



Tides

Essential Question

- What effect does the Sun and moon have on the ocean's tides?



TIDES

Tides are daily movements of ocean water that change the level of the ocean's surface.



What causes tides to occur?

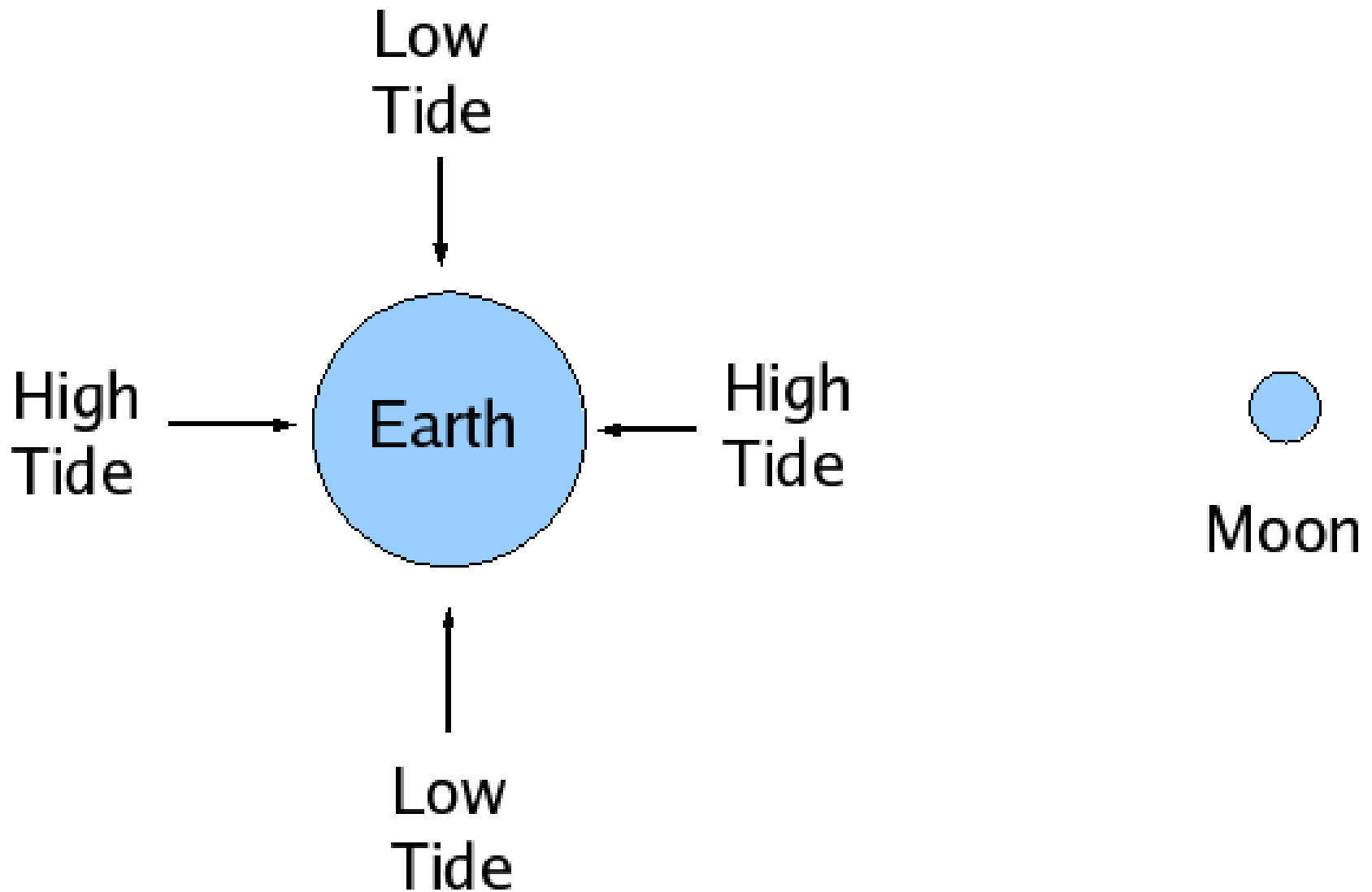
The **gravitational pull** the **moon** has on the earth causes high and low tides.



High tides occur on the sides of the Earth that are closest to and farthest away from the moon.

