

SMS-303: Integrative marine sciences, physics.

Quiz Lab 2.

1. Oceanic organisms as a whole:

- a. Can significantly contribute to mixing in the oceans.**
- b. Prefer mixed water**
- c. Use mixing to move faster.**
- d. Do not contribute significantly to mixing except, possibly, at some places.**

2. What mixes in the oceans?

- a. Heat.**
- b. Momentum.**
- c. Nutrients.**
- d. All of the above.**

3. Stirring and mixing:

- a. Are the same.**
- b. Work together to erode gradients.**
- c. Are sometimes the same.**
- d. None of the above.**

4. Which enhances mixing?

- a. Cooling water from the top.**
- b. Cooling water from the bottom.**
- c. Heating water from the top.**
- d. None of the above.**

5. Mixing of momentum (friction):

- a. Causes fluids to slow down near the boundaries.**
- b. Allows the wind momentum to penetrate to depth.**
- c. Causes the formation of bottom boundary layers.**
- d. All the answers above.**

6. Salt fingers:

- a. None of the answers below.**
- b. Occur because heat diffuses faster than salt.**
- c. Occur because salt diffuses faster than heat.**
- d. Occur because momentum diffuses faster than heat.**

7. Mixing stratified fluids:

- a. Requires work.**
- b. Increases stratification.**
- c. Is easy.**
- d. Requires internal waves.**

8. Stretching and folding:

- a. Is reduced by stirring.**
- b. Requires momentum.**
- c. Increases gradients so diffusion occurs more rapidly.**
- d. Decreases gradients so mixing occurs more rapidly.**

9. The thermocline problem refers to:

- a. The fact that the density gradient at the ocean thermocline is too diffuse given the measured mixing rates at the thermocline.**
- b. The fact that the density gradient at the ocean thermocline is too sharp given the measured mixing rates at the thermocline.**
- c. The fact that the ocean is not stratified enough.**
- d. The fact that the ocean is stratified.**

10. In estuaries in Maine which are likely to dominate mixing:

- a. Salt fingers.**
- b. Tidal mixing.**
- c. Breaking internal waves.**
- d. Biological mixing.**