

Chapter 1

1. All of these statements describe properties of sodium. Which one describes a *physical* property of sodium?

- A. Sodium's surface turns black when first exposed to air.
- B. Sodium is a solid at 25°C and changes to a liquid when heated to 98°C.
- C. When placed in water, sodium sizzles and a gas is formed.
- D. When placed in contact with chlorine, sodium forms a compound that melts at 801°C.
- E. Sodium is never found as the pure metal in nature.

2. All of these statements describe properties of tin. Which one describes a *chemical* property of tin?

- A. Tin can be hammered into a thin sheet.
- B. At -40°C a sheet of tin crumbles to a gray powder.
- C. Tin melts at 231.9°C.
- D. When a bar of tin is bent, it emits an audible "cry".
- E. Tin dissolves slowly in cold, dilute hydrochloric acid, but it dissolves readily in concentrated hydrochloric acid.

3. The diameter of an atom is approximately 1×10^{-8} cm. What is this diameter when expressed in nanometers?

- A. 1×10^{-19} nm
- B. 1×10^{-15} nm
- C. 1×10^1 nm
- D. 1×10^{-10} nm
- E. 1×10^{-1} nm

4. 6.0 km is how many micrometers?

- A. 6.0×10^6 μm
- B. 1.7×10^{-7} μm
- C. 6.0×10^9 μm
- D. 1.7×10^{-4} μm
- E. 6.0×10^3 μm

5. How many milliliters is 0.005 L?

- A. 0.5 mL
- B. 5 mL
- C. 0.50 mL
- D. 0.000005 mL
- E. 200 mL

6. After carrying out the operations below, how many significant figures are appropriate to show in the result?

$$(13.7 + 0.027) \div 8.221$$

- A. 1
- B. 2
- C. 3
- D. 4
- E. 5

7. How many significant figures does the sum $8.5201 + 1.93$ contain?

- A. 1
- B. 2
- C. 3
- D. 4
- E. 5

8. How many significant figures does the sum $8.520 + 2.7$ contain?

- A. 1
- B. 2
- C. 3
- D. 4
- E. 5

9. Do the indicated arithmetic and give the answer to the correct number of significant figures.

$$(1.5 \times 10^{-4} \times 61.3) + 2.01 =$$

- A. 2.0192
- B. 2.0
- C. 2.019
- D. 2.02
- E. 2.019195

10. Table salt (sodium chloride) is 39.1% sodium. How many grams of salt contains 72.0 g of sodium?

- A. 28.2 g salt
- B. 72.0 g salt
- C. 184 g salt
- D. 2,820 g salt
- E. 1.84×10^5 g salt

11. A piece of metal with a mass of 125 g is placed into a graduated cylinder that contains 25.00 mL of water, raising the water level to 56.00 mL. What is the density of the metal?

- A. 5.00 g/cm^3
- B. 4.03 g/cm^3
- C. 2.23 g/cm^3
- D. 1.51 g/cm^3
- E. 0.25 g/cm^3

12. A piece of metal with a mass of 114 g was placed into a graduated cylinder that contained 25.00 mL of water, raising the water level to 42.50 mL. What is the density of the metal?

- A. 0.154 g/cm^3
- B. 0.592 g/cm^3
- C. 2.68 g/cm^3
- D. 6.51 g/cm^3
- E. 7.25 g/cm^3

13. Given the following densities at 25°C :

magnesium: 1.7 g/cm^3 graphite: 1.8 g/cm^3 iron: 7.9 g/cm^3

A block of iron has a mass of 826 g. What is the mass of a block of magnesium that has the same volume as the block of iron?

- A. 1,400 g
- B. 3,800 g
- C. 830 g
- D. 180 g
- E. 90 g

14. The density of mercury is 13.6 g/cm^3 . How many liters does 251 g of Hg occupy?

- A. 18.5 L
- B. 54.9 L
- C. $1.85 \times 10^{-2} \text{ L}$
- D. $5.42 \times 10^{-2} \text{ L}$
- E. $3.41 \times 10^3 \text{ L}$

15. Which one of these represents a *physical* change?

- A. battery cables corrode
- B. bleach turns hair yellow
- C. sugar, if heated enough, turns black and loses its sweetness
- D. milk turns sour
- E. lard, when heated, changes to liquid

16. Which one of these represents a *chemical* change?

- A. boiling water to form steam
- B. turning hair yellow with bleach
- C. melting butter
- D. mixing powdered charcoal and oxygen at room temperature
- E. cutting a bar of sodium metal into pieces with a knife

17. The number 1.050×10^9 has how many significant figures?

- A. 2
- B. 3
- C. 4
- D. 9
- E. 13

18. How many significant figures are there in 1.3070 g?

- A. 6
- B. 5
- C. 4
- D. 3
- E. 2

19. How many significant figures does the product 8.52010×7.9 contain?

- A. 2
- B. 3
- C. 4
- D. 5
- E. 6

20. Bromine is a red liquid at 25°C. Its density is 3.12 g/cm³. What is the volume of 28.1 g of liquid bromine?

- A. 87.7 cm³
- B. 0.111 cm³
- C. 9.01 cm³
- D. 28.1 cm³
- E. 111 cm³

Chapter 1 Key

1. B
2. E
3. E
4. C
5. B
6. C
7. D
8. C
9. D
10. C
11. B
12. D
13. D
14. C
15. E
16. B
17. C
18. B
19. A
20. C

Chapter 1 Summary

<u>Category</u>	<u># of Questions</u>
Difficulty: Easy	6
Difficulty: Medium	14
Raymond - 001 Chemistry...	20