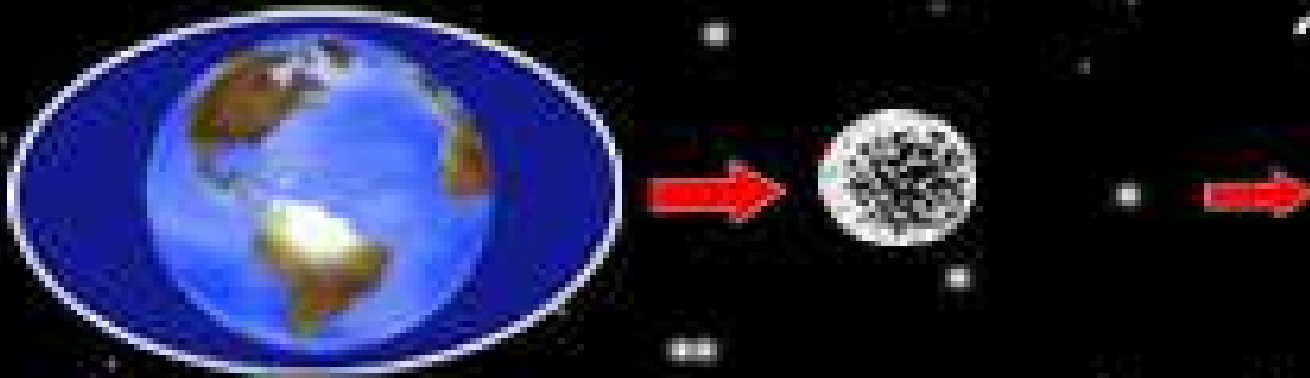
Low tides occur on the two sides of the Earth that are at a 90 degree angle to the moon.

DRAW THE DIAGRAM BELOW



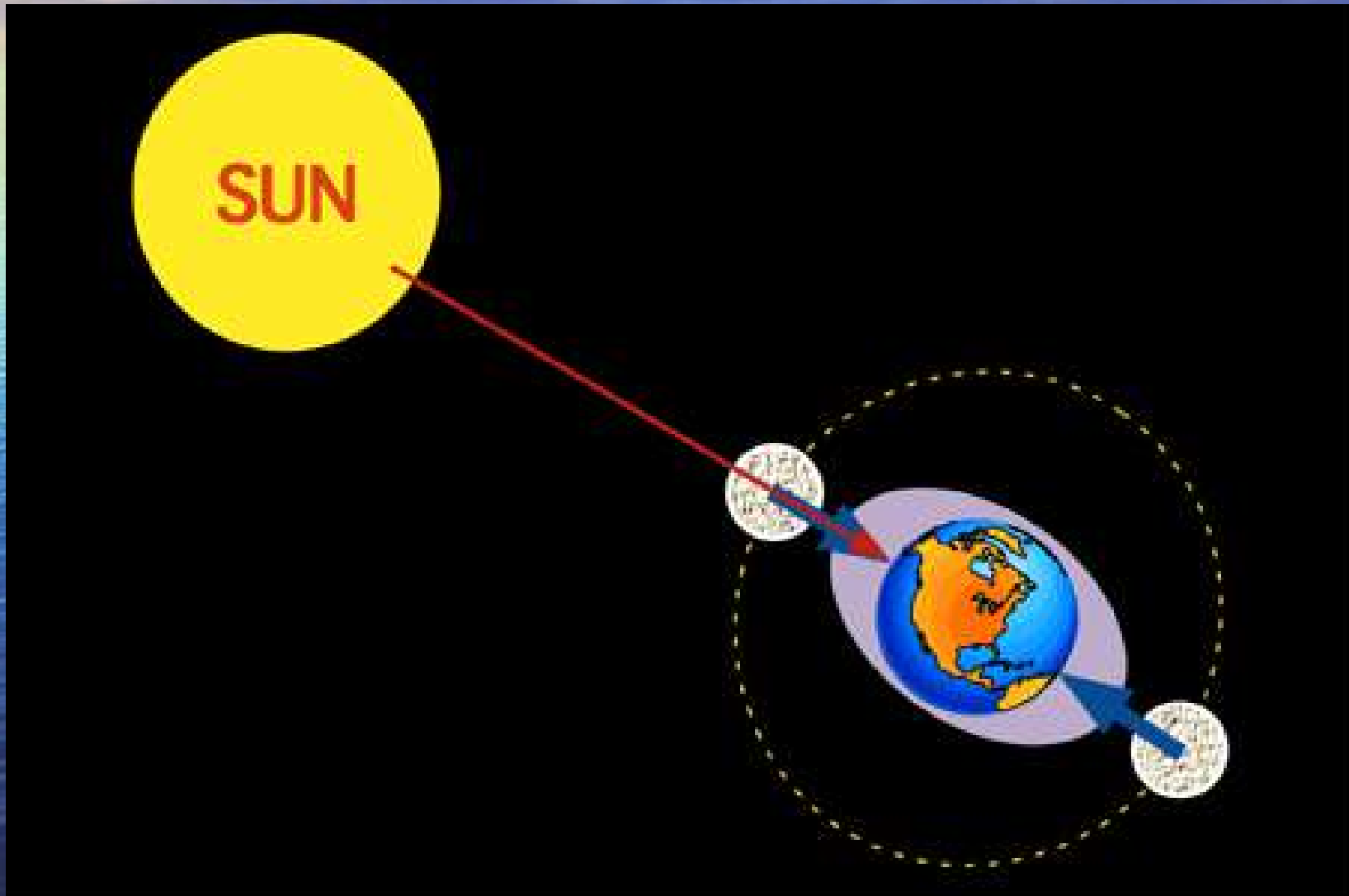
Spring Tides occur when the sun, earth, and moon form a straight line.

