**Intro to Oceanography**

Date:

SWBAT: Describe and diagram the features of the continental margins and ocean basins.

Oceanography is the study of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

* draws on geology, chemistry, physics and biology

Sonar - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Works by transmitting sound waves toward the bottom of the ocean; sensitive receiver intercepts the echo reflected by the bottom
2. Speed of sound \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. The depths determined from monitoring the echoes
* Use for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

The ocean floor is divided into 2 areas:

|  |  |
| --- | --- |
| 1. Continental Margin:
	1. Shallow parts of ocean made of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	2. It is not always obvious; it’s not the shoreline
	3. It is the dividing line between \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
 | 1. Ocean Basin
	1. Made of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

It’s the area beyond the continental rise |



**Ocean Life and Aquaculture**

Date:

SWBAT: Categorize ocean dwellers by movement. Describe how we use the ocean as a food source.

**Classification of Marine Organisms:** Marine organisms can be classified according to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**\_\_**

Marine Ecosystems

* Some of the most diverse marine ecosystems are:
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ – freshwater and seawater mix
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ – near surface of tropical waters formed by skeletal deposits of coral

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| **Term** | **Description** |
| **Plankton** | All organisms (algae, animals and bacteria) that drift with the ocean currents.* Phytoplankton are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Phytoplankton perform *photosynthesis*.
* Zooplankton are free floating, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Zooplankton eat phytoplankton.
 |
| **Benthos** | any form of ocean life that \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| **Nekton** | **nektos = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** Animals capable of moving independently of the ocean currents by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ * + Ex. Adult fish, squid, marine mammals and reptiles
 |

Food from the Ocean

* **Aquaculture**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ *Catfish, salmon, oysters, and shrimp*

|  |  |
| --- | --- |
| **Traditional**Land-based to ocean-based cultivation* Fishing
	+
* Substantial contributions to food supplies
*
* Destruction of coastal ecosystems
 | **Sustainable**Land-based to ocean-based cultivation* Fishing
	+
* Plant-based feeds
* Does not negatively affect wildlife
* Supports long-term economic and social well-being of local communities
 |



**Temperature, Salinity and Acidification**

Date:

SWBAT: Describe how the ocean temperature changes with depth; determine how salinity affects density.

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| **Temperature** |
| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the surface of ocean water (H2O) 3 temperature zones of ocean water:* **Surface zone**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_; sea level to 300m;

sunlight only penetrates a few meters, but wind and waves mix heat evenly throughout the surface zone.* **Thermocline zone**: marked by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_;

marks the boundary change between the surface zone and the deep zone300-800m below sea level. * **Deep zone**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 800m-ocean floor.
 | http://madeiraislands.net/wp-content/uploads/2015/07/thermocline.jpg |
| **Salinity** |
| What’s in ocean water?* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of ocean water is H2O
* The other \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is dissolved gases and solids such as salts
	+ (NaCl) Sodium Chloride is the main salt in the ocean
 |
| http://www.fao.org/docrep/r4082e/r4082e42.gifSalinity – \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (mainly salts) present in ocean water.* Average salinity of ocean water is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ (%o = parts salt per 1000 parts ocean water)
	+ 50 million billion tons of salt in our seas
	+ **1,000 g of seawater consists of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_of dissolved salts**
* **Large amounts of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ salinity.**
* Large amounts of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ salinity.
 |
| Each year, Earth's rivers carry more and more salt into the ocean. The water evaporates, but the salt is left behind in the ocean* The principle source of dissolved salts in the ocean is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
 | http://www.msnucleus.org/membership/html/k-6/wc/oceans/4/images/wcoc4_2.gif |
| Ocean Resources* Desalination - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
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| **Ocean Acidification** |
| Excess carbon dioxide from the atmosphere makes its way to the oceans* + The oceans are a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* CO2 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ acidity of ocean water
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ especially (CaCO3) calcium carbonate organisms

Negative impacts on fisheries* + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Decrease in global shellfish production and disruption of livelihoods
 |

**Currents and Climate**

Date:

SWBAT: Categorize ocean currents by location, temperatures, surface and density.

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| --- | --- |
| **Term** | **Description** |
| Ocean Currents | Definition:* Currents can be on the surface of the ocean or in deep water.
 |
| Surface Currents | Definition:* The energy that drives surface ocean currents comes from \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
 |
| Gyres | http://columbia.superfame.us/wp-content/uploads/2014/09/Five-major-ocean-gyres1.jpgDefinition:Why do currents move in a circular pattern? * Because of the Earth’s rotation, currents are deflected to the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and to the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

This is called the **Coriolis Effect** |
| Ocean Current Impact on Climate | * Oceans maintain the balance of heat energy by ocean currents cycling between \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ When currents from low-latitude regions move into higher latitudes, they transfer heat from warmer to cooler areas on Earth
* Ocean currents are especially important to coastal regions
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the air temperatures along these coastal regions

An example of this is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| Deep (density) Currents | http://www.aoml.noaa.gov/hrd/Landsea/seasonal/fig5.gifDefinition:**Factors that affect the density of seawater:*** + **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**
	+ **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**
* Decreasing temperature and increasing salinity cause water to become more dense.

