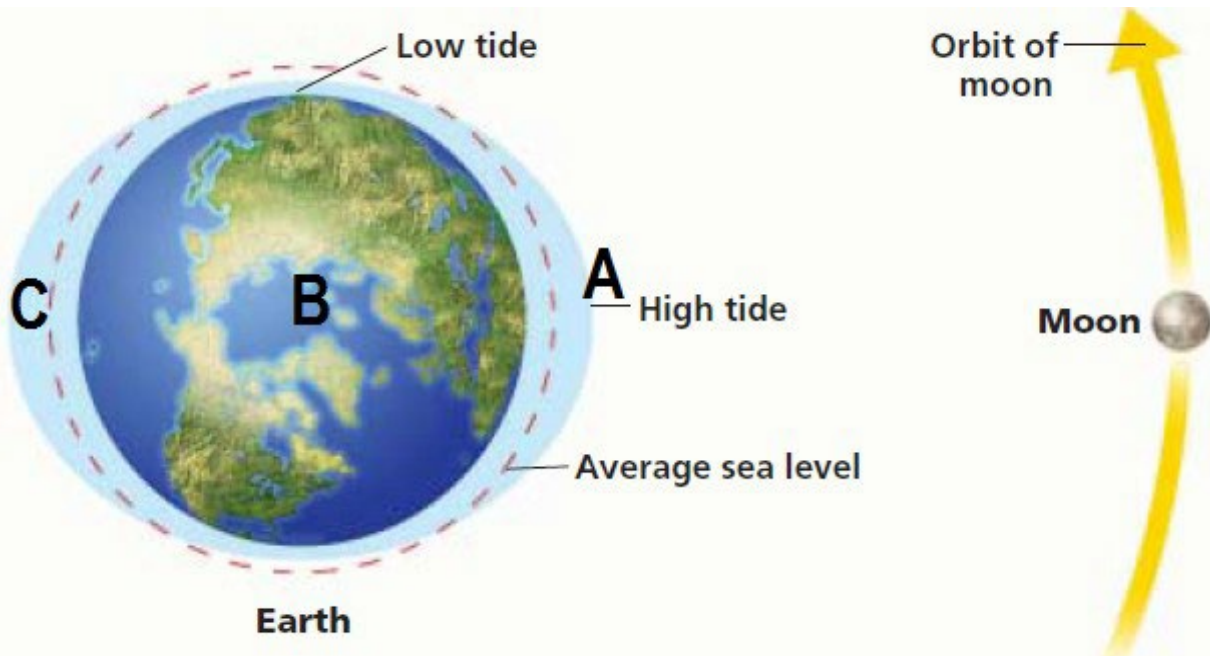
4. happen 0 to 3 times per year (about 2)
- ii. solar—when the moon blocks out the view of the sun (moon is also casting a shadow on earth)
 1. lasts only 2 to 7.5 minutes
 2. only can be seen by the people in the shadow of the moon
 3. must use special glasses to see it
 4. happen 2 to 5 times per year (about 2)

C. MOON SURFACE FEATURES

- a. Craters- large pits make from impacts of asteroids
 - i. Some are 2 billion years old
 - ii. there is no erosion nor plate tectonics to wear them away
- b. Maria {mar' ee uh} hardened lava fields
 - i. Appear as large, dark pools
 - ii. Once thought to be seas of water
 - iii. Large impacts released lava flows from below
- c. Rilles- collapsed lava tubes
 - i. look like river beds
 - ii. curvy
- d. Rays- ridges of moon dust
 - i. formed during asteroid impacts
 - ii. Go straight out from craters
 - iii. Found near newer craters
 - iv. Go away over time as other impacts knock them down
- e. Regolith – moon dust, moon “soil”
 - i. Created from vaporized asteroids
 - ii. Finer than sand
 - iii. Neil Armstrong’s footprints are still marking it due to no erosion on the moon

