

Introduction to Chemistry, 5e (Bauer)

Chapter 1 Matter and Energy

1) Which of the following is **not** an example of matter?

- A) a rock
- B) a hot-air balloon
- C) carbon dioxide in your exhaled breath
- D) steam
- E) heat from a barbeque grill

Answer: E

Difficulty: 2 Medium

Topic: Study of Chemistry

Bloom's: 2. Understand

Gradable: automatic

Subtopic: Classification and States of Matter; Properties of Matter

Accessibility: Keyboard Navigation

2) Which of the following is **not** an example of matter?

- A) air
- B) light from a candle
- C) wax
- D) the propellant in an aerosol can
- E) a stain on clothing

Answer: B

Difficulty: 2 Medium

Topic: Study of Chemistry

Bloom's: 2. Understand

Gradable: automatic

Subtopic: Classification and States of Matter; Properties of Matter

Accessibility: Keyboard Navigation

3) Which of the following is an example of matter?

- A) sunlight
- B) light from an incandescent bulb
- C) helium in a balloon
- D) heat from a car's radiator
- E) all of these are correct

Answer: C

Difficulty: 2 Medium

Topic: Study of Chemistry

Bloom's: 2. Understand

Gradable: automatic

Subtopic: Classification and States of Matter; Properties of Matter

Accessibility: Keyboard Navigation

4) Which of the following does **not** apply to a chemical compound?

- A) A chemical compound consists of two or more elements.
- B) The elements in a compound are combined in definite proportions.
- C) The characteristics of the compound are different from the characteristics of the elements from which it is made.
- D) Compounds can be separated into their constituent elements using only physical methods.
- E) A chemical compound can also be classified as a pure substance.

Answer: D

Difficulty: 2 Medium

Topic: Study of Chemistry

Bloom's: 2. Understand

Gradable: automatic

Subtopic: Classification and States of Matter; Properties of Matter

Accessibility: Keyboard Navigation

5) Which of the following statements regarding elements is **incorrect**?

- A) Elements are the simplest building block of matter.
- B) Elements cannot be broken down into simpler substances even by chemical means.
- C) Some elements are not naturally occurring, and have been synthesized by scientists.
- D) As the Greeks had thought, water is an element.
- E) Elements are classified using a periodic table.

Answer: D

Difficulty: 1 Easy

Topic: Study of Chemistry

Bloom's: 2. Understand

Gradable: automatic

Subtopic: Classification and States of Matter; Properties of Matter

Accessibility: Keyboard Navigation

6) A combination of two or more substances that can be separated by using only a physical process is

- A) an element.
- B) a compound.
- C) a mixture.
- D) a substance.
- E) a composition.

Answer: C

Difficulty: 1 Easy

Topic: Study of Chemistry

Bloom's: 1. Remember

Gradable: automatic

Subtopic: Classification and States of Matter; Properties of Matter

Accessibility: Keyboard Navigation

7) Which of the following is an example of a pure substance?

- A) sand
- B) tap water
- C) aluminum in a soda can (not considering the paint or plastic coatings)
- D) river water
- E) granite

Answer: C

Difficulty: 1 Easy

Topic: Study of Chemistry

Bloom's: 2. Understand

Gradable: automatic

Subtopic: Properties of Matter

Accessibility: Keyboard Navigation

8) Which of the following is an example of a pure substance?

- A) a copper wire
- B) milk
- C) leather
- D) a piece of carpet
- E) ocean water

Answer: A

Difficulty: 1 Easy

Topic: Study of Chemistry

Bloom's: 2. Understand

Gradable: automatic

Subtopic: Classification and States of Matter; Properties of Matter

Accessibility: Keyboard Navigation

9) Which of the following is **not** an example of a mixture?

- A) air
- B) iced tea
- C) 24-carat gold
- D) brass
- E) a person

Answer: C

Difficulty: 1 Easy

Topic: Study of Chemistry

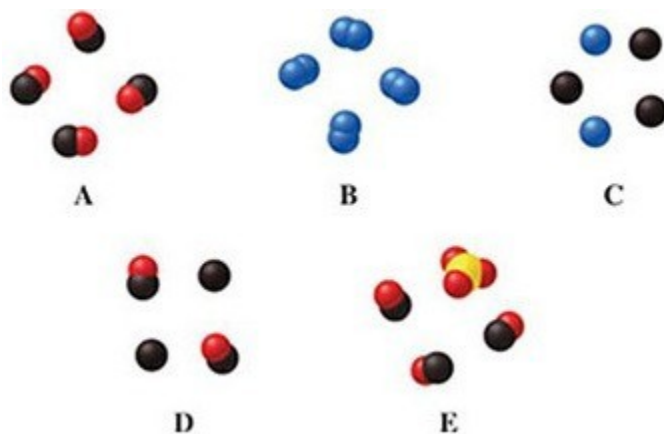
Bloom's: 2. Understand

Gradable: automatic

Subtopic: Classification and States of Matter; Properties of Matter

Accessibility: Keyboard Navigation

10) Which image(s) in the figure represents a pure elemental substance?



- A) image A
- B) image B
- C) image C
- D) images A and B
- E) image E

Answer: B

Difficulty: 2 Medium

Topic: Study of Chemistry

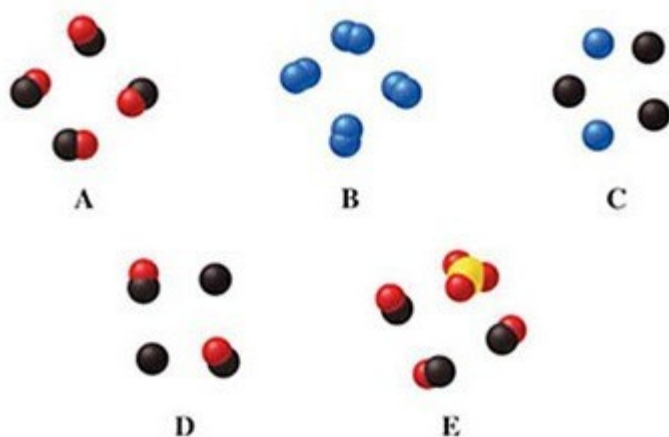
Bloom's: 2. Understand

Gradable: automatic

Subtopic: Classification and States of Matter; Properties of Matter

Accessibility: Keyboard Navigation

11) Which image(s) in the figure represents a mixture of compounds?



- A) image A
- B) images A and E
- C) image C
- D) image D
- E) image E

Answer: E

Difficulty: 2 Medium

Topic: Study of Chemistry

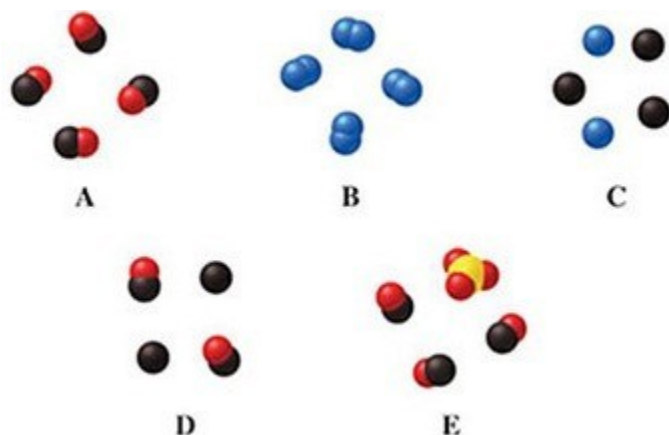
Bloom's: 2. Understand

Gradable: automatic

Subtopic: Classification and States of Matter; Properties of Matter

Accessibility: Keyboard Navigation

12) Which image(s) in the figure represents a mixture of two elements?



