

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.

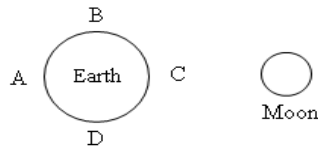
2. Tides are mostly caused by ...

- 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?

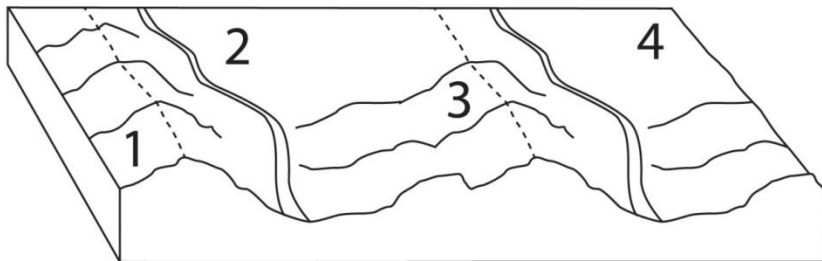
- A) It keeps the pH of oceans uniform.
- B) It captures atmospheric CO₂
- C) It transports heat from the equator toward the poles.
- D) It controls the tidal cycle.

4. Which points on the Earth diagram would have low tides?



- A) A and C
- B) A and C
- C) B and D
- D) B and C

5. Which location is in the same catchment area?



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

6. 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

7. 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

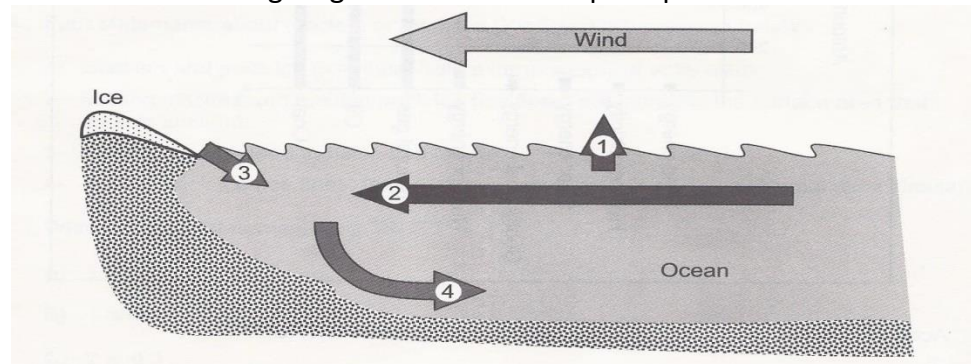
8. The following statements are related to ocean circulation.

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

9. 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

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

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

11. Which of the following will increase the density of a solution?

1. Increasing the salinity
 2. Decreasing the salinity
 3. Adding water
 4. Allowing water to evaporate
- A) 1 B) 1 and 2 C) 1 and 3 D) 1 and 4

12. Which of the following statements concerning thermohaline circulation is true?

- A) Thermohaline circulation allows for the heat accumulated in ocean water at the Polar Regions to circulate to the Equatorial Region.
- B) Thermohaline circulation allows for the heat accumulated in ocean water at the Equatorial Region to circulate to the Polar Regions.
- C) Thermohaline circulation can be compared to a conveyor belt which moves warm and cold air masses around the Earth.
- D) Thermohaline circulation can be compared to a conveyor belt which moves warm and cold freshwater systems around the Earth.

13. True or false?

- a) Pack ice is found on land and glaciers float on the sea. _____
- b) Watersheds will be more polluted towards the bottom of the drainage basin. _____
- c) Having a flat land will produce a good watershed. _____
- d) Icebergs are formed from pack ice _____
- e) Both rocks and minerals are pure substances. _____
- f) Glaciers float on the sea _____
- g) Melting pack ice has no effect on sea level _____
- h) The Gulf Stream is a surface current _____
- i) Ocean salinity will decrease if glaciers continue to melt _____
- j) Surface currents can be driven by wind only _____

14. Some scientists claim that global warming has caused Arctic pack ice (ice floes) and continental glaciers to melt more quickly. Answer the following three questions.

a- Explain if melting glaciers affect sea levels.

b- Explain if melting pack ice (ice floes) affect sea levels.

c- Explain how melting Arctic pack ice (ice floes) affects thermohaline circulation.

15. Will the meltwater eventually arrive at the equator? Explain your answer.