SPRING TIDE



Not to Scale

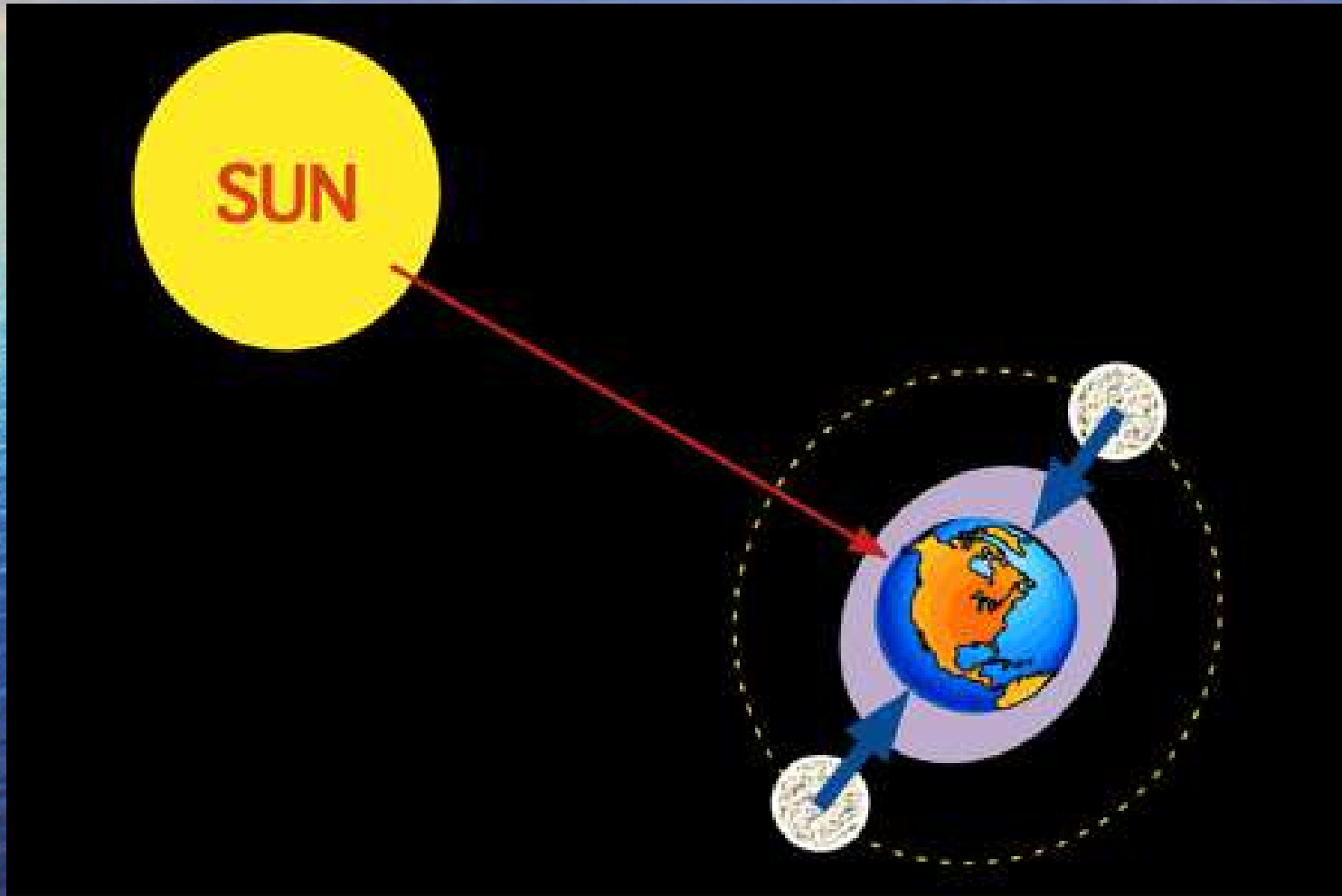
What phases of the moon will occur during the spring tides?

