



SCIENCE

Tuesday 2.9.16

How do the cycles of the Moon
affect Earth's cycles?

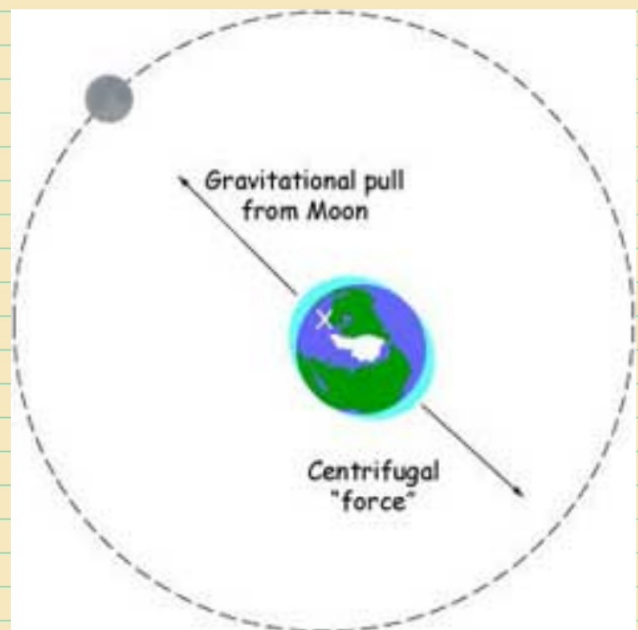
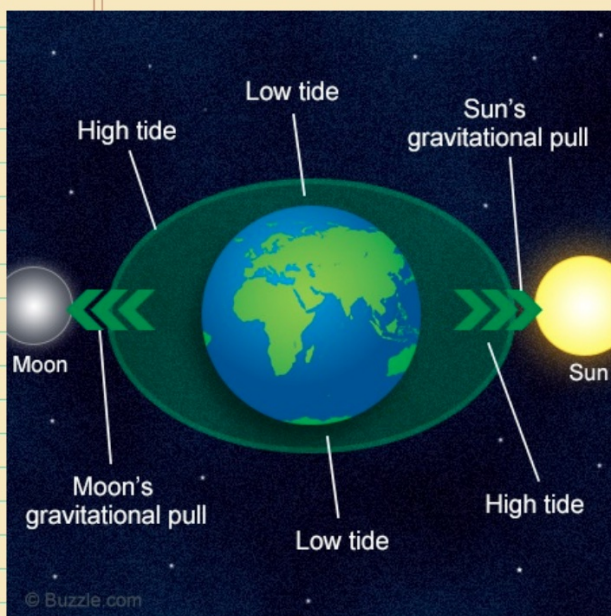
Lets brainstorm!

The biggest effect the moon has on the Earth is on the Ocean.

The **Moon's** gravity pulls on **Earth's** oceans and distorts them, causing tides. The water on the side of **Earth** closest to the **Moon** experiences the biggest pull, and bulges outward. The water on the opposite side also bulges, and the two bulges follow the **Moon's** motion and **Earth's** rotation.



How Tides work



- As the Earth spins on its own axis, ocean water is kept at equal levels around the planet by the Earth's gravity pulling inward and centrifugal force pushing outward.

The Moon's gravitational forces are strong enough to disrupt this balance by accelerating the water towards the Moon.

This causes the water to 'bulge.' As the Moon orbits our planet and as the Earth rotates, the bulge also moves.

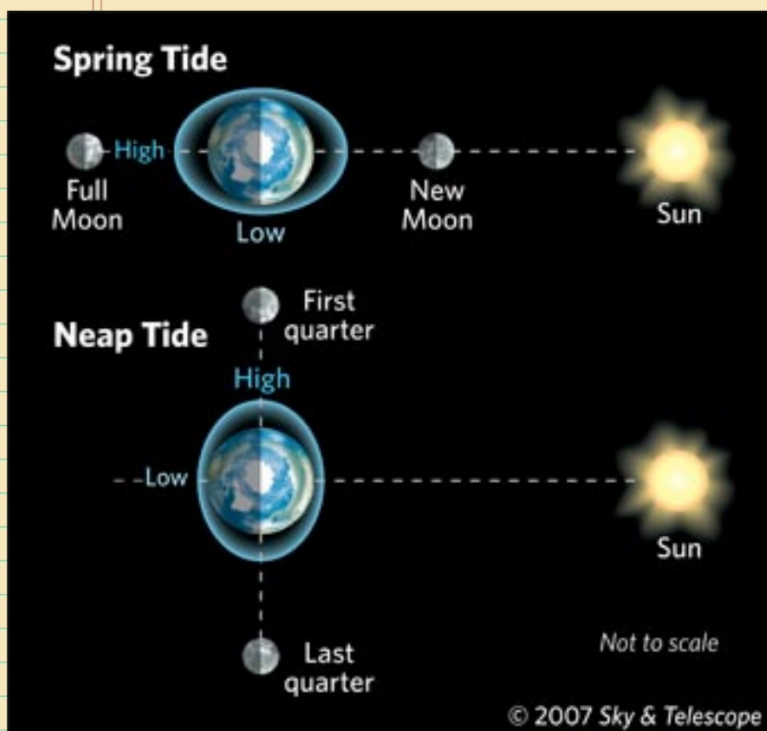
The areas of the Earth where the bulging occurs experience *high tide*, and the other areas are subject to a *low tide*.

Water on the **opposite** side of Earth facing away from the Moon also bulges outward (high tide), but for a different and interesting reason: in reality, the Moon and the Earth *revolve together around a common gravitational center between them, or center of mass.*

Here's a rough but helpful analogy: picture yourself swinging a heavy object attached to a rope around your body as you rotate. You have to lean back to compensate, which puts the center of mass between you and the object. With the Earth-Moon system, gravity is like a rope that pulls or keeps the two bodies together, and centrifugal force is what keeps them apart. Because the centrifugal force is greater than the Moon's gravitational pull, ocean water on the opposite side of the Earth bulges outward. The same forces are at play as the Earth revolves around the Sun. The Sun's gravity pulls ocean water toward the Sun, but at the same time, the centrifugal force of the combined Earth-Sun revolution causes water on the opposite side of Earth to bulge away from the Sun.

However, the effect is smaller than the Moon, even given the greater mass of the Sun (greater mass means greater gravitational force). Why? Simply because The Sun is so far away — over 380 times farther away from the Earth than the Moon.

So How does alignment of the moon and the Sun affect the tides?



Spring Tide: are especially strong tides (they do not have anything to do with the season Spring). They occur when the Earth, the Sun, and the Moon are in a line. The gravitational forces of the Moon and the Sun both contribute to the tides. Spring tides occur during the full moon and the new moon.

Neap Tide: a tide just after the first or third quarters of the moon when there is the least difference between high and low water.





SCIENCE

Wednesday 2.10.16

Today, you will be answering questions posted around the classroom to help prepare you for your quiz tomorrow.

YOU HAVE A QUIZ IN SCIENCE TOMORROW



SCIENCE

Thursday 2.11.16

Quiz time! Clear your desk!



SCIENCE

Friday 2.12.16

Last day before break! We are going to go over your quiz from yesterday,

and then you'll have time to pass out Valentines!