Name _____ Class _____ Date _____

Skills Worksheet

Directed Reading B

Section: Buoyancy and Density (pp. 412–419)

1. The upward force that fluids exert on all matter is called buoyant force.

BUOYANT FORCE AND FLUID PRESSURE

2. In a fluid, buoyant force exists because the pressure at the bottom of an object is greater than the pressure at the top.

3. State Archimedes' principle.

The buoyant force on an object in a fluid is an upward force equal to the weight of the fluid that the object takes the place of (displaces).

4. The weight of displaced fluid determines the buoyant force on an object.

WEIGHT VERSUS BUOYANT FORCE

b. floats

5. If the weight of the water an object displaces is equal to the weight of the object, the object
- **a.** sinks.
- **b.** floats.
- **c.** flies.
- **d.** is buoyed up.

a. sinks

6. If the weight of the water an object displaces is less than the weight of the object, the object
- **a.** sinks.
- **b.** floats.
- **c.** flies.
- **d.** is buoyed up.

d. is buoyed up.

7. If the weight of the water an object displaces is greater than the object's weight, the object
- **a.** sinks.
- **b.** floats.
- **c.** flies.
- **d.** is buoyed up.

Match the correct description with the correct formula. Write the letter in the space provided.

a. **8.** when a rock sinks

c. **9.** when a duck is buoyed up

b. **10.** when a fish is suspended in the water

a. Buoyant force is less than weight.

b. Buoyant force equals weight.

c. Buoyant force is greater than weight.

DENSITY AND FLOATING

11. How does the density of a rock affect its ability to float?

The rock is more dense than water so it will not float The rock will sink.

12. Why does an ice cube float in water?

The density of ice is less than water.

13. Why does a helium balloon float in air?

The helium in the balloon weighs less than, the air that it displaces. Therefore it has a buoyant force that lifts it up.

DETERMINING DENSITY

A. **14.** The volume of a regular solid can be determined by

a. multiplying together the lengths of its sides.

b. dividing the length of one side by another.

c. adding the lengths of its sides.

d. multiplying its height and weight.

A. **15.** The volume of an irregular solid equals
- **a.** the volume of water it displaces when fully submerged.
- **b.** the volume of water it contains.
- **c.** the volume of air it contains.
- **d.** the volume of the regular solid that it would fit inside of.

CHANGING OVERALL DENSITY

16. A ship's hollow shape increases its volume and decreases its overall density, allowing it to float.

17. If a steel ship were NOT hollow, it would sink.

18. What is the purpose of a submarine's ballast tanks?

to fill with water, thus changing the overall density allowing the submarine to submerge (dive)

19. How is compressed air used in a submarine?

Compressed air is used to push out the water from the ballast tanks allowing the submarine to resurface.

20. How does a fish's swim bladder affect its overall density?

When the swim bladder fills with air, this increases the overall volume of the fish. Therefore decreasing the overall density allowing it to float.

21. How do fish without swim bladders keep from sinking?

Sharks have to keep swimming in order to float.

pg. 168 answers:
1. atmosphere
2.density
3. fluid
4. atmospheric pressure
5. pascal
6. pressure