Name:

Date: Period:

**Lesson 1.2 – Ocean Movements**

**Lesson 1.2: Matching**

*Match each definition with the correct term.*

|  |  |
| --- | --- |
| **Definitions**  \_\_\_\_\_ 1. type of ocean current caused by global winds  \_\_\_\_\_ 2. transfer of wind energy across the surface of ocean water  \_\_\_\_\_ 3. tide with the greatest difference between high and low tides  \_\_\_\_\_ 4. type of ocean current caused by differences in density  \_\_\_\_\_ 5. tide with the least difference between high and low tides  \_\_\_\_\_ 6. daily rise and fall of sea level at a given place along the shore  \_\_\_\_\_ 7. rise of cold water from the deep ocean to the surface | **Terms**  a. wave  b. tide  c. surface current  d. upwelling  e. spring tide  f. deep current  g. neap tide |

**Lesson 1.2: Critical Reading**

*Read this passage based on the text and answer the questions that follow.*

**Tides**

Tides are the repeated rise and fall of sea level at any given place. The pull of the moon’s gravity on Earth is the primary cause of tides. The pull of the sun’s gravity is a secondary cause. Although the moon has much less mass than the sun, its effect on Earth’s tides is greater because it is so much closer to Earth.

As the moon revolves around Earth, its gravity pulls Earth toward it. The lithosphere is unable to move much but ocean water can, and it bulges outward toward the moon. This creates a high tide on the side of Earth facing the moon. The moon’s gravity pulling Earth toward it leaves behind water on the opposite side of the planet. This creates another high tide bulge on the opposite side of Earth from the moon. Because so much water is pulled into the two high tide bulges low tides occur at places in between. Earth rotates beneath the moon once each day, so any given place on the coast will experience two high tides and two low tides every day.

The difference in water levels between high and low tides is called the tidal range. This range is greatest during

spring tides and least during neap tides.

* Spring tides occur when the gravitational pull of both the moon and the sun are in the same direction. This happens when the moon is in its new or full moon phase, so spring tides occur about twice a month. The high tides are higher and the low tides are lower than at other times of the month.
* Neap tides occur when the gravitational pull of the moon and the sun are at right angles to each other. This happens during the first and third quarter phases of the moon, so spring tides also occur about twice a month. The high tides are lower and the low tides are higher than at other times of the month.

**Questions about the Passage**

1. Explain how the moon causes high and low tides.

2. Why are there two high tides and two low tides in a given place each day?

3. Why does the sun have only a secondary effect on Earth’s tides?

4. Compare and contrast spring and neap tides.

**Lesson 1.2: Multiple Choice**

*Circle the letter of the correct choice.*

1. The largest wind waves in the ocean form when the wind
   1. is very strong.
   2. blows steadily for a long time.
   3. blows over a very long distance.
   4. all of the above
2. Waves cause individual water particles to
   1. travel toward shore.
   2. move in tiny circles.
   3. sink to the bottom.
   4. move in currents.
3. In most locations along the shore, a high tide occurs twice each
   1. year.
   2. month.
   3. week.
   4. day.
4. Which of the following factors has the greatest effect on surface currents?
   1. global winds
   2. Earth’s revolution
   3. differences in water salinity
   4. differences in water temperature
5. The ocean water motions that most affect local climates on land are
   1. tides.
   2. waves.
   3. deep currents.
   4. surface currents.
6. Near the poles, ocean water is very dense because of its
   1. low temperature.
   2. low salinity.
   3. large volume.
   4. two of the above
7. Which of the following statements about upwelling is false?
   1. It brings nutrients to the surface.
   2. It typically takes place along coasts.
   3. It causes cold, dense water to rise.
   4. It occurs when winds push water toward shore.

**Lesson 1.2: True or False**

*Write true if the statement is true or false if the statement is false. If the statement is false, write the word or phrase that would make the statement true.*

\_\_\_\_\_ 1. Thermohaline circulation refers to the movement of ocean water in **surface currents**.

\_\_\_\_\_ 2. Waves break when they become **too tall** to be supported by their base.

\_\_\_\_\_ 3. Tsunamis are caused **only by earthquakes**.

\_\_\_\_\_ 4. Rip currents are **deep currents** that pass close to shore.

\_\_\_\_\_ 5. **Earth’s rotation** is responsible for the Coriolis effect.

\_\_\_\_\_ 6. The direction of surface currents is influenced **only by the shape of ocean basins**.

\_\_\_\_\_ 7. The **Gulf Stream** raises London’s average air temperature.

\_\_\_\_\_ 8. Changes in temperature and salinity of ocean water take place **on the ocean floor**.

\_\_\_\_\_ 9. Adding salt to water makes it **less dense**.

\_\_\_\_\_ 10. Upwelling causes a **decrease** in marine organisms where it occurs.

**Lesson 1.2: Fill in the Blank**

*Fill in the blank with the appropriate term.*

1. High water pushed ashore by storm winds is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

2. A damaging wave caused by a sharp jolt to ocean water is a(n) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

3. Tides are caused primarily by the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_gravity.

4. The difference between the ocean levels at high and low tides is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

5. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ tides occur at new moon and full moon phases.

6. The effect of Earth’s rotation on the direction of surface currents is called the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

7. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the event in which very cold, very saline water sinks to the bottom of the ocean.