Name _____ Class _____ Date _____

Skills Worksheet

# Directed Reading A

## Section: Physical Properties

### PHYSICAL PROPERTIES

_____ **1.** A characteristic of matter that can be observed or measured without changing the identity of the matter is a

**a.** matter property. **c.** chemical property.
**b.** physical property. **d.** volume property.

_____ **2.** Some examples of physical properties are

**a.** color, odor, and age. **c.** color, odor, and magnetism.
**b.** color, odor, and speed. **d.** color, odor, and anger.

**Match the correct example with the correct physical property. Write the letter in the space provided.**

_____ **3.** Aluminum can be flattened into sheets of foil.

_____ **4.** An ice cube floats in a glass of water.

_____ **5.** Copper can be pulled into thin wires.

_____ **6.** Plastic foam protects you from hot liquid.

_____ **7.** Flavored drink mix dissolves in water.

_____ **8.** An onion gives off a very distinctive smell.

_____ **9.** A golf ball has more mass than a table tennis ball.

**a.** state
**b.** solubility
**c.** thermal conductivity
**d.** malleability
**e.** odor
**f.** ductility
**g.** density

**10.** Density is the _____ that describes the relationship between mass and volume.

**11.** Objects such as a cotton ball and a small tomato can occupy similar volumes but vary greatly in _____.

**12.** If you pour different liquids into a graduated cylinder, the liquids will form layers based upon differences in the _____ of each liquid.

**13.** Which layer of liquid would settle on the bottom?

_____

Name _____ Class _____ Date _____

## Directed Reading A *continued*

**14.** Where will the least dense liquid be found?

**15.** Why would 1 kg of lead be less awkward to carry around than 1 kg of feathers?

**16.** What will happen to a solid object made from matter with a greater density than water when it is dropped into water?

**17.** How will knowing the density of a substance help you determine whether an object made from that material will float in water.

**18.** What is the equation for density?

**19.** What do $D$, $V$, and $m$ stand for in the equation for density?

**20.** The units for density take the form of a mass unit divided by a(n)

_____ unit.

**21.** What are two reasons why density is a useful property for identifying substances?

Name _____ Class _____ Date _____

## Directed Reading A *continued*

### IDENTIFYING SUBSTANCES USING PROPERTIES

**22.** One substance can be identified from another using

_____.

**23.** What are two ways that you might be able to tell apart different substances with the same size and shape, even if they are composed of the same element?

_____

_____

**24.** Another property that can be used to identify substances

is _____.

**25.** Solubility means that different amounts of substances will dissolve in the

same _____ of water.

**26.** Another property that can be used to identify substances is how easily each

changes _____ when it absorbs or loses energy.

**27.** What is the amount of heat needed to change the temperature of 1 kg of a substance by 1°C?

_____

**28.** Most metals have _____ specific heats.

**29.** The specific heat of water is very _____.

**30.** Which has a higher specific heat, lead or glass?

_____

### PHYSICAL CHANGES DO NOT FORM NEW SUBSTANCES

**31.** A change that only affects the physical properties of a substance is

known as a(n) _____.

**32.** What kind of changes are melting and freezing?

_____

_____

_____

Name _____ Class _____ Date _____

## Directed Reading A *continued*

**Identify which of the following activities represent physical changes by writing PC in the space provided, if they cause only physical changes. Put an X beside any that do not.**

_____**33.** sanding a piece of wood

_____**34.** baking bread

_____**35.** crushing an aluminum can

_____**36.** melting an ice cube

_____**37.** dissolving sugar in water

_____**38.** molding a piece of silver

**39.** When a substance undergoes a physical change,

its _____ does not change.