- A) image A
- B) image B
- C) image C
- D) image D
- E) images C and D

Answer: C

Difficulty: 2 Medium

Topic: Study of Chemistry

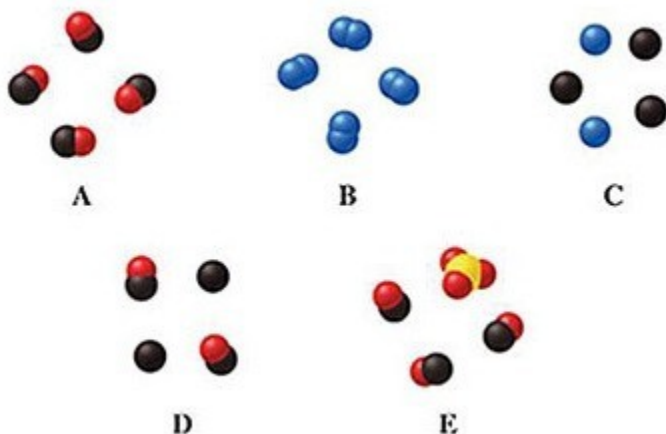
Bloom's: 2. Understand

Gradable: automatic

Subtopic: Classification and States of Matter; Properties of Matter

Accessibility: Keyboard Navigation

13) Which image(s) in the figure represents a mixture?



- A) image C
- B) image D
- C) image E
- D) images C and D
- E) images C, D, and E

Answer: E

Difficulty: 2 Medium

Topic: Study of Chemistry

Bloom's: 2. Understand

Gradable: automatic

Subtopic: Classification and States of Matter; Properties of Matter

Accessibility: Keyboard Navigation

14) Which of these substances is an element?

- A) C
- B) CO
- C) N₂
- D) HCl
- E) both C and N₂

Answer: E

Difficulty: 1 Easy

Topic: Study of Chemistry; Components of Matter

Bloom's: 2. Understand

Gradable: automatic

Subtopic: Classification of Matter; Chemical Formulas; Elements and the Periodic Table

Accessibility: Keyboard Navigation

15) Which of these substances is a compound?

- A) Co
- B) NI₃
- C) Fe
- D) CCl₄
- E) both NI₃ and CCl₄

Answer: E

Difficulty: 1 Easy

Topic: Study of Chemistry; Components of Matter

Bloom's: 2. Understand

Gradable: automatic

Subtopic: Classification and States of Matter; Chemical Formulas; Elements and the Periodic Table

Accessibility: Keyboard Navigation

16) Select the substance below which is a compound.

- A) NO
- B) Ir
- C) Ni
- D) Co
- E) Rf

Answer: A

Difficulty: 1 Easy

Topic: Study of Chemistry; Components of Matter

Bloom's: 2. Understand

Gradable: automatic

Subtopic: Classification and States of Matter; Chemical Formulas; Elements and the Periodic Table

Accessibility: Keyboard Navigation

17) Which of these elements is a metal?

- A) Ca
- B) N
- C) Ne
- D) C
- E) O

Answer: A

Difficulty: 1 Easy

Topic: Study of Chemistry; Components of Matter

Bloom's: 2. Understand

Gradable: automatic

Subtopic: Classification of Matter; Chemical Formulas; Elements and the Periodic Table

Accessibility: Keyboard Navigation

18) Which of these elements is a nonmetal?

- A) Na
- B) Mg
- C) Cu
- D) K
- E) Cl

Answer: E

Difficulty: 1 Easy

Topic: Study of Chemistry; Components of Matter

Bloom's: 2. Understand

Gradable: automatic

Subtopic: Classification and States of Matter; Chemical Formulas; Elements and the Periodic Table

Accessibility: Keyboard Navigation

19) The symbol for the element barium is _____.

- A) B
- B) Br
- C) Ba
- D) Be
- E) Bi

Answer: C

Difficulty: 1 Easy

Topic: Components of Matter

Bloom's: 1. Remember

Gradable: automatic

Subtopic: Chemical Formulas; Elements and the Periodic Table

Accessibility: Keyboard Navigation

20) The symbol for the element copper is _____.

- A) Co
- B) C
- C) Cr
- D) Cu
- E) Ca

Answer: D

Difficulty: 1 Easy

Topic: Components of Matter

Bloom's: 1. Remember

Gradable: automatic

Subtopic: Chemical Formulas; Elements and the Periodic Table

Accessibility: Keyboard Navigation

21) The symbol for the element potassium is _____.

- A) P
- B) Pt
- C) K
- D) Po
- E) Pa

Answer: C

Difficulty: 1 Easy

Topic: Components of Matter

Bloom's: 1. Remember

Gradable: automatic

Subtopic: Chemical Formulas; Elements and the Periodic Table

Accessibility: Keyboard Navigation

22) The symbol for the element sodium is _____.

- A) S
- B) So
- C) Sm
- D) Na
- E) Sn

Answer: D

Difficulty: 1 Easy

Topic: Components of Matter

Bloom's: 1. Remember

Gradable: automatic

Subtopic: Chemical Formulas; Elements and the Periodic Table

Accessibility: Keyboard Navigation

23) The symbol for the element calcium is _____.

- A) Ca
- B) C
- C) Cm
- D) Cu
- E) Cl

Answer: A

Difficulty: 1 Easy

Topic: Study of Chemistry

Bloom's: 1. Remember

Gradable: automatic

Subtopic: Properties of Matter; Classification of Matter

Accessibility: Keyboard Navigation

24) The symbol for the element iron is _____.

- A) I
- B) Ir
- C) Fe
- D) In
- E) Ag

Answer: C

Difficulty: 1 Easy

Topic: Components of Matter

Bloom's: 1. Remember

Gradable: automatic

Subtopic: Chemical Formulas; Elements and the Periodic Table

Accessibility: Keyboard Navigation

25) The symbol Hg corresponds to which element?

- A) magnesium
- B) gallium
- C) mercury
- D) hydrogen
- E) helium

Answer: C

Difficulty: 1 Easy

Topic: Components of Matter

Bloom's: 1. Remember

Gradable: automatic

Subtopic: Chemical Formulas; Elements and the Periodic Table

Accessibility: Keyboard Navigation

26) The symbol Au corresponds to which element?

- A) arsenic
- B) gold
- C) mercury
- D) silver
- E) aluminum

Answer: B

Difficulty: 1 Easy

Topic: Components of Matter

Bloom's: 1. Remember

Gradable: automatic

Subtopic: Chemical Formulas; Elements and the Periodic Table

Accessibility: Keyboard Navigation

27) Which of the following is the physical state of matter which does not have a characteristic shape, but takes on the shape of the filled part of its container?

- A) solid
- B) liquid
- C) gas
- D) liquid or gas
- E) solid or liquid

Answer: B

Difficulty: 1 Easy

Topic: Study of Chemistry

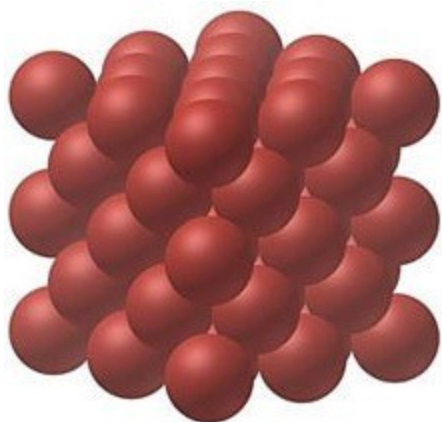
Bloom's: 1. Remember

Gradable: automatic

Subtopic: Classification and States of Matter; Properties of Matter

Accessibility: Keyboard Navigation

28) Which physical state is represented in this image?