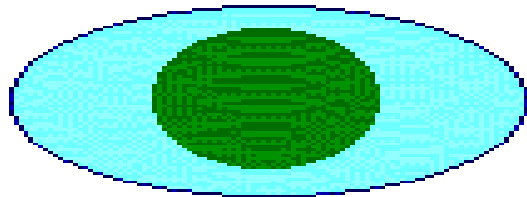


Neap tides occur when the sun, earth, and moon form a right angle.

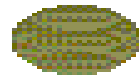


What phases of the moon will occur during the neap tides?

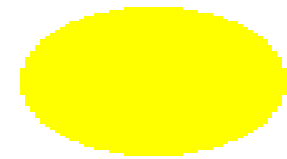




EARTH

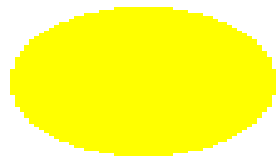


MOON

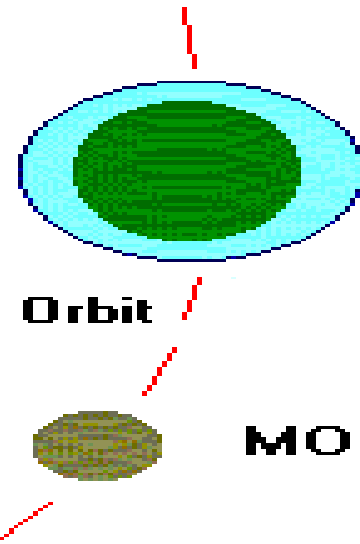


SUN

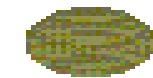
2. The bulge is large when the Moon and Sun are in line - this is a 'spring' tide



