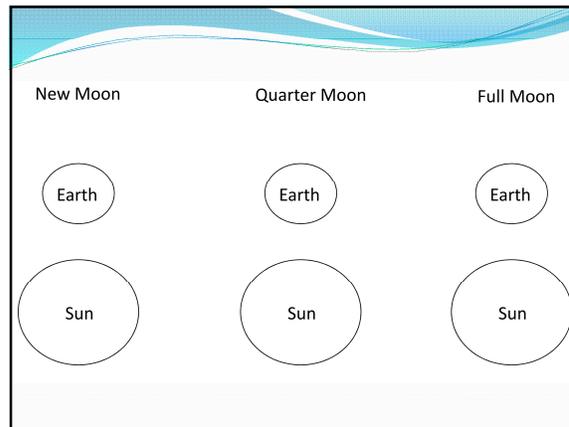


1. Have homework on your desk.
2. Complete back of tide activity.

Who will have the ah-ha moment?
When you do, be appropriate with your reaction. Please don't give away the answer, let your classmates discover it for themselves.



Tides:

High or Low - What Causes Tides?



Study Jams Video



What Are Tides?

- Tides are the daily **rise** and **fall** of Earth's **waters** on its coastlines.
- As the tide comes **in**, the level of water on the beach **rises**, and as the tide goes **out**, the level of water on the beach goes **down**.
- Tides occur in **all** bodies of water, but they are most noticeable in the **ocean** and large **lakes**.



High Tides

- High tides are when the water reaches its **highest** point.



Low Tides

- Low tides are when the water reaches its **lowest** point.



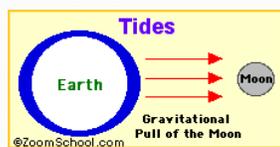
What Causes Tides?

- Tides are caused by the **interaction** of Earth, the Moon, and the **Sun**.
- **Gravity** is the reason for tides.
- Gravity is the **force** exerted by an object that **pulls** other objects toward it.



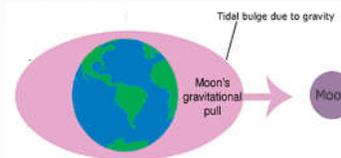
Moon's Gravity and Tides

- The Moon's **gravity** affects the **water** on Earth's surface.
- Since the Moon is **close** to the Earth, it has a **strong** gravitational pull on it (closer objects have stronger gravitational pull).



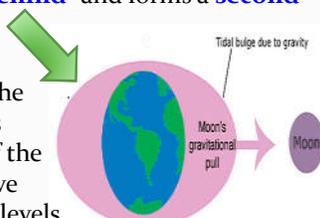
Moon's Gravity – Tidal Bulges

- The Moon pulls on the water on the side **nearest** to it more **strongly** than it pulls on the **center** of the Earth.
- This **pull** creates a bulge of water, called a **tidal bulge**, on the side of Earth **facing** the Moon.



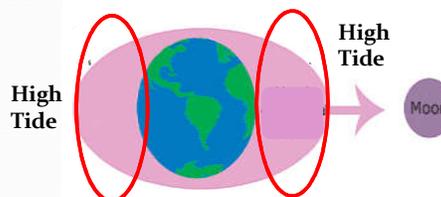
Moon's Gravity – Tidal Bulges

- The water on the side of Earth facing **away** from the Moon has a **less** strong pull.
- This water is "**left behind**" and forms a **second** bulge.
- As Earth **rotates**, different places on the planet's surface pass through the areas of the **tidal** bulges and have the change in water levels.



Tidal Bulges – High Tide

- In places where there are tidal bulges, **high tide** is occurring along the coastlines.



Tidal Bulges – Low Tide

- In places **between** the bulges, **low** tide is occurring.

LOW TIDE

Moon's gravitational pull

LOW TIDE

Daily Tide Cycle

- Most seashores have **four** tides every day – **two** high tides and **two** low tides.
- A **change** of from low to high tide or vice versa takes about **6** hours and **12** minutes.
- Changes in tides can be **drastic** (can notice) or **less drastic** (can't notice).

Sun's Gravity and Tides

- The Sun is so **large** that its **gravity** also affects tides.
- At times, the **Sun** and **Moon** pull together on Earth's waters in the **same** direction.
- At other times they pull in **different** directions. Moon affects 70% of the tide, the sun affects 30% of the tides

Moon has a 70% effect on the tide, the sun has a 30% affect

Monthly Tide Cycle

- Changes in the **positions** of Earth, the Moon, and Sun affect the **height** of tides during a month.

Spring Tides

- Spring** tides occur **2** times a month, during a **full** and **new** moon when the Earth, Sun, and Moon are lined up.
- Spring tides are **higher** and **lower** than normal tides.
- "**strong** tides"

Neap Tides

- Neap** tides occur in between spring tides, at the **first** and **third** quarters of the Moon when the Sun and Moon pull at **right** angles to each other.
- Neap tides are **not** as high or low as normal tides.
- "**weak** tides"