- A) gas
- B) liquid
- C) solid
- D) mixture

Answer: C

Difficulty: 1 Easy

Topic: Study of Chemistry

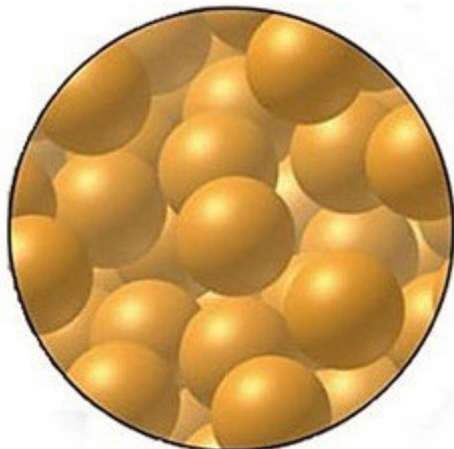
Bloom's: 2. Understand

Gradable: automatic

Subtopic: Classification and States of Matter; Properties of Matter

Accessibility: Keyboard Navigation

29) Which physical state is represented in this image?



- A) mixture
- B) gas
- C) liquid
- D) solid

Answer: C

Difficulty: 1 Easy

Topic: Study of Chemistry

Bloom's: 2. Understand

Gradable: automatic

Subtopic: Classification and States of Matter; Properties of Matter

Accessibility: Keyboard Navigation

30) Which of the following statements regarding the solid state of matter is **incorrect**?

- A) The symbol for solid is (s).
- B) Solids consist of particles that do not move past one another.
- C) The particles in a solid are in close contact with one another.
- D) Solids can be compressed to smaller volumes.
- E) When a solid is heated, the particles begin to move faster.

Answer: D

Difficulty: 1 Easy

Topic: Study of Chemistry

Bloom's: 2. Understand

Gradable: automatic

Subtopic: Classification and States of Matter; Properties of Matter

Accessibility: Keyboard Navigation

31) Which of the following statements regarding the gaseous state of matter is **incorrect**?

- A) The symbol for a gas is (g).
- B) Gases consist of particles that are in constant random motion.
- C) Gases can be compressed to smaller volumes.
- D) It is possible for gases to mix together.
- E) The particles in a gas are relatively close to one another.

Answer: E

Difficulty: 1 Easy

Topic: Study of Chemistry

Bloom's: 2. Understand

Gradable: automatic

Subtopic: Classification and States of Matter; Properties of Matter

Accessibility: Keyboard Navigation

32) A characteristic of a substance that involves the transformations the substance can undergo to produce a different substance is

- A) a physical property.
- B) a chemical property.
- C) a physical change.
- D) a material property.
- E) a characteristic property.

Answer: B

Difficulty: 1 Easy

Topic: Study of Chemistry

Bloom's: 1. Remember

Gradable: automatic

Subtopic: Classification and States of Matter; Properties of Matter

Accessibility: Keyboard Navigation

33) Which of the following statements is **incorrect**?

- A) The condensation of steam on a mirror is an example of a physical change.
- B) The burning of a piece of charcoal to a white powder is an example of a physical change.
- C) Evaporation of water from a fish tank is evidence of a physical change.
- D) The fact that sulfur is a yellow powder is a physical property.
- E) The fact that copper conducts electricity is a physical property.

Answer: B

Difficulty: 2 Medium

Topic: Study of Chemistry

Bloom's: 2. Understand

Gradable: automatic

Subtopic: Classification and States of Matter; Properties of Matter

Accessibility: Keyboard Navigation

34) Which of the following statements is **incorrect**?

- A) The burning of propane in a barbecue grill is a physical change.
- B) The cooking of the meat on a barbecue grill is a chemical change.
- C) Cleaning the grill afterwards using a steel brush is a physical change.
- D) Further cleaning of the grill using a detergent is a chemical change.
- E) Digestion of the meat by your body involves both physical and chemical changes.

Answer: A

Difficulty: 2 Medium

Topic: Study of Chemistry

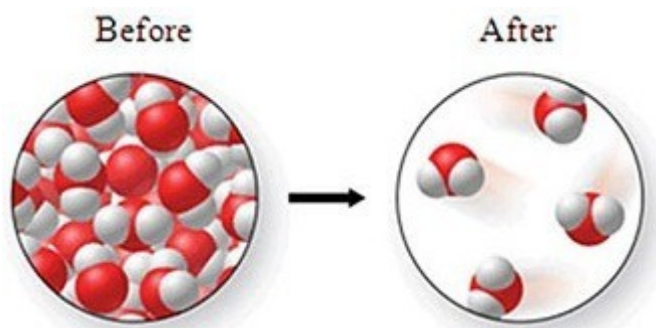
Bloom's: 2. Understand

Gradable: automatic

Subtopic: Classification and States of Matter; Properties of Matter

Accessibility: Keyboard Navigation

35) Consider the following transformation. Which of the statements best describes the process?



- A) A *chemical* change occurs in which atoms rearrange to form a new compound.
- B) A *chemical* change occurs in which an ionic compound is formed from diatomic elements.
- C) A *chemical* change occurs in which no atoms rearrange to form a new substance.
- D) A *physical* change occurs in which no atoms rearrange to form a new substance.
- E) A *physical* change occurs in which atoms rearrange to form a new compound.

Answer: D

Difficulty: 2 Medium

Topic: Study of Chemistry

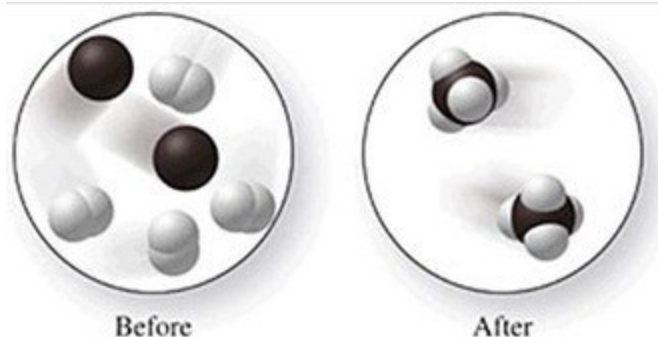
Bloom's: 2. Understand

Gradable: automatic

Subtopic: Classification and States of Matter; Properties of Matter

Accessibility: Keyboard Navigation

36) Consider the following transformation. Which of the statements best describes the process?



- A) A *physical* change occurs in which no atoms rearrange.
- B) A *physical* change occurs in which atoms rearrange to form a new compound.
- C) A *chemical* change occurs in which no atoms rearrange.
- D) A *chemical* change occurs in which atoms rearrange to form a new compound.
- E) A *chemical* change occurs in which an ionic compound is formed from diatomic elements.

Answer: D

Difficulty: 2 Medium

Topic: Study of Chemistry

Bloom's: 2. Understand

Gradable: automatic

Subtopic: Classification and States of Matter; Properties of Matter

Accessibility: Keyboard Navigation

37) A 1-ounce serving of Cheetos has 2.90×10^2 mg of sodium. What is this mass in units of grams?