SUN

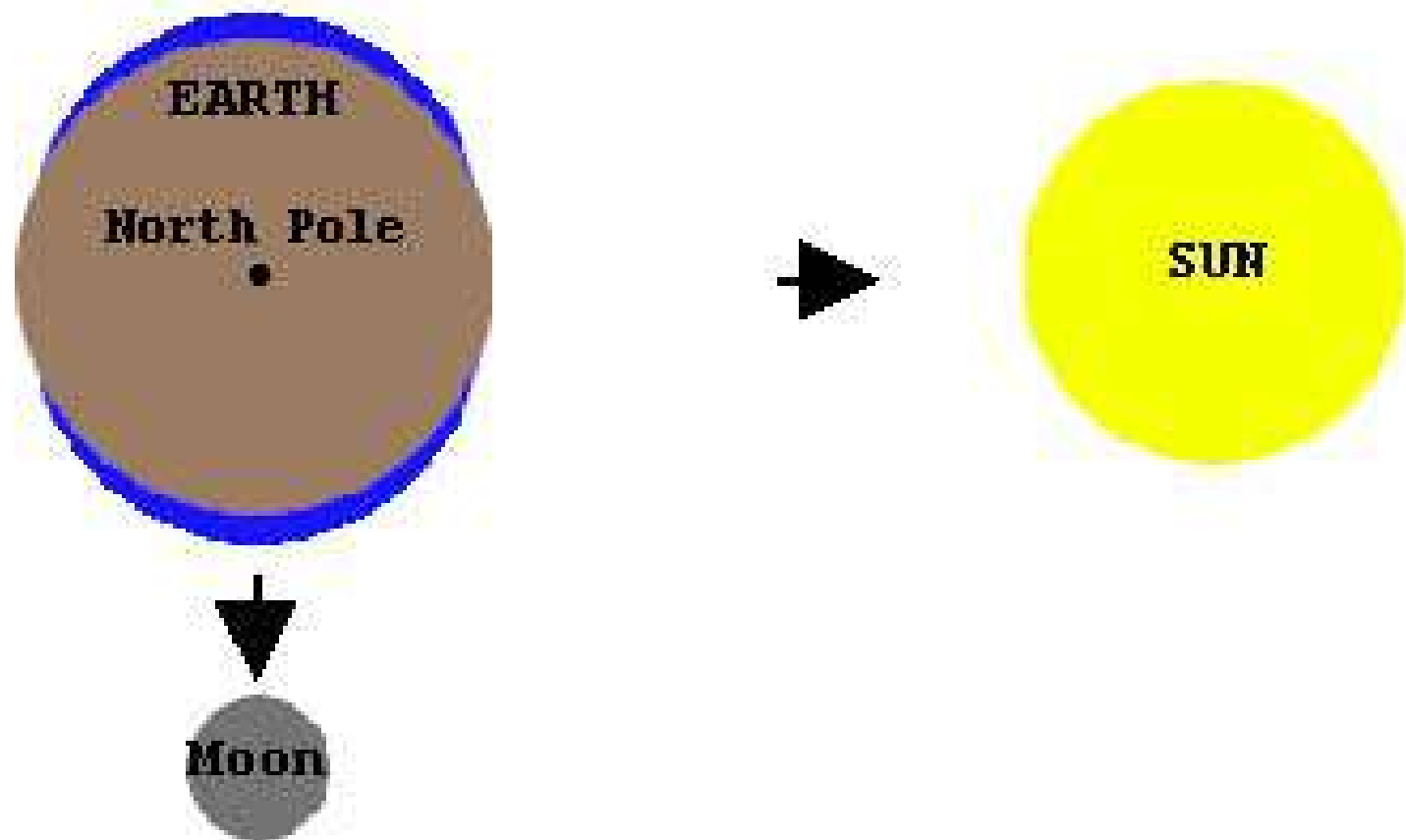
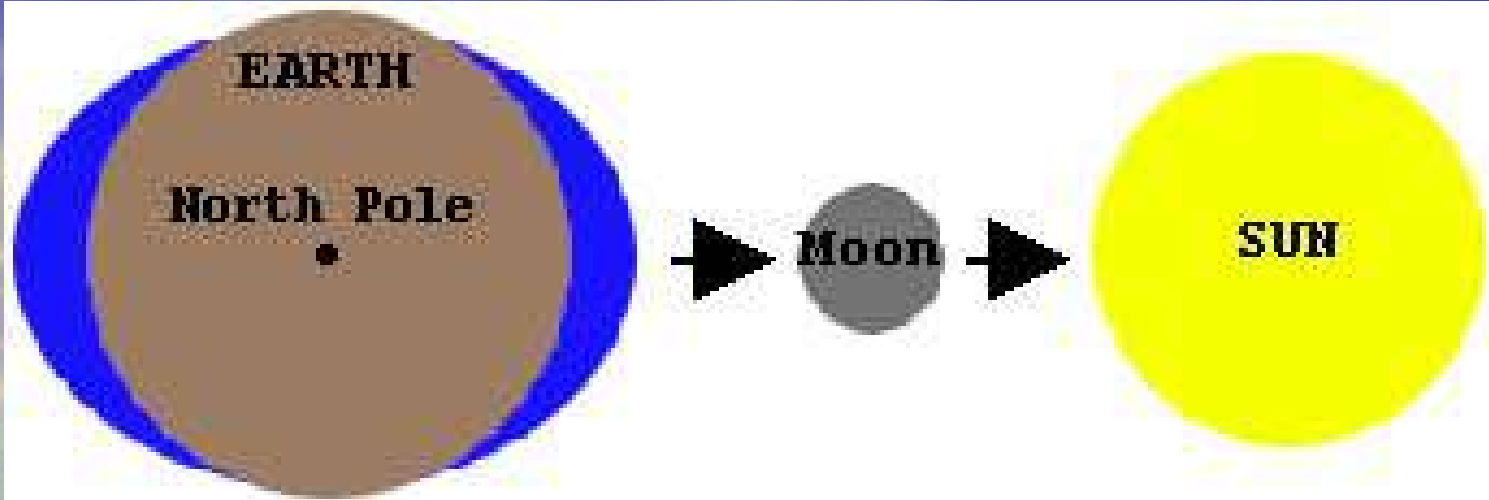