Near Antarctica, surface conditions create the highest density water in the world.* Evaporation results in increased salinity – \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

A simplified model of ocean circulation is called conveyor belt |
| Upwelling | Definition:* Winds blow the warm surface water away and it is replaced by cold waters (with lots of nutrients!)
	+ Deep water is very rich in nutrients and is brought to the surface.

What’s the impact of upwelling?* Upwelling revitalizes the ocean and keeps the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
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**Waves and the Shore**

Date:

SWBAT: Identify features of a wave and of wave erosion and deposition.

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| **Term** | **Description** |
| Waves | * Waves are ocean energy traveling along the boundary between the ocean and the atmosphere.
* The power of the waves is most noticeable near the shore.
 |
| Swell | Definition: |
| Size of a Wave | 1. The **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** of the wind.
2. The length of **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** the wind blows.
3. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** – the distance the wind blows
 |
| Part of a Wave | http://dtc.pima.edu/blc/183/09_183/wave_parts_answer.jpgCrest:Trough:Wave Height: distance between the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Wave Length: Distance between \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (either crest to crest or trough to trough.)* The average wave length is 2-3 times the wave’s height
* Waves break in water that is as deep as one half the wavelength.

Energy in a wave- As a wave moves across the surface of the ocean, only \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ …not the water! |
| Breakers | Definition:* If the ocean floor is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, the wave breaks \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* If the ocean floor is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, the wave spills forward with \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
 |
| Longshore Currents | http://www.sepmstrata.org/CMS_Images/IMAGE003.gifDefinition: * Occurs when waves approach the beach at an angle
* They often form long sandbars.
 |
| Refraction | https://physi.files.wordpress.com/2010/02/1000px-refraction_-_huygens-fresnel_principle-svg.pngDefinition:* Refraction causes \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| Undertow | Definition:Generally a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ that moves water and sand from the beach back to the shore. |
| Rip Current | Definition:A \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ current that \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ from the beach carrying sand and water.* How can a swimmer escape a rip current? Swim \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
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| **Wave Erosion and Deposition** |
| * Waves along the shoreline are constantly \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Many shoreline features can result from this activity. |
| **Term** | **Description** |
| Wave-Cut Cliffs and Platforms | * Result from the cutting action of the surf \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
 |
| Sea Arches and Sea Stacks | * \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ that extend into the sea, and are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ on all sides because of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, are eroded in the center
* First forming arches and then, when the arch caves in, forming a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
 |
| Barrier Islands | https://upload.wikimedia.org/wikipedia/commons/thumb/4/48/Accreting_coast_Image6.svg/360px-Accreting_coast_Image6.svg.pngDefinition:* + They are left over after a rise in sea level over time
	+ Or leftover sandbars after a drop in sea level
 |
| Spits | Definition:  |
| Bars | Definition: |
| Tombolo | Definition: |
| Shoreline Stabilization | * Groins, breakwaters, seawalls, and beach nourishment are designed to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Groins, breakwaters, and seawalls require construction while beach nourishment does not
	+ Only offer \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to shoreline problems.
 |
| Beach Nourishment | http://www.ecomare.nl/typo3temp/GB/07c0b6a3bf.pngDefinition: * + Most sand comes from offshore.
	+ Can be very expensive.
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
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**Tides**

Date:

SWBAT: Describe the moon’s effects on tides, calculate tidal variations, and identify the moon phases.

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| --- | --- |
| Term | Description |
| Tides | It is caused by the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_* The moon takes 24 hours and 50 minutes to orbit the earth.
* Thus, tides shift by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
 | http://www.hagstone.net/tidalmonth.jpg |
| Tidal Range | Definition: |
| **Spring Tides** | **Neap Tides** |
| Occurrence: Produce:Occurs during the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ phase* When the Sun, Earth and Moon line up in a straight line, the combined gravity of the Sun and the moon have an effect on the earth’s oceans,

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_* Happen every \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Daily tidal range is at \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
 | Occurrence:Produce:Occurs during the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ phase* When the Sun, Earth and moon are perpendicular to each other, their gravitational pulls \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Daily tidal range is at \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
 |
| Friction created between the water and the ocean floor slows the rotation of the earth. (Slowed 10.8 minutes since the dinosaurs died) |
| Diurnal | Definition:Example: Gulf of Mexico | http://www.hurricanescience.org/images/hss/tide7abc.jpg |
| Semidiurnal | Definition: Example: East Coast |
| Flood Tide | Definition: |
| Ebb Tide | Definition: |
| Slack Water | Definition: |
| Tidal Bore | Definition: |