- A) 290,000 g
- B) 0.290 g
- C) 0.00345 g
- D) 3.45 g
- E) 29.0 g

Answer: B

Difficulty: 1 Easy

Topic: Study of Chemistry

Bloom's: 2. Understand

Gradable: automatic

Subtopic: Scientific Notation and Significant Figures; Measurement; Dimensional Analysis

Accessibility: Keyboard Navigation

38) A brownie contains 1.30×10^2 mg of sodium. What is this mass in units of grams?

- A) 1.30×10^5 g
- B) 0.130 g
- C) 13.0 g
- D) 7.69 g
- E) 0.00769 g

Answer: B

Difficulty: 1 Easy

Topic: Study of Chemistry

Bloom's: 2. Understand

Gradable: automatic

Subtopic: Scientific Notation and Significant Figures; Measurement; Dimensional Analysis

Accessibility: Keyboard Navigation

39) A 1-ounce serving of a breakfast cereal contains 1.60×10^2 mg of potassium. What is this mass in units of grams?

- A) 0.160 g
- B) 1.60×10^5 g
- C) 6.25 g
- D) 0.00625 g
- E) 16.0 g

Answer: A

Difficulty: 1 Easy

Topic: Study of Chemistry

Bloom's: 2. Understand

Gradable: automatic

Subtopic: Scientific Notation and Significant Figures; Measurement; Dimensional Analysis

Accessibility: Keyboard Navigation

40) How many pounds of Spaghettios are in a can that contains 418 g? (1 lb = 453.6 g)

- A) 0.0576 lb
- B) 1.19×10^4 lb
- C) 0.922 lb
- D) 1.90×10^5 lb
- E) 3.60×10^{-2} lb

Answer: C

Difficulty: 1 Easy

Topic: Study of Chemistry

Bloom's: 2. Understand

Gradable: automatic

Subtopic: Scientific Notation and Significant Figures; Measurement; Dimensional Analysis

Accessibility: Keyboard Navigation

41) How many pounds of miniature candy bars are in a package that contains 197 g? (1 lb = 453.6 g)

- A) 0.0271 lb
- B) 0.434 lb
- C) 5.59×10^3 lb
- D) 8.94×10^5 lb
- E) 1.69×10^{-3} lb

Answer: B

Difficulty: 1 Easy

Topic: Study of Chemistry

Bloom's: 2. Understand

Gradable: automatic

Subtopic: Scientific Notation and Significant Figures; Measurement; Dimensional Analysis

Accessibility: Keyboard Navigation

42) A 1-ounce serving of Doritos has 17 g of carbohydrates. What is this mass in units of ounces? (16 ounces = 453.6 g)

- A) 2.7 oz
- B) 0.037 oz
- C) 0.60 oz
- D) 480 oz
- E) 28 oz

Answer: C

Difficulty: 1 Easy

Topic: Study of Chemistry

Bloom's: 2. Understand

Gradable: automatic

Subtopic: Scientific Notation and Significant Figures; Measurement; Dimensional Analysis

Accessibility: Keyboard Navigation

43) A can of Spaghettios has a mass of 418 g. What is this mass in units of ounces? (16 ounces = 453.6 g)

- A) 0.922 oz
- B) 1.90×10^5 oz
- C) 14.7 oz
- D) 1.19×10^4 oz
- E) 5.76×10^{-2} oz

Answer: C

Difficulty: 1 Easy

Topic: Study of Chemistry

Bloom's: 2. Understand

Gradable: automatic

Subtopic: Scientific Notation and Significant Figures; Measurement; Dimensional Analysis

Accessibility: Keyboard Navigation

44) A package of miniature candy bars has a mass of 197 g. What is this mass in units of ounces? (16 ounces = 453.6 g)

- A) 6.95 oz
- B) 0.434 oz
- C) 8.94×10^4 oz
- D) 1.43×10^6 oz
- E) 2.71×10^{-2} oz

Answer: A

Difficulty: 1 Easy

Topic: Study of Chemistry

Bloom's: 2. Understand

Gradable: automatic

Subtopic: Scientific Notation and Significant Figures; Measurement; Dimensional Analysis

Accessibility: Keyboard Navigation

45) A can of cashews has a mass of 8.5 ounces. What is this mass in kg? (16 ounces = 453.6 g)

- A) 3900 kg
- B) 0.24 kg
- C) 240 kg
- D) 3.9 kg
- E) 0.14 kg

Answer: B

Difficulty: 2 Medium

Topic: Study of Chemistry

Bloom's: 2. Understand

Gradable: automatic

Subtopic: Scientific Notation and Significant Figures; Measurement; Dimensional Analysis

Accessibility: Keyboard Navigation

46) A can of soup has a mass of 10.75 ounces. What is this mass in kg? (16 ounces = 453.6 g)

- A) 304.8 kg
- B) 0.3048 kg
- C) 2.370×10^{-2} kg
- D) 1.481×10^{-3} kg
- E) 4.876×10^3 kg

Answer: B

Difficulty: 2 Medium

Topic: Study of Chemistry

Bloom's: 2. Understand

Gradable: automatic

Subtopic: Scientific Notation and Significant Figures; Measurement; Dimensional Analysis

Accessibility: Keyboard Navigation

47) A loaf of bread has a mass of 24 ounces. What is this mass in kg? (16 ounces = 453.6 g)

- A) 0.68 kg
- B) 680 kg
- C) 5.3×10^{-2} kg
- D) 0.85 kg
- E) 1.7×10^5 kg

Answer: A

Difficulty: 2 Medium

Topic: Study of Chemistry

Bloom's: 2. Understand

Gradable: automatic

Subtopic: Scientific Notation and Significant Figures; Measurement; Dimensional Analysis

Accessibility: Keyboard Navigation

48) What is the mass in kilograms of a copper pipe that weighs 12.5 pounds? (1 lb = 453.6 g)

- A) 0.0276 kg
- B) 27.6 kg
- C) 5.67×10^3 kg
- D) 5.67 kg
- E) 1.72×10^{-3} kg

Answer: D

Difficulty: 2 Medium

Topic: Study of Chemistry

Bloom's: 2. Understand

Gradable: automatic

Subtopic: Scientific Notation and Significant Figures; Measurement; Dimensional Analysis

Accessibility: Keyboard Navigation

49) A typical light-weight bicycle weighs 17.5 pounds. What is the mass of a typical bike in kilograms? (1 lb = 453.6 g)

- A) 0.0386 kg
- B) 7.94 kg
- C) 7.94×10^6 kg
- D) 1.27×10^5 kg
- E) 2.41×10^{-3} kg

Answer: B

Difficulty: 2 Medium

Topic: Study of Chemistry

Bloom's: 2. Understand

Gradable: automatic

Subtopic: Scientific Notation and Significant Figures; Measurement; Dimensional Analysis

Accessibility: Keyboard Navigation

50) A bottle of Gatorade has a volume of 591 mL. What is this volume in L?

- A) 5.91 L
- B) 591,000 L
- C) 0.00169 L
- D) 1.69 L
- E) 0.591 L

Answer: E

Difficulty: 1 Easy

Topic: Study of Chemistry

Bloom's: 2. Understand

Gradable: automatic

Subtopic: Scientific Notation and Significant Figures; Measurement; Dimensional Analysis

Accessibility: Keyboard Navigation

51) A bottle of soda has a volume of 474 mL. What is this volume in L?