EARTH



MOON

3. The bulge is at its smallest when the Moon is along the line of the Earth's orbit around the Sun - this is a 'neap' tide



What type of tide will occur in this picture?



Check for Understanding

- During a full moon what type of tide occurs?

Check for Understanding

- During a quarter moon what type of tide will occur?

Can you answer the objective?

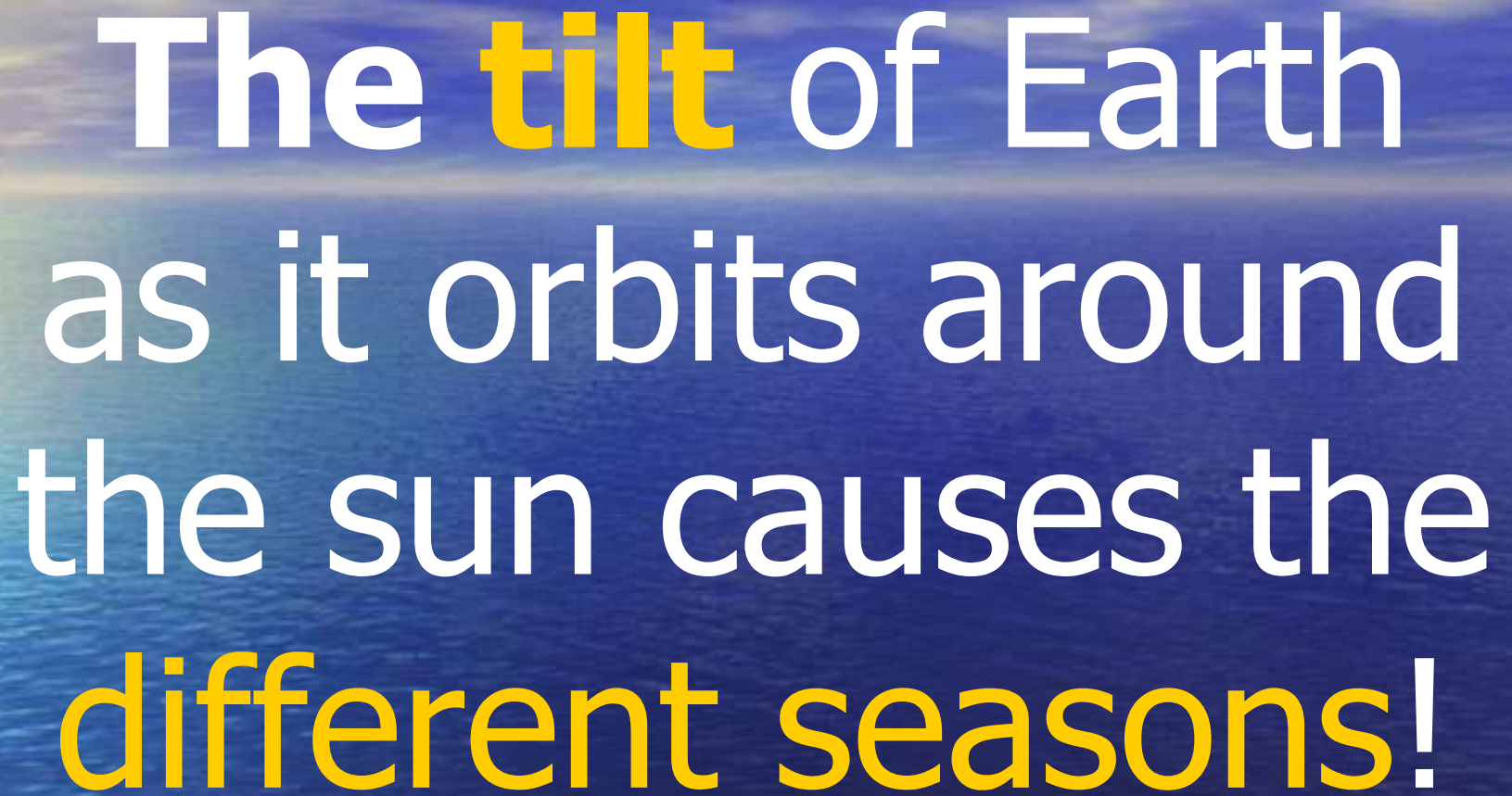
- What effect does the Earth and moon have on the ocean's tides?



