

Hydrosphere Worksheet

1. Which of the following statements describes the impact of thermohaline circulation on climate?

- A) It regulates the world's climate
- B) It decreases the world's average temperature
- C) It increases the world's average temperature
- D) It has no notable impact on the world's climate.

2. Tides are mostly caused by ...

- A) The spinning of the earth
- B) The orbiting of the earth around the sun
- C) The moon's pull of gravity on the earth
- D) The sun's pull of gravity on the earth

3. What is the role of thermohaline circulation?

- A) It keeps the pH of oceans uniform.
- B) It captures atmospheric CO₂
- C) It transports heat from the equator toward the poles.
- D) It controls the tidal cycle.

4. What are the characteristics of ocean water which has a tendency to sink?

- A) Low temperature and low density
- B) High temperature and low density
- C) Low temperature and high density
- D) High temperature and high density

5. The average salinity of the ocean is 35 g/L, but may vary from one area to another depending on certain conditions. The following table lists observations regarding four different areas of an ocean.

| Area | Observation |
|------|---|
| 1 | Area that receives water from a melting coastal glacier |
| 2 | Tropical area with strong surface winds |
| 3 | Area with a large amount of water is lost through evaporation |
| 4 | Arctic area where pack ice is formed |

Which area of this ocean has the lowest salinity level?

- A) Area 1
- B) Area 2
- C) Area 3
- D) Area 4

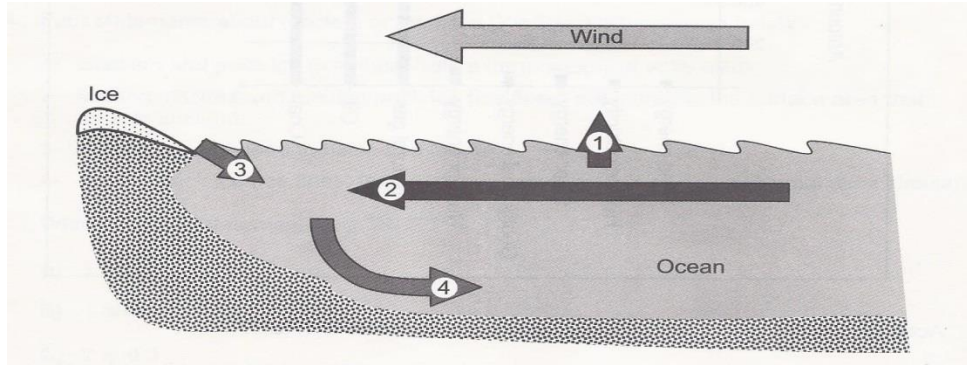
6. The following statements are related to ocean circulation.

- 1- The salinity of ocean water will decrease when neighboring coastal glaciers melt.
- 2- Cold water near the poles will move toward the ocean floor.

Which of the following choices is correct?

- A) Only statement 1 is true.
- B) Only statement 2 is true.
- C) Statements 1 and 2 are correct.
- D) Neither statements are correct.

7. The following diagram illustrates the principal of ocean circulation.



Which of these arrows represents the water with the greatest density?

- A) Arrow 1 B) Arrow 2 C) Arrow 3 D) Arrow 4

8. From the statements below, choose two which will cause an increase in the salinity of ocean water.

- | | |
|---|------------------------------------|
| 1. increased erosion | 3. ice floes and glaciers melt |
| 2. ocean water redirected to a tidal energy plant | 4. water evaporates at the equator |
- A) 1 and 3 B) 1 and 4 C) 2 and 3 D) 2 and 4

9. Four statements about glaciers or pack ice (ice floes) are provided below.

- 1- Glaciers and pack ice hold a large supply of salty water.
- 2- Melting glaciers and pack ice will increase the surface area that reflects sunlight.
- 3- Melting glaciers lead to rising sea levels.
- 4- Melting pack ice is one of the factors that slows down thermohaline circulation.

Which of these statements are true?

- A) 1 and 2 B) 1 and 4 C) 2 and 3 D) 3 and 4

10. Oceanic circulation is simulated by pouring coloured salt water on the surface of distilled water in a beaker. The temperature of the salt water is the same as that of the distilled water. Which of the following choices provided the correct information on the density and the behavior of the salt water during this simulation?

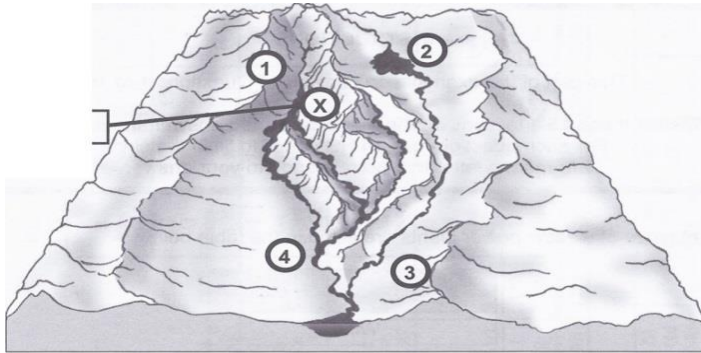
| | Density of the salt water compared with the density of the distilled water | Behaviour of the salt water when poured on the surface of the distilled water |
|---|--|---|
| A | Higher | Stays on the surface |
| B | Lower | Stays on the surface |
| C | Higher | Sinks to the bottom |
| D | Lower | Sinks to the bottom |

11. What do glaciers and pack ice have in common?

- A) They float on the ocean
- B) They are made up of water whose salinity level is below that of seawater
- C) They are always located near the poles
- D) When they melt, they do not affect the salinity of the oceans

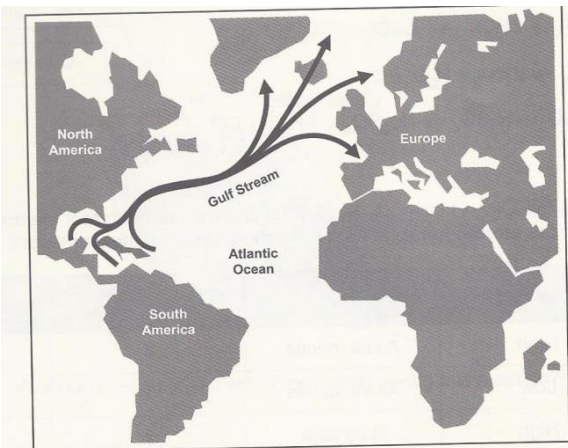
12. Which of the following statements is true about pack ice?
- A) The melting of pack ice does not affect the temperature of the ocean water.
 - B) The melting of pack ice affects the salinity of the ocean water.
 - C) The melting of pack ice affects sea levels.
 - D) The melting of pack ice does not affect oceans.

13. A pharmaceutical company is planning to build a factory where indicated by the letter X on the map below. Residents of towns 1, 2, 3 and 4 indicated on the map are concerned about the quality of their water in the event of a toxic spill. Which one of the 4 towns has a reason to be concerned about the quality of its water?



- A) Town 1
- B) Town 2
- C) Town 3
- D) Town 4

14. The following map shows the path of the ocean current called the Gulf Stream, which flows from the equator to northern Europe.



Which of the following choices provides **only** correct information about the Gulf Stream?

| | Type of current | Caused by | Impact on the temperature of the North Atlantic Ocean |
|---|-----------------|--------------------------|---|
| A | Surface current | The density of water | Makes it colder |
| B | Surface current | The winds | Makes it warmer |
| C | Deep current | The winds | Makes it warmer |
| D | Deep current | The density of the water | Makes it colder |