- A) 4.74 L
- B) 0.474 L
- C) 47.4 L
- D) 2.11 L
- E) 0.00211 L

Answer: B

Difficulty: 1 Easy

Topic: Study of Chemistry

Bloom's: 2. Understand

Gradable: automatic

Subtopic: Scientific Notation and Significant Figures; Measurement; Dimensional Analysis

Accessibility: Keyboard Navigation

52) A bottle of Gatorade has a volume of 591 mL. What is this volume in fluid ounces? (1 fluid ounce = 29.57 mL)

- A) 20.0 fl oz
- B) 0.0500 fl oz
- C) 1.40×10^5 fl oz
- D) 14.0 fl oz
- E) 35 fl oz

Answer: A

Difficulty: 1 Easy

Topic: Study of Chemistry

Bloom's: 2. Understand

Gradable: automatic

Subtopic: Scientific Notation and Significant Figures; Measurement; Dimensional Analysis

Accessibility: Keyboard Navigation

53) A bottle of soda has a volume of 474 mL. What is this volume in fluid ounces? (1 fluid ounce = 29.57 mL)

- A) 16.0 fl oz
- B) 0.0624 fl oz
- C) 1.75×10^5 fl oz
- D) 17.5 fl oz
- E) 30 fl oz

Answer: A

Difficulty: 1 Easy

Topic: Study of Chemistry

Bloom's: 2. Understand

Gradable: automatic

Subtopic: Scientific Notation and Significant Figures; Measurement; Dimensional Analysis

Accessibility: Keyboard Navigation

54) A bottle of fluoride rinse has a volume of 500 mL. Which of the following equivalences is **incorrect**?

- A) $V = 0.500 \text{ L}$
- B) $V = 500 \text{ cm}^3$
- C) $V = 5.00 \times 10^{-4} \text{ m}^3$
- D) $V = 0.500 \text{ m}^3$
- E) both $V = 500 \text{ cm}^3$ and $V = 0.500 \text{ m}^3$

Answer: D

Difficulty: 2 Medium

Topic: Study of Chemistry

Bloom's: 2. Understand

Gradable: automatic

Subtopic: Scientific Notation and Significant Figures; Measurement; Dimensional Analysis

Accessibility: Keyboard Navigation

55) If the displacement (size) of a motorcycle engine is 1500 cm^3 , which of the following equivalences is **incorrect**?

- A) $V = 1500 \text{ mL}$
- B) $V = 1.500 \text{ L}$
- C) $V = 1.500 \times 10^{-3} \text{ m}^3$
- D) $V = 15.00 \text{ m}^3$
- E) both $V = 1500 \text{ mL}$ and $V = 15.00 \text{ m}^3$

Answer: D

Difficulty: 1 Easy

Topic: Study of Chemistry

Bloom's: 2. Understand

Gradable: automatic

Subtopic: Scientific Notation and Significant Figures; Measurement; Dimensional Analysis

Accessibility: Keyboard Navigation

56) A box has dimensions of 4.0 cm by 8.5 cm by 2.0 cm. The volume of the box in mL is

- A) 34 mL
- B) 0.068 mL
- C) 68 mL
- D) 17 mL
- E) 14.5 mL

Answer: C

Difficulty: 1 Easy

Topic: Study of Chemistry

Bloom's: 2. Understand

Gradable: automatic

Subtopic: Scientific Notation and Significant Figures; Measurement; Dimensional Analysis

Accessibility: Keyboard Navigation

57) A box has dimensions of 2.5 cm by 3.0 cm by 4.0 cm. The volume of the box in milliliters and liters is

- A) 30 mL and 0.030 L
- B) 30 mL and 30,000 L
- C) 7.5 mL and 0.0075 L
- D) 7.5 mL and 7,500 L
- E) 3,000 mL and 3.0 L

Answer: A

Difficulty: 2 Medium

Topic: Study of Chemistry

Bloom's: 2. Understand

Gradable: automatic

Subtopic: Classification of Matter; Scientific Notation and Significant Figures; Measurement

Accessibility: Keyboard Navigation

58) A box has dimensions of 3.5 cm by 4.0 cm by 8.0 cm. The volume of the box in milliliters and liters is

- A) 112 mL and 112,000 L
- B) 112 mL and 0.112 L
- C) 0.112 mL and 112 L
- D) 14 mL and 0.014 L
- E) 14 mL and 14,000 L

Answer: B

Difficulty: 2 Medium

Topic: Study of Chemistry

Bloom's: 2. Understand

Gradable: automatic

Subtopic: Scientific Notation and Significant Figures; Measurement; Dimensional Analysis

Accessibility: Keyboard Navigation

- 59) The proprietor of a rock shop insists that a nugget is pure gold. If the nugget occupies a volume of 5.40 mL, what would its mass have to be if it were truly pure gold? ($d_{\text{gold}} = 19.3$ g/mL)
- A) 104 g
 - B) 3.57 g
 - C) 0.279 g
 - D) 13.9 g
 - E) 197 g

Answer: A

Difficulty: 2 Medium

Topic: Study of Chemistry

Bloom's: 3. Apply

Gradable: automatic

Subtopic: Properties of Matter; Scientific Notation and Significant Figures; Measurement; Dimensional Analysis

Accessibility: Keyboard Navigation

- 60) If the density of a certain alcohol is 0.785 g/mL, what volume of the alcohol would have a mass of 75.0 g?
- A) 0.955 mL
 - B) 58.9 mL
 - C) 75.8 mL
 - D) 95.5 mL
 - E) 0.0105 mL

Answer: D

Difficulty: 2 Medium

Topic: Study of Chemistry

Bloom's: 3. Apply

Gradable: automatic

Subtopic: Properties of Matter; Scientific Notation and Significant Figures; Measurement; Dimensional Analysis

Accessibility: Keyboard Navigation

61) The density of aluminum is 2.7 g/cm^3 . What is the mass of a piece of aluminum foil which is 10.0 cm by 5.0 cm by 0.0018 cm thick?

- A) 0.090 g
- B) $3.3 \times 10^{-2} \text{ g}$
- C) 0.24 g
- D) $1.4 \times 10^2 \text{ g}$
- E) 19 g

Answer: C

Difficulty: 2 Medium

Topic: Study of Chemistry

Bloom's: 3. Apply

Gradable: automatic

Subtopic: Properties of Matter; Scientific Notation and Significant Figures; Measurement; Dimensional Analysis

Accessibility: Keyboard Navigation

62) If the density of a certain alcohol is 0.785 g/mL , what mass of the alcohol would have a volume of 200.0 mL?

- A) 2.55 g
- B) 157 g
- C) 200 g
- D) 255 g
- E) $3.92 \times 10^{-3} \text{ g}$

Answer: B

Difficulty: 1 Easy

Topic: Study of Chemistry

Bloom's: 3. Apply

Gradable: automatic

Subtopic: Properties of Matter; Scientific Notation and Significant Figures; Measurement; Dimensional Analysis

Accessibility: Keyboard Navigation

63) A student exploring the desert finds a piece of metal with a volume of 29.9 cm^3 . If this metal has a mass of 337.5 g, which of the following is the metal most likely to be?

- A) aluminum (density = 2.70 g/cm^3)
- B) sodium chloride (density = 2.16 g/cm^3)
- C) lead (density = 11.3 g/cm^3)
- D) gold (density = 19.3 g/cm^3)
- E) The student discovered a new metal with a density of 0.0886 g/cm^3 .

Answer: C

Difficulty: 2 Medium

Topic: Study of Chemistry

Bloom's: 3. Apply

Gradable: automatic

Subtopic: Properties of Matter; Scientific Notation and Significant Figures; Measurement; Dimensional Analysis

Accessibility: Keyboard Navigation

64) If a balloon filled with helium were heated with a blow-dryer, the balloon would increase in volume. What would happen to the density of the helium in the balloon?