SEASONS

Essential Question

How do the positions of the Earth and Sun effect the four seasons?



The **tilt** of Earth
as it orbits around
the sun causes the
different seasons!

Four Seasons:

Summer

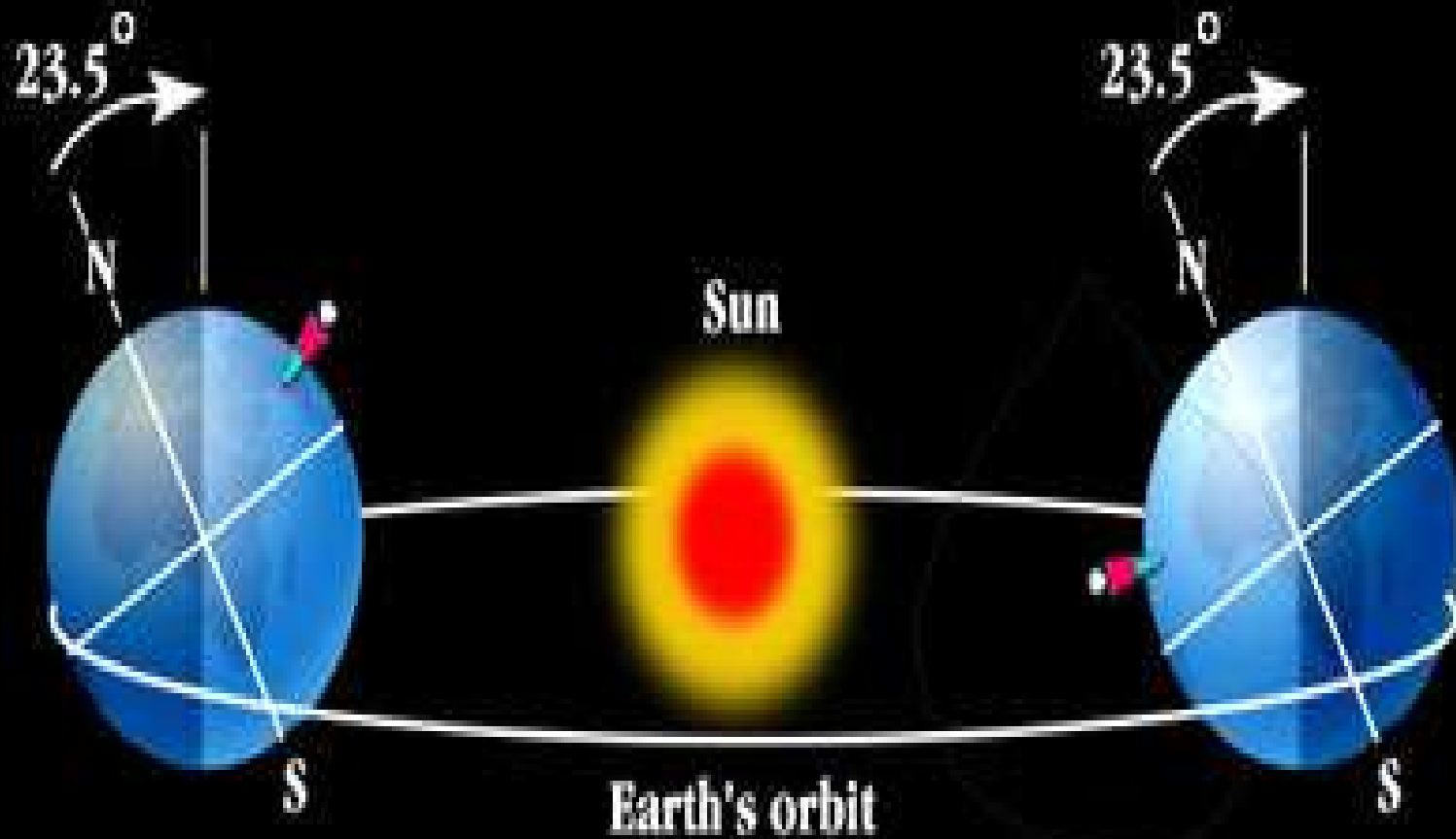
Fall (autumn)

Winter

Spring



What seasons are occurring in the southern hemisphere??