**40.** What is changed when matter undergoes a physical change? Give an example to explain your answer.

_____

_____

_____

_____

_____

# Answer Key

## Directed Reading A

### SECTION: WHAT IS MATTER?

1. B
2. D
3. They are all made of matter.
4. Matter is anything that has mass and takes up space.
5. Volume is the amount of space taken up by an object.
6. volume
7. meniscus
8. length, width, and height
9. cubic
10. Answers will vary. Sample answer: The volume could be measured by placing the nugget in a graduated cylinder with water. The volume of water displaced is the volume of the nugget.
11. Because 1 milliliter of water is equal to 1 cubic centimeter.
12. D
13. C
14. A
15. D
16. The only way to change the mass is to change the amount of matter it contains.
17. mass
18. weight
19. weight
20. mass
21. weight
22. weight
23. mass
24. C
25. An outside force is needed to change the motion of an object.
26. The more mass an object has, the greater its inertia.
27. Answers will vary. Sample answer: A full cart has more mass than an empty one. More mass means the cart has more inertia. Because it has more inertia, a full cart is harder to put into motion.

### SECTION: PHYSICAL PROPERTIES

1. B
2. C
3. D
4. A
5. F
6. C
7. B
8. E
9. G
10. physical property
11. density
12. density
13. The densest layer will settle on the bottom.
14. The least dense layer will be found on top.
15. because 1 kg of lead would take up less space than 1 kg of feathers
16. The object will sink.
17. Answers will vary. Sample answer: If you know the density of the substance, you could compare it with the density of water. If the density of the object is less than water it will float.
18. $D = m/V$
19. density; volume; mass
20. volume
21. Answers will vary. Sample answers: Because a substance's density is always the same at a given temperature and pressure and because most substances have different densities.
22. properties
23. boiling point and melting point
24. solubility
25. amount
26. temperature
27. specific heat
28. low
29. high
30. glass
31. physical change
32. changes in state
33. PC
34. X
35. PC
36. PC
37. PC
38. PC
39. identity

40. Answers will vary. Sample answer: When matter undergoes a physical change, one or more physical properties are changed. For example, if a lump of copper is drawn out into a thin wire, only its shape is changed, not its identity.

### SECTION: CHEMICAL PROPERTIES

1. C
2. A
3. B
4. D
5. B
6. Answers will vary. Sample answer: The burning changes wood to smoke and ashes.
7. chemical
8. characteristic
9. B
10. C
11. Answers will vary. Sample answer: Baking a cake involves chemical changes because the cake has completely different properties than its original ingredients. It is impossible reverse the results of those changes.
12. Answers will vary. Sample answer: The creation of new substances with new properties shows that a change is chemical. Other signs include a change in color or odor, the release of energy as sound, heat, or light; bubbling or clouding in the mixture.
13. precipitate
14. Answers will vary. Sample answer: Some chemical changes can be reversed with more chemical changes. For example: The water formed in a space shuttle's rockets can later be split back into hydrogen and oxygen using an electric current.
15. B
16. A
17. physical changes
18. CC
19. PC
20. CC
21. PC
22. CC
23. CC
24. PC
25. PC

### SECTION: USING THE PROPERTIES OF MATTER

1. properties
2. float
3. sink below the water
4. stay above the water
5. B
6. A
7. an electric circuit
8. the alarm sounds
9. how well a material allows charges to move in it
10. conductivities
11. rubber and plastic
12. to work in vending machines
13. alloy
14. aluminum foil
15. Coins of the same type need to be the same thickness. The materials used to make coins must be malleable so they can be squeezed to the right thickness without breaking.
16. solubility
17. They did not break down and would stay in landfills for years.
18. starch
19. Answers will vary. Sample answer: Starch packing peanuts dissolve quickly in water, break down in landfills, and are made from renewable resources.
20. chemical makeup and thickness, water temperature, volume of water
21. packaging fertilizers, cleaners, and foodstuffs
22. by protecting people from coming into contact with the material, by protecting the environment, by not leaving behind packaging waste that might have chemicals on them

## Directed Reading B

### SECTION: WHAT IS MATTER?

1. C
2. B
3. C
4. A
5. B
6. D
7. meniscus
8. cubic
9. volume