Section 13.3 Buoyancy

(pages 400–404)

This section discusses buoyancy and Archimedes' principle of factors that determine whether an object will sink or float in a fluid.

Reading Strategy (page 400)

Summarizing As you read about buoyancy, write a brief summary of the text following each green heading. Your summary should include only the most important information. For more information on this Reading Strategy, see the **Reading and Study Skills** in the **Skills and Reference Handbook** at the end of your textbook.

Buoyant Force	Buoyant force is the apparent loss of weight of an object submerged in a fluid.

Buoyant Force (page 400)

1. What is buoyancy? _____

_____

2. Circle the letter of the correct answer. In which direction does a buoyant force act?

a. in the direction of gravity
b. perpendicular to gravity
c. in the direction opposite of gravity

3. Is the following sentence true or false? The greater a fluid's density, the greater its buoyant force. _____

4. Circle the letter of each sentence that is true about buoyancy.

a. Forces pushing up on a submerged object are greater than the forces pushing down on it.
b. Forces acting on the sides of a submerged object cancel each other out.
c. Gravitational forces work together with buoyant forces.

Archimedes' Principle (page 401)

5. According to Archimedes' principle, the weight of fluid displaced by a floating object is equal to the _____ acting on that object. Circle the correct answer.

buoyant force fluid pressure gravity

6. Is the following sentence true or false? When an object floats partially submerged in a fluid, it displaces a volume of fluid equal to its own volume. _____

Density and Buoyancy (pages 401–404)

Match each description with the correct property. Properties may be used more than once.

Description	Property
_____ **7.** This property is the ratio of an object's mass to its volume, often expressed in g/cm^3.	a. weight
_____ **8.** This force is equal to the force of gravity that acts on a floating object.	b. buoyant force
_____ **9.** When this property is greater for an object than for the fluid it is in, the object sinks.	c. density
_____ **10.** These two forces act on every object in a fluid.	

11. Use what you know about density and buoyancy to predict whether each of the substances listed in the table will float or sink in water. The density of water is 1.0 g/cm^3.

Will It Float or Sink?		
Substance	**Density (g/cm^3)**	**Float or Sink?**
Gold	19.3	
Balsa Wood	0.15	Float
Ice	0.92	
Brick	1.84	Sink
Milk	1.03	
Gasoline	0.70	