Winter in Northern Hemisphere

Summer in Northern Hemisphere

Summer Solstice

- The longest amount of day light and the shortest night.
- June 21st in the Northern Hemisphere

Winter Solstice

- The shortest day and the longest night.
- December 21st in the Northern Hemisphere

Equinox

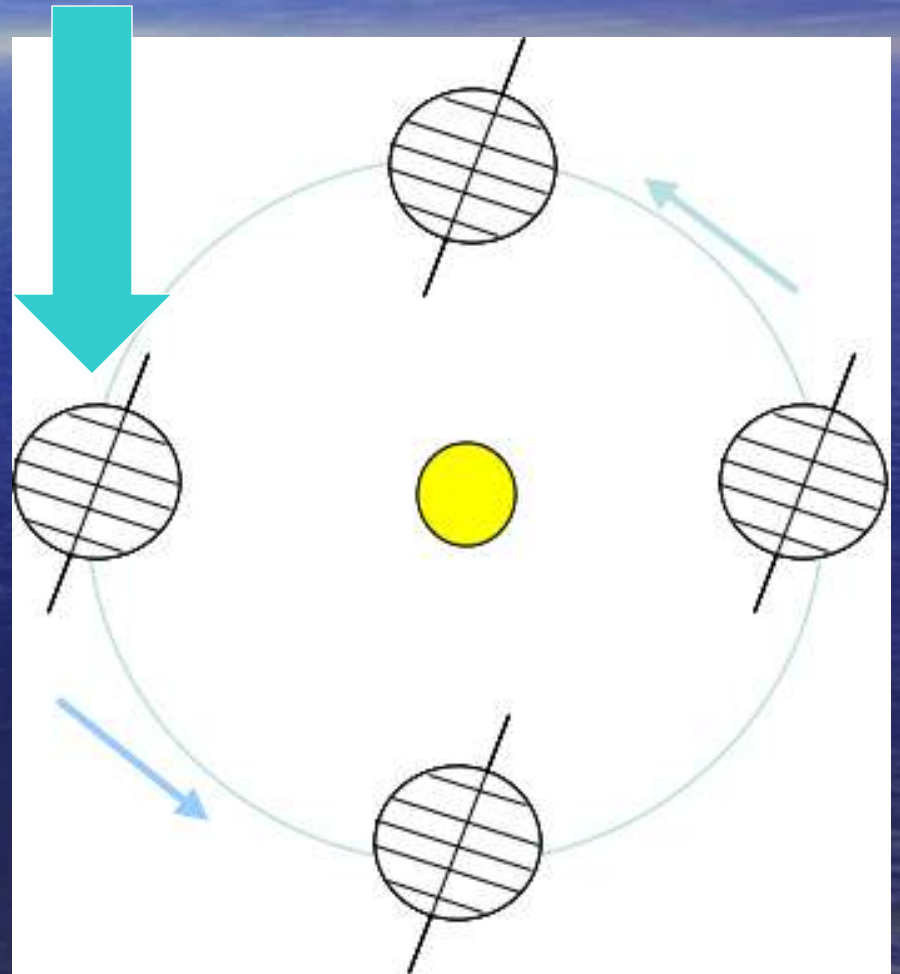
- During spring & fall
- Even amount of day and night.
- Spring Equinox in the Northern Hemisphere is around March 21st .
- Fall Equinox in the Northern Hemisphere is around September 21st .

Check for Understanding

- When the Northern Hemisphere is tilted away from the sun what season will it be?
 - a. Summer
 - b. Winter
 - c. Spring
 - d. fall

Check for Understanding

- What season would The Northern Hemisphere be in this picture?



Can you answer the Essential Question?

- How do the positions of the Earth and sun cause the four seasons?