- A) It would decrease.
- B) It would increase.
- C) It would remain the same.
- D) A chemical reaction would occur, so it is impossible to predict.
- E) The initial statement is incorrect—the volume of the balloon would not increase.

Answer: A

Difficulty: 2 Medium

Topic: Study of Chemistry

Bloom's: 2. Understand

Gradable: automatic

Subtopic: Properties of Matter; Measurement

Accessibility: Keyboard Navigation

65) A rubber stopper sinks in water, but floats in methylene chloride. Place these three substances in order from least density to greatest density.

- A) rubber stopper < methylene chloride < water
- B) rubber stopper < water < methylene chloride
- C) water < methylene chloride < rubber stopper
- D) water < rubber stopper < methylene chloride
- E) methylene chloride < water < rubber stopper

Answer: D

Difficulty: 2 Medium

Topic: Study of Chemistry

Bloom's: 3. Apply

Gradable: automatic

Subtopic: Properties of Matter; Measurement

Accessibility: Keyboard Navigation

66) A diamond will float in water, but sink in carbon tetrachloride. Place these three substances in order from least density to greatest density.

- A) water < diamond < carbon tetrachloride
- B) diamond < water < carbon tetrachloride
- C) carbon tetrachloride < diamond < water
- D) diamond < carbon tetrachloride < water
- E) water < carbon tetrachloride < diamond

Answer: E

Difficulty: 2 Medium

Topic: Study of Chemistry

Bloom's: 3. Apply

Gradable: automatic

Subtopic: Properties of Matter; Measurement

Accessibility: Keyboard Navigation

67) An ice cube will sink in hexane, but float in water. Place these three substances in order from least density to greatest density.

- A) ice < water < hexane
- B) hexane < ice < water
- C) hexane < water < ice
- D) water < hexane < ice
- E) water < ice < hexane

Answer: B

Difficulty: 2 Medium

Topic: Study of Chemistry

Bloom's: 3. Apply

Gradable: automatic

Subtopic: Properties of Matter; Measurement

Accessibility: Keyboard Navigation

68) If the temperature of a bowl of ice cream increases from -10°C to 25°C , what is the increase in temperature in units of degrees Celsius and Kelvin?

- A) 15°C , 288 K
- B) 35°C , 308 K
- C) 35°C , 273 K
- D) 35°C , 35 K
- E) 15°C , 273 K

Answer: D

Difficulty: 1 Easy

Topic: Study of Chemistry

Bloom's: 2. Understand

Gradable: automatic

Subtopic: Measurement

Accessibility: Keyboard Navigation

69) If the temperature of water in a freezer decreases from 22°C to −25°C, what is the decrease in temperature in units of degrees Celsius and Kelvin?

- A) 47°C, 320 K
- B) 47°C, 273 K
- C) 47°C, 47 K
- D) 3°C, 276 K
- E) 3°C, 3 K

Answer: C

Difficulty: 1 Easy

Topic: Study of Chemistry

Bloom's: 2. Understand

Gradable: automatic

Subtopic: Measurement

Accessibility: Keyboard Navigation

70) Which of the following is **not** an example of a physical property?

- A) The boiling point of acetone is 56°C.
- B) Sand is more dense than water.
- C) Helium is a gas at room temperature.
- D) Copper gets a greenish coating on it when exposed to moist air.
- E) Water is colorless.

Answer: D

Difficulty: 2 Medium

Topic: Study of Chemistry

Bloom's: 2. Understand

Gradable: automatic

Subtopic: Properties of Matter

Accessibility: Keyboard Navigation

71) Which of the following is **not** an example of a physical property?

- A) The boiling point of liquid nitrogen is 77 K.
- B) Nitrogen is a gas at room temperature.
- C) Nitrogen is colorless.
- D) Nitrogen gas is less dense than oxygen gas.
- E) Nitrogen combines with oxygen in an internal combustion engine to form oxides of nitrogen.

Answer: E

Difficulty: 2 Medium

Topic: Study of Chemistry

Bloom's: 2. Understand

Gradable: automatic

Subtopic: Properties of Matter

Accessibility: Keyboard Navigation

72) Which of the following is **not** an example of a chemical property?

- A) An iron nail will rust in water.
- B) Sugar will dissolve in water.
- C) A steak on a hot frying pan will turn brown.
- D) Gasoline will burn if ignited.
- E) Water can be decomposed to hydrogen and oxygen.

Answer: B

Difficulty: 2 Medium

Topic: Study of Chemistry

Bloom's: 2. Understand

Gradable: automatic

Subtopic: Properties of Matter

Accessibility: Keyboard Navigation

73) Which of the following is **not** an example of a chemical change?

- A) Water becomes purple as Kool-Aid is dissolved in it.
- B) Aluminum turns white after prolonged exposure to air.
- C) A piece of charcoal becomes white after it burns.
- D) Magnesium burns in air to make magnesium oxide.
- E) Zinc metal reacts with hydrochloric acid to form zinc chloride and hydrogen gas.

Answer: A

Difficulty: 2 Medium

Topic: Study of Chemistry

Bloom's: 2. Understand

Gradable: automatic

Subtopic: Properties of Matter

Accessibility: Keyboard Navigation

74) Which of the following is **not** an example of a physical change?

- A) Ice melts when warmed.
- B) Dry ice sublimates (converts from a solid to a gas) at room temperature.
- C) Liquid nitrogen converts to a gas at room temperature.
- D) Blue copper sulfate crystals dissolve in water to form a blue solution.
- E) When hydrogen and oxygen gas are mixed in the presence of a spark, water is formed.

Answer: E

Difficulty: 2 Medium

Topic: Study of Chemistry

Bloom's: 2. Understand

Gradable: automatic

Subtopic: Properties of Matter

Accessibility: Keyboard Navigation

75) Which of the following is **not** a form of energy?

- A) chemical
- B) mechanical
- C) temperature
- D) heat
- E) electrical

Answer: C

Difficulty: 2 Medium

Topic: Study of Chemistry

Bloom's: 2. Understand

Gradable: automatic

Subtopic: Properties of Matter

Accessibility: Keyboard Navigation

76) Which of the following statements is **incorrect**?

- A) Energy is the capacity to do work or transfer heat.
- B) Mechanical work occurs when a force acts over a distance.
- C) Kinetic energy is the energy possessed by an object due to its position.
- D) Potential energy can be possessed by chemical compounds.
- E) A compound releases potential energy when it undergoes a spontaneous chemical reaction.

Answer: C

Difficulty: 2 Medium

Topic: Study of Chemistry

Bloom's: 2. Understand

Gradable: automatic

Subtopic: Properties of Matter

Accessibility: Keyboard Navigation

77) Which of the following statements is **incorrect**?

- A) H_2 molecules which are moving faster must have more kinetic energy than slower moving H_2 molecules.
- B) A book stored on a high bookshelf has potential energy.
- C) A volleyball flying over a net has both kinetic energy and potential energy.
- D) When gasoline is burned to power an engine, it releases only potential energy.
- E) The water in a waterfall has kinetic, potential, and mechanical energy.

Answer: D

Difficulty: 2 Medium

Topic: Study of Chemistry

Bloom's: 2. Understand

Gradable: automatic

Subtopic: Properties of Matter

Accessibility: Keyboard Navigation

78) Which of the following is **not** a practice that would be employed by a scientist?