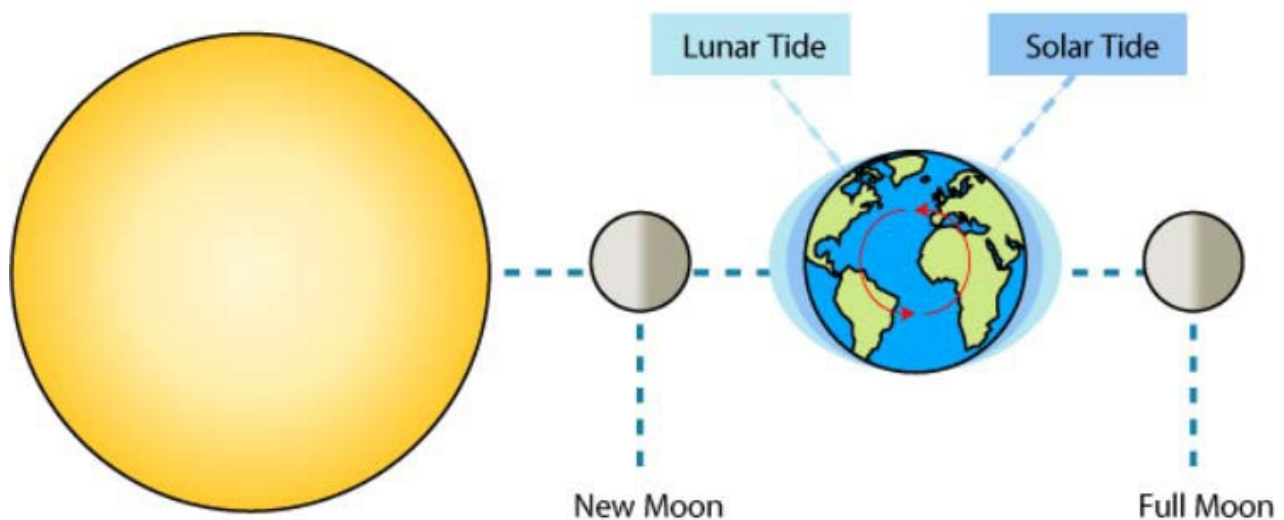
D. TIDES

- a. TIDE DEFINITION- the periodic rise and fall of the water level in oceans
 - i. Low tide- when water level is lowest
 - ii. High tide- when water level is highest
- b. Causes of tides
 - i. Moon’s gravitational pull- it is more than 2x as powerful as the sun’s gravitational pull because the moon is much closer to the earth
 - ii. Sun’s gravitational pull- less powerful – even though the sun is bigger, it is so far away it has less influence than the moon
- c. Why is there a bulge on the side NOT facing the moon?

