

Name: _____

Period: _____

Date: _____

VARIATIONS IN A SALTY OCEAN? (30 POINTS)

Instructions:

Login to the computer using your 6 digit student ID and your password.

Type in the internet address: www.classzone.com

Choose high school science and select your Earth Science textbook

Click the link to the Exploring Earth Website

In the key code box type in ES2202

Answer the following questions.

1. STEP 1:

- a. What is salinity?

- b. What is the average salinity of the ocean?

- c. What does the symbol $^0/_{00}$ (“permill”) mean?

- d. How high is the salinity in the Red Sea and the Mediterranean Sea?

2. STEP 2:

- a. Look at the map showing average annual sea surface temperature (enlarge the map by clicking on it).
 - i. What temperatures do you see along the equator?
 - ii. What temperatures do you see at the North and South poles?
- b. Look at the map showing average annual salinity (enlarge the map by clicking on it).
 - i. What salinities do you see along the equator?
 - ii. What salinities do you see at the North Pole?
 - iii. What salinities do you see at the South Pole?
- c. What is the temperature at 90°E, 15°N?
- d. What is the salinity at 90°E, 15°N? (use the color chart)
- e. Why do you think the water at this location has a high temperature but a low salinity?

3. **STEP 3:** Read the information carefully and answer the following questions or fill in the blanks as appropriate.

- a. What does density measure?
- a. Which has a higher density, freshwater or saltwater?
- b. _____ the amount of salt dissolved in water _____ the water's density.
- c. _____ the temperature of water results in a _____ in the water's density.
- d. When water masses of differing density meet, the mass with the _____ density will sink to the bottom and the mass with the _____ density will float on top of it.

4. **STEP 4:** Click on each of the red buttons and answer the following information for each location:

- a. 0°, 50°W
 - i. Temperature:

- ii. Salinity:

- iii. Density:

- b. 20°N, 90°E

- i. Temperature:

- ii. Salinity:

- iii. Density:

5. **STEP 5:** Click on the red button and answer the following information:

- a. What is the average salinity of the water above Northern Africa?
- b. What is the average temperature of the water above Northern Africa?
- c. Why do you think the salinity is so high in this area?

6. **STEP 6:** Click on the red button and answer the following information

- a. What is the average salinity of the water North of South America?
- b. What is the average temperature of the water North of South America?
- c. What will happen if this water mixes with the water to the southwest in the Pacific Ocean?