

SMS-204: Integrative marine sciences, physics.

Quiz Lab 5.

- 1. The Re number associated with 1m long Tuna swimming at one body-length per second in sea water is:**
 - a. Can be computed only if the Tuna is sinking.**
 - b. Much less than 1.**
 - c. About 1.**
 - d. Much larger than 1.**

- 2. The drag force on a settling particle at low Re :**
 - a. Is similar to that of high Re .**
 - b. is linearly proportional to its velocity.**
 - c. is linearly proportional to its velocity².**
 - d. is linearly proportional to the fluids diffusivity.**

- 3. A flagellated bacterium, 2 micrometers in size, stops swimming after swimming 30body length per second. It will then:**
 - a. glide ten body lengths before stopping.**
 - b. glide about five body lengths before stopping**
 - c. glide about one body length before stopping.**
 - d. glide much less than one body length before stopping.**

- 4. Turbulence:**
 - a. Is the property of the fluid.**
 - b. Is a property of the flow.**
 - c. Is the property of the particle in a fluid.**
 - d. All of the above.**

- 5. The shape of a sinking particle:**
 - a. Does not affect sinking velocity.**
 - b. Provide thrust.**
 - c. Changes the no-slip condition.**
 - d. Affects sinking velocity.**

6. Reynold's experiment:

- a. Proved that turbulence exists.**
- b. Showed a new way to mix fluids.**
- c. Proved viscosity exists.**
- d. Showed how turbulence is a threshold phenomenon.**

7. Size of a marine organism in general:

- a. correlates with their prey swimming velocity.**
- b. correlates with their predators swimming velocity.**
- c. correlates with their own swimming velocity.**
- d. correlates with their swimming direction.**

8. When sinking in a stratified fluid:

- a. As the density of the fluid increases sinking speed increases.**
- b. As the density of the fluid increases sinking speed decreases.**
- c. As the density of the fluid increases sinking speed stays the same.**
- d. As the density of the fluid increases sinking accelerates.**

9. One of the 'tricks' of low Re swimmers is to:

- a. Break symmetry between stroke and recovery stroke (ciliates)**
- b. Break left right symmetry (corkscrew motion, flagellates).**
- c. Both a and b.**
- d. None of the above.**

10. Why do we care about Re ?

- a. It tells us which swimming strategy is better**
- b. It tells us which swimming strategy is more efficient**
- c. It helps us classify swimmers with similar swimming appendages**
- d. It helps us classify flows of similar characteristics**