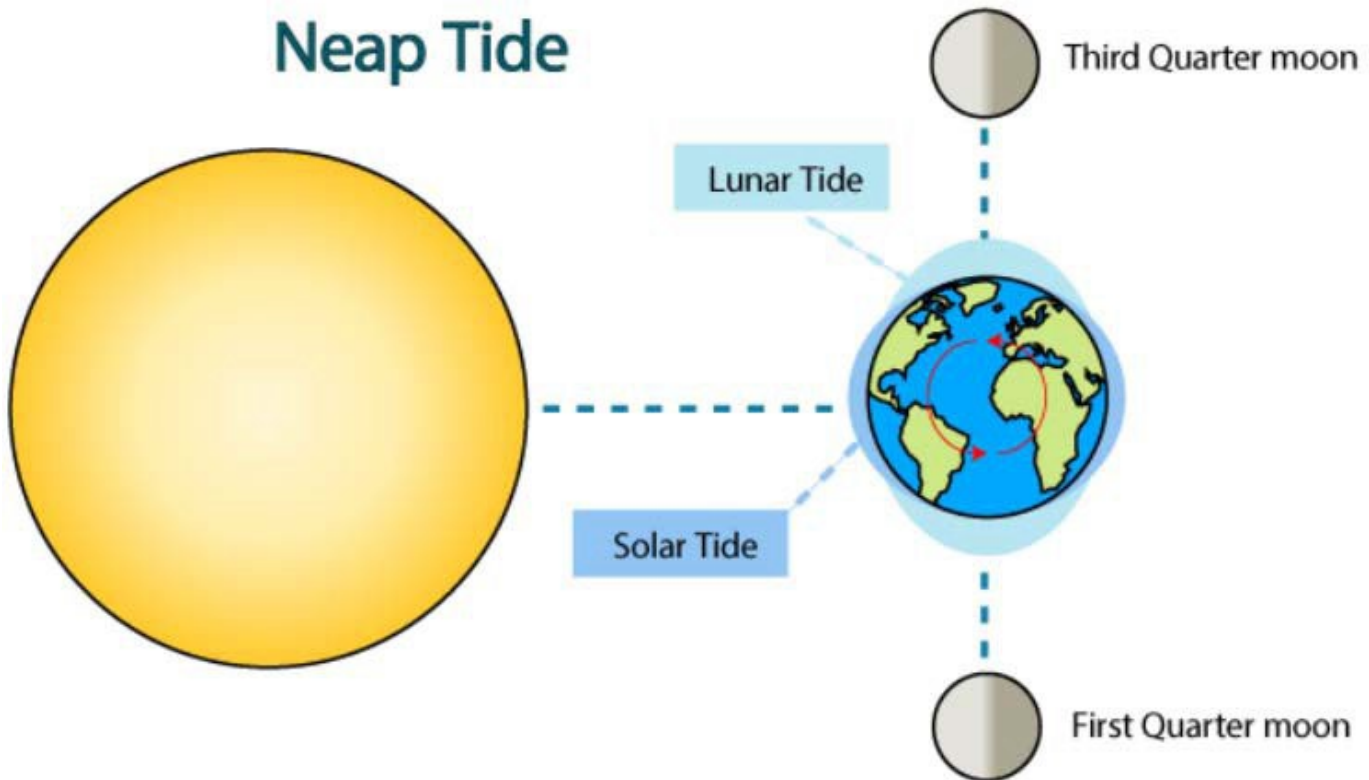


- i. At point a, there is an obvious tidal bulge because of the moon's gravity.
 - ii. At point b, the moon is pulling on Earth as well, but not as hard as at point A, because it's farther away
 - iii. At point c, the moon has the least influence. This water is not tugged on as much, so it gets "left behind"
- d. Types of tides
- i. Spring tide – the sun, moon, and earth are all lined up and thus the sun's gravity adds to the pull of the moon
 1. The high tide is higher
 2. The low tide is lower
 3. Happens during new moon and full moon
 4. Lunar tide and solar tide are added together

Spring Tide



- ii. NEAP TIDE – the sun and moon are 90 degrees apart relative to the earth, causing less extreme tidal changes
 1. High tide is lower
 2. Low tides are higher
 3. Happens during 1st quarter and 3rd quarter
 4. Lunar tide and solar tide are in different places



- e. Tidal patterns – tides are not the same everywhere because bodies of water are different sizes, shapes, and depths.
 - i. Diurnal – 1 high tide and 1 low tide each day
 - ii. Semi diurnal – 2 high tides and 2 low tides each day (both about the same height each time)
 - iii. Mixed semi diurnal - 2 high tides and 2 low tides each day (different heights each time)
 - iv. Happen about 50 minutes later each day

E. MOON FORMATION

- a. large object (size of Mars) hit earth when it was still molten
- b. melted chunks of earth break off
- c. chunks accrete (come together) to form a moon
- d. moon is pulled by Earth's gravity into orbit

- F. **MOON SIZE** Luna is $\frac{1}{4}$ the size of earth (in diameter) (only Charron, Pluto's moon has a larger moon/earth ratio)