- A) testing ideas by experimentation
- B) organizing findings in specific ways
- C) predicting the outcome of an experiment and then not testing the prediction
- D) trying to explain why things happen
- E) making physical models to explain the behavior of matter

Answer: C

Difficulty: 2 Medium

Topic: Study of Chemistry

Bloom's: 2. Understand

Gradable: automatic

Subtopic: Scientific Method

Accessibility: Keyboard Navigation

79) Which of the following is **not** normally a part of scientific inquiry?

- A) observations
- B) philosophizing
- C) theories
- D) hypotheses
- E) laws

Answer: B

Difficulty: 2 Medium

Topic: Study of Chemistry

Bloom's: 2. Understand

Gradable: automatic

Subtopic: Scientific Method

Accessibility: Keyboard Navigation

80) Which of the following statements is **incorrect**?

- A) The scientific method is a way of looking at the world that is different from non-science forms of inquiry.
- B) The scientific method does not allow for the use of inferences, and everything must be proved by direct observation.
- C) A theory is a tentative explanation of the behavior or properties of matter.
- D) Scientists must isolate and study one variable at a time when performing experiments.
- E) A behavior of matter that has universal validity is called a law.

Answer: C

Difficulty: 2 Medium

Topic: Study of Chemistry

Bloom's: 2. Understand

Gradable: automatic

Subtopic: Scientific Method

Accessibility: Keyboard Navigation

81) The number 0.005925 correctly expressed in scientific notation is:

- A) 59.25×10^{-4}
- B) 5.93×10^{-3}
- C) 5.9×10^{-3}
- D) 5.925×10^3
- E) 5.925×10^{-3}

Answer: E

Difficulty: 1 Easy

Topic: Study of Chemistry

Bloom's: 2. Understand

Gradable: automatic

Subtopic: Scientific Notation and Significant Figures

Accessibility: Keyboard Navigation

82) The number 0.0416 correctly expressed in scientific notation is:

- A) 4.16×10^3
- B) 4.2×10^3
- C) 4.16×10^{-2}
- D) 4.2×10^{-3}
- E) 4.2×10^{-2}

Answer: C

Difficulty: 1 Easy

Topic: Study of Chemistry

Bloom's: 2. Understand

Gradable: automatic

Subtopic: Scientific Notation and Significant Figures

Accessibility: Keyboard Navigation

83) The number 0.0017400 correctly expressed in scientific notation is:

- A) 1.74×10^3
- B) 1.7400×10^3
- C) 1.74×10^{-2}
- D) 1.74×10^{-3}
- E) 1.7400×10^{-3}

Answer: E

Difficulty: 1 Easy

Topic: Study of Chemistry

Bloom's: 2. Understand

Gradable: automatic

Subtopic: Scientific Notation and Significant Figures

Accessibility: Keyboard Navigation

84) The number 5.650×10^{-2} correctly expressed in decimal form is:

- A) 0.565
- B) 0.0565
- C) 0.05650
- D) 565
- E) 565.0

Answer: C

Difficulty: 1 Easy

Topic: Study of Chemistry

Bloom's: 2. Understand

Gradable: automatic

Subtopic: Scientific Notation and Significant Figures

Accessibility: Keyboard Navigation

85) The number 54,900 correctly expressed in scientific notation is:

- A) 5.49×10^4
- B) 54.9×10^3
- C) 5.49×10^{-3}
- D) 5.5×10^4
- E) 5.49×10^{-4}

Answer: A

Difficulty: 1 Easy

Topic: Study of Chemistry

Bloom's: 2. Understand

Gradable: automatic

Subtopic: Scientific Notation and Significant Figures

Accessibility: Keyboard Navigation

86) The number 625,000 correctly expressed in scientific notation is:

- A) 6.25×10^{-5}
- B) 6.25×10^{-4}
- C) 6.3×10^5
- D) 6.2×10^5
- E) 6.25×10^5

Answer: E

Difficulty: 1 Easy

Topic: Study of Chemistry

Bloom's: 2. Understand
Gradable: automatic
Subtopic: Scientific Notation and Significant Figures
Accessibility: Keyboard Navigation

87) The correct answer for the product $(6.45 \times 10^5) \times (1.2 \times 10^4)$ is: (considering significant figures)

- A) 7.7×10^9
- B) 5.375×10^1
- C) 7.74×10^9
- D) 7.7×10^{11}
- E) 7.74×10^{11}

Answer: A
Difficulty: 1 Easy
Topic: Study of Chemistry
Bloom's: 2. Understand
Gradable: automatic
Subtopic: Scientific Notation and Significant Figures
Accessibility: Keyboard Navigation

88) The correct answer for the product $(8.2 \times 10^{-3}) \times (2.84 \times 10^5)$ is: (considering significant figures)

- A) 2.3288×10^3
- B) 2.3×10^3
- C) 2.3×10^4
- D) 2.3×10^5
- E) 2.33×10^2

Answer: B
Difficulty: 1 Easy
Topic: Study of Chemistry
Bloom's: 2. Understand
Gradable: automatic
Subtopic: Scientific Notation and Significant Figures
Accessibility: Keyboard Navigation

89) The correct answer for the product $(6.1 \times 10^4) \times (3312)$ is: (considering significant figures)

A) 2.020×10^8

B) 2.02×10^8

C) 2.0×10^9

D) 2.02032×10^8

E) 2.0×10^8

Answer: E

Difficulty: 1 Easy

Topic: Study of Chemistry

Bloom's: 2. Understand

Gradable: automatic

Subtopic: Scientific Notation and Significant Figures

Accessibility: Keyboard Navigation

90) What is the correct answer to the following mathematical operation expressed to the appropriate number of significant figures?

$$\left(3.225 \times 10^{19}\right) \times \left(\frac{0.01}{7.3 \times 10^{-3}}\right)$$

A) 4×10^{19}

B) 4.4×10^{19}

C) 4.42×10^{19}

D) 4.418×10^{19}

E) 4.42×10^{18}

Answer: A

Difficulty: 1 Easy

Topic: Study of Chemistry

Bloom's: 2. Understand

Gradable: automatic

Subtopic: Scientific Notation and Significant Figures

Accessibility: Keyboard Navigation

91) What is the correct answer to the following mathematical operation expressed to the appropriate number of significant figures?

$$\frac{0.040}{(2.6345 \times 10^{-4}) \times (7.91)}$$

- A) 12.0×10^4
- B) 1.9
- C) 19
- D) 19.1
- E) 19.195

Answer: C

Difficulty: 1 Easy

Topic: Study of Chemistry

Bloom's: 2. Understand

Gradable: automatic

Subtopic: Scientific Notation and Significant Figures

Accessibility: Keyboard Navigation

92) When the mathematical operation is carried out, how many significant figures should be reported in the answer?

$$\frac{0.040}{(2.6345 \times 10^{-4}) \times (7.91)}$$

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

Answer: B

Difficulty: 1 Easy

Topic: Study of Chemistry

Bloom's: 2. Understand

Gradable: automatic

Subtopic: Scientific Notation and Significant Figures

Accessibility: Keyboard Navigation

93) When the mathematical operation is carried out, how many significant figures should be reported in the answer?

$$(3.225 \times 10^{19}) \times \left(\frac{0.01}{7.3 \times 10^{-3}} \right)$$

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

Answer: A

Difficulty: 1 Easy

Topic: Study of Chemistry

Bloom's: 2. Understand

Gradable: automatic

Subtopic: Scientific Notation and Significant Figures

Accessibility: Keyboard Navigation

94) The correct answer for the subtraction $28.645 \text{ g} - 22.105 \text{ g}$ is: (considering significant figures)

