Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Pd: \_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_

**Ocean Currents - Lab Stations**

**Station 1: Temperature and Ocean Currents**

**Look at the map of the wind-driven (surface) ocean currents.**

1. What might cause ***surface ocean currents***? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Complete the lab activity to learn more about the relationship between temperature and *deep ocean currents*.**

3. Which currents sank, the warm or cold currents? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4. In which direction did these currents flow along the bottom? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

5. Which currents rose to the surface, the warm or cold currents? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

6. In which direction did these currents flow along the top? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

7. Sketch a color diagram of what you observed:

8. What might explain the movements of the these currents? *(think about density..)*

9. How are deep ocean currents produced differently than surface currents?

**Station 2 : Salinity and Ocean Currents**

**Look at the maps of sea surface temperature and surface salinities of the oceans.**

10. Write down any relationships you see between sea surface temperature and surface salinity: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

11. Evaporation at the surface causes water to escape the ocean surface, leaving behind particles (like salt) in the ocean. If evaporation causes surface water to be salty, where in the world would you expect ocean water to have the highest surface salinity? Explain why:

**Complete the activity to learn more about the relationship between salinity and deep ocean currents.**

12. After completing the activity: Is salt water more or less dense than fresh water? ***Explain*** your answer using results that you obtained from your experiment:

13. Therefore, what would you expect to happen as surface water evaporates and causes water to become more salty?

14. How can this create deep ocean currents?

**Station 3 - Wind and Ocean Currents**

|  |  |  |
| --- | --- | --- |
| **Calm conditions** | Particles on surface water (floating) | Particles in deep water (sunken) |
| *Drawing* |  |  |
| *Description* |  |  |

|  |  |  |
| --- | --- | --- |
| **Windy conditions** | Particles on surface water (floating) | Particles in deep water (sunken) |
| *Drawing* |  |  |
| *Description* |  |  |

15. Based on this activity, if the wind stopped blowing for a short time, would ocean currents stop? Explain how you know:

16. Based on this activity, can wind cause currents on the bottom of the ocean? Explain why, using evidence from the activity:

**Station 4 - The Coriolis Effect**

If you place water droplets near the center of the model as it spins, what path do you predict the water will take when you spin the model? Explain your prediction, and draw your prediction in Circle A.

**Circle A: Predicted Path**

I predict that...

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

I predicted this because...

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Now complete the activity and observe the actual path. Describe the actual path, and draw it into Circle B.

**Circle B: Actual Path**

I observed that...

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Based on this activity, do you think that ocean currents move in:

***(Circle one) :***Straight paths? Zigzags? Curves?

I think this because...

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_