

Chapter 1 Test

Directions:

This is a 25-question test. Once you've completed it, the answer key will become available.

You may take this test only ONCE.

1) QID: 26358

Which of the following describes a scientific law?

- A scientific law is a tentatively accepted explanation of facts.
- A scientific law is a concise statement that summarizes a fundamental relationship of nature.
- A scientific law is an all encompassing idea that provides a full explanation for known observations.
- A scientific law is a basic principle that may be stated without direct proof.

2) QID: 26374

Which of the following statements is **not** a part of Dalton's atomic theory.

- All matter is composed of indivisible atoms.
- All atoms of a given element are identical in mass and all other properties.
- The number of protons determines the identity of an atom
- Atoms are indestructible and retain their identities in chemical reactions.

3) QID: 26371

Which of the following defines a hypothesis?

- A hypothesis is a tentatively accepted explanation of the facts.
- A hypothesis is a concise statement that summarizes a fundamental relationship of nature.
- A hypothesis is an encompassing idea that provides a full explanation for known observations.
- A hypothesis is a basic principle that may be stated without direct proof.

4) QID: 8118

Which statement best describes the field of chemistry?

- Chemistry is the study of chemical equations.
- Chemistry is the study of solutions.
- Chemistry is the study of matter.
- Chemistry is the study of acids and bases.

5) QID: 8128

Calcium carbonate can be decomposed into calcium oxide and carbon dioxide. The mass of the products collected is the same as the mass of the reactants, so that matter was neither created nor destroyed. Which part of Dalton's atomic theory best explains this observation?

- A chemical reaction consists of the rearrangement of the atoms from reactants to products.
- All matter is made up of indivisible atoms.
- A compound is a type of matter composed of two or more elements in fixed ratios.
- An element is a type of matter composed of one type of atom with a characteristic mass.

6) QID: 8047

Phosphoric acid is made up of the elements hydrogen, phosphorus, and oxygen. Which of the following best describes phosphoric acid?

- an element
- a compound
- a homogeneous mixture
- a heterogeneous mixture

7) QID: 8048

Which of the following is an example of a heterogeneous mixture?

- colored glass
- iodized salt
- granola bar
- brass

8) QID: 8052

Tap water consists of water, sodium and chloride ions, and possibly bacteria, chlorine, and other ingredients. Which choice best defines what tap water is?

- a mixture
- a pure substance
- an element
- a compound

9) QID: 8023

Suppose that during an experiment, you first melt a piece of ice. Then you heat the water until it evaporates. What type(s) of changes occurred during this experiment?

- physical change
- chemical change
- neither physical nor chemical changes
- physical and chemical changes

10) QID: 8026

Copper ornamentation on many buildings is often tarnished as a result of the copper interacting with air. Which term best describes this change in the copper?

- physical change
- chemical change
- change in the reactivity
- density change

11) QID: 8025

Which term best describes the type of change that occurs when the identity or composition of matter is changed?

- physical change
- chemical change
- reactivity
- extensive change

SAMPLE

12) QID: 8066

Scientists use prefixes to make new units that are either smaller or larger and are more convenient to use. For example, you could describe the distance to work as either 85 kilometers or 85,000 meters. Which prefix represents 1/100?

- milli
- centi
- kilo
- deci

13) QID: 8070

Given what you have learned about prefixes, calculate how many liters of liquid are in a container that has 579 mL of the liquid.

- 57.9 L
- 0.0579 L
- 0.579 L
- 5.79 L

14) QID: 8069

Derived units come from combinations of the seven basic SI units. Which of the following choices is **not** a derived unit?

- a Joule
- a second
- a coulomb
- a liter

15) QID: 8079

Which of the following statements about accuracy is **NOT** true?

- Accuracy reflects the quality of the measurement instrument.
- Accuracy is tied to the concept of random error and influences the last digit in your measurement.
- Accuracy requires comparison to the hypothetical true value of the measurement
- It is entirely possible for a measurement to be precise and not at all accurate.

16) QID: 8085

Which of the following sets of measurements of a dose of cough medicine, all in mL, can be described as precise but not accurate if the true value is 15.4 mL?

- 15.4, 15.5, 15.3
- 28.3, 28.2, 28.4
- 18.2, 12.7, 16.5
- none of these answers is correct

17) QID: 8086

During a laboratory experiment you record the following measurements for the weight of a specimen: 2.24 mg, 2.23 mg, 2.24 mg, 2.22 mg, 2.23 mg. If the true, hypothetical measurement value for the specimen is 2.23 mg, what kind of results did you get with your measurements?

- precise and accurate
- accurate but not precise
- neither accurate nor precise
- precise but not accurate

18) QID: 4537

Determine which statement is **not** correct.

- 48.33 has four significant figures.
- 16.7 has three significant figures.
- 0.0193 has four significant figures.
- 0.003 has one significant figure.

19) QID: 4540

Which of the following has one or more zeros that are **not** significant?

- 203.002
- 20.400
- 609
- 0.03787

20) QID: 4548

Which multiplication problem is **not** correctly expressed with respect to significant figures?

- $19.00034 \cdot 0.003 = 0.06$
- $297.1 \cdot 23.236 = 6,903.4$
- $1.8 \cdot 2.35 = 4.2$
- $8.904 \cdot 2.1 = 19$

21) QID: 4549

With regard to the proper number of significant digits, which of the following calculations is carried out incorrectly?

- $18.8 \div 4.3 = 4.37$
- $1.99 \div 18.77 = 0.106$
- $2.8437 \div 1.9999 = 1.4219$
- $2.1 \div 5.558 = 0.38$

SAMPLE

22) QID: 8089

In order to install new carpeting, it is important to first know the dimensions of a room. You should know the area (length \cdot width) of the floor. Carpeting in the United States is typically sold in units of area, such as square feet (or ft^2). Suppose you want to buy carpeting for a room. You have only a meter stick to measure the room's dimensions. The length is 5.50 m and the width is 3.70 m. If the conversion factor for meters to feet is approximately 1 meter = 3.25 ft, about how much carpeting should you buy? (Note: it is usually a good idea to buy a little extra.)

- about 325 ft^2
- about 225 ft^2
- about 200 ft^2
- about 250 ft^2

23) QID: 8090

In the United States, people sometimes find it necessary to convert between kilometers and miles. The standard conversion is 1 km = 0.62 miles. If a typical marathon race is 42.3 km long, about how long is the race in miles? (1 km = 0.62 miles.)

- 62 miles
- 68.2 miles
- 42.3 miles
- 26.2 miles

24) QID: 8095

What is 200 K in degrees °C?

- 473 °C
- 473 °C
- 73 °C
- 73 °C

25) QID: 8088

One kilogram is equal to about 2.20 pounds. Both kilograms and pounds are units of mass. What is the equivalent weight in pounds of a 37.5 kilogram object?

- 82.5 lb
- 22.0 lb
- 17.0 lb
- 75.0 lb

SAMPLE