

## Practice Buoyancy Questions for the Quiz

1. What can you use to predict the buoyancy of an object?
2. Density of iron =  $7.9 \text{ g/cm}^3$       Density of mercury =  $13.6 \text{ g/mL}$   
  
Will the iron float or sink? Why?
3. A. Floating is called \_\_\_\_\_  
B. Sinking is called \_\_\_\_\_  
C. Neither is called \_\_\_\_\_
4. A. If an object's density is less than the fluid's it will \_\_\_\_\_  
B. If an object's density is greater than the fluid's it will \_\_\_\_\_  
C. If an object's density equals the fluid's density it will \_\_\_\_\_
5. A fluid is a \_\_\_\_\_ or a \_\_\_\_\_
6. A force is a \_\_\_\_\_ or a \_\_\_\_\_
7. Gravitational force is a \_\_\_\_\_. Buoyant force is a \_\_\_\_\_.
8. A. An object sinks if the gravitational force is \_\_\_\_\_  
than the buoyant force.  
B. An object floats if the gravitational force is \_\_\_\_\_  
than the buoyant force.  
C. Object is neutrally buoyant if the gravitational force is \_\_\_\_\_  
to the buoyant force.
9. A hot air balloon weights 1600 N. How much air must it displace to float? Why?
10. What is the buoyant force on the balloon?
11. An object weights 10 N, but weighs 8 N in water.  
Buoyant force on the object = \_\_\_\_\_  
Will the object sink or float?
12. What force tries to sink objects?
13. Each time another person gets into a rowboat, what happens to the boat? Why?
14. The buoyant force equals the weight of \_\_\_\_\_.
15. What causes the buoyant force?

Answers:

1. Density
2. The iron will float in mercury. The iron's density is less than the density of mercury.
3.
  - A. Floating is called positive buoyancy
  - B. Sinking is called negative buoyancy
  - C. Neither is called neutral buoyancy
4.
  - A. If an object's density is greater than the fluid's density the object will sink
  - B. If an object's density is less than the fluid's density the object will float
  - C. If the densities are equal the object will be neutrally buoyant
5. A fluid is a liquid or a gas.
6. A force is a push or a pull.
7. Gravitational force is a pull. Buoyant force is a push.
8.
  - A. An object sinks if the gravitational force is greater than the buoyant force.
  - B. An object floats if the gravitational force is equal to the buoyant force.
  - C. An object is neutrally buoyant if the gravitational force is equal to the buoyant force.
9. The balloon must displace 1600 N of air. In order to float an object must displace a weight of fluid equal to the object's weight.
10. 1600 N
11. The buoyant force = 2 N. The object will sink
12. What force tries to sink objects?
13. The rowboat will sink lower into the water with each person added. As you add more people the weight of the boat increases. In order to remain floating the boat must displace more water (why it sinks lower) so the displaced water weight keeps equal to the boat's weight.
14. displaced water
15. An object pushes fluid out of the way, the fluid pushes back. The fluid pushing back causes the buoyant force on the object.