- A) 6.54 g
- B) $6.54 \times 10^{-1} \text{ g}$
- C) 6.540 g
- D) 6.5400 g
- E) $6.54 \times 10^1 \text{ g}$

Answer: C

Difficulty: 1 Easy

Topic: Study of Chemistry

Bloom's: 2. Understand

Gradable: automatic

Subtopic: Scientific Notation and Significant Figures

Accessibility: Keyboard Navigation

95) The correct answer for the addition $56.234 + 0.0021$ g is: (considering significant figures)

- A) 56 g
- B) 56.24 g
- C) 56.2361 g
- D) 56.236 g
- E) 56.255 g

Answer: D

Difficulty: 1 Easy

Topic: Study of Chemistry

Bloom's: 2. Understand

Gradable: automatic

Subtopic: Scientific Notation and Significant Figures

Accessibility: Keyboard Navigation

96) The correct answer for the addition $102.5 \text{ mL} + 6.55 \text{ mL}$ is: (considering significant figures)

- A) 109.05 mL
- B) 109 mL
- C) 109.0 mL
- D) 109.050 mL
- E) 108.15 mL

Answer: C

Difficulty: 1 Easy

Topic: Study of Chemistry

Bloom's: 2. Understand

Gradable: automatic

Subtopic: Scientific Notation and Significant Figures

Accessibility: Keyboard Navigation

97) How would you report the value at the peak of the graph shown below assuming the y-axis is in units of cm?



- A) 18 cm
- B) 18.0 cm
- C) 18.00 cm
- D) 20 cm
- E) 20.0 cm

Answer: A

Difficulty: 1 Easy

Topic: Study of Chemistry

Bloom's: 2. Understand

Gradable: automatic

Subtopic: Scientific Notation and Significant Figures

Accessibility: Keyboard Navigation

98) If a jet's cruising altitude is 32,200 ft (to three significant figures), this distance in km is: (1 mile = 1.61 km; 1 mile = 5280 ft)

- A) 9.8186 km
- B) 9.82 km
- C) 1.06×10^8 km
- D) 2.737×10^8 km
- E) 2.00×10^4 km

Answer: B

Difficulty: 2 Medium

Topic: Study of Chemistry

Bloom's: 3. Apply

Gradable: automatic

Subtopic: Scientific Notation and Significant Figures; Measurement; Dimensional Analysis

Accessibility: Keyboard Navigation

99) If a car is traveling at 97 km/hr, what is its speed in mi/hr? (1 mile = 1.61 km)

- A) 1.6×10^2 mi/hr
- B) 156 mi/hr
- C) 60.2 mi/hr
- D) 6.0×10^1 mi/hr
- E) 3600 mi/hr

Answer: D

Difficulty: 2 Medium

Topic: Study of Chemistry

Bloom's: 3. Apply

Gradable: automatic

Subtopic: Scientific Notation and Significant Figures; Measurement; Dimensional Analysis

Accessibility: Keyboard Navigation

100) The American Heart Association recommends that for every 1000 dietary calories consumed, the sodium intake should be 1000 mg or less and should not exceed a daily limit of 3300 mg for an adult. What is the yearly limit on sodium intake in pounds?

- A) 7.3×10^{-3} lb
- B) 2.7 lb
- C) 730 lb
- D) 1.2×10^3 lb
- E) 1.2×10^6 lb

Answer: B

Difficulty: 3 Hard

Topic: Study of Chemistry

Bloom's: 3. Apply

Gradable: automatic

Subtopic: Scientific Notation and Significant Figures; Measurement; Dimensional Analysis

Accessibility: Keyboard Navigation

101) Water is considered a mixture because it consists of hydrogen and oxygen.

Answer: FALSE

Difficulty: 2 Medium

Topic: Study of Chemistry; Components of Matter

Bloom's: 2. Understand

Gradable: automatic

Subtopic: Classification and States of Matter; Chemical Formulas

Accessibility: Keyboard Navigation

102) The larger the sample of a given substance, the more dense it is.

Answer: FALSE

Difficulty: 2 Medium

Topic: Study of Chemistry

Bloom's: 1. Remember

Gradable: automatic

Subtopic: Measurement

Accessibility: Keyboard Navigation

103) A glass of tea with ice cubes in it is an example of a heterogeneous mixture.

Answer: TRUE

Difficulty: 1 Easy

Topic: Study of Chemistry

Bloom's: 2. Understand

Gradable: automatic

Subtopic: Classification and States of Matter

Accessibility: Keyboard Navigation

104) A "law" in science is a rule that is enacted by a group of influential scientists.

Answer: FALSE

Difficulty: 1 Easy

Topic: Study of Chemistry

Bloom's: 1. Remember

Gradable: automatic

Subtopic: Scientific Method

Accessibility: Keyboard Navigation

105) The law of conservation of mass states that the mass of the products of a chemical reaction is equal to the mass of the reacting substances.

Answer: TRUE

Difficulty: 1 Easy

Topic: Study of Chemistry

Bloom's: 1. Remember

Gradable: automatic

Subtopic: Scientific Method

Accessibility: Keyboard Navigation

106) Scientific theories are explanations of natural behavior.

Answer: TRUE

Difficulty: 1 Easy

Topic: Study of Chemistry

Bloom's: 1. Remember

Gradable: automatic

Subtopic: Scientific Method

Accessibility: Keyboard Navigation

107) The symbol (*w*) means "dissolved in water."

Answer: FALSE

Difficulty: 1 Easy

Topic: Study of Chemistry

Bloom's: 1. Remember

Gradable: automatic

Subtopic: Classification and States of Matter

Accessibility: Keyboard Navigation

108) The symbol $\text{H}_2\text{O}(aq)$ is the normal way to represent the compound water.

Answer: FALSE

Difficulty: 1 Easy

Topic: Study of Chemistry; Components of Matter

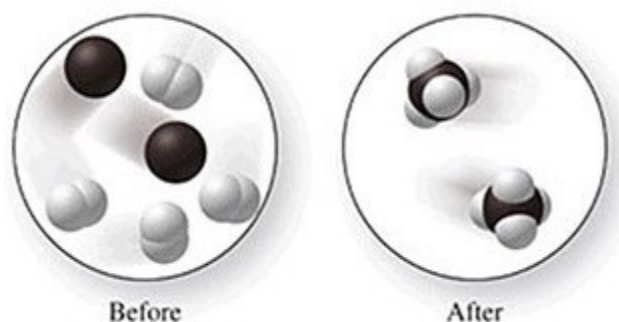
Bloom's: 1. Remember

Gradable: automatic

Subtopic: Classification and States of Matter; Chemical Formulas

Accessibility: Keyboard Navigation

109) The changes shown in the diagram represent a physical change.



Answer: FALSE

Difficulty: 2 Medium

Topic: Study of Chemistry

Bloom's: 2. Understand

Gradable: automatic

Subtopic: Classification and States of Matter; Properties of Matter

Accessibility: Keyboard Navigation

110) If the number 6.2510 is rounded to 2 significant figures, it would be reported as 6.3.

Answer: TRUE

Difficulty: 2 Medium

Topic: Study of Chemistry

Bloom's: 2. Understand

Gradable: automatic

Subtopic: Scientific Notation and Significant Figures; Measurement

Accessibility: Keyboard Navigation

111) The symbol for the element sodium is S.

Answer: FALSE

Difficulty: 1 Easy

Topic: Components of Matter

Bloom's: 1. Remember

Gradable: automatic

Subtopic: Chemical Formulas; Elements and the Periodic Table

Accessibility: Keyboard Navigation

112) The symbol for the element cobalt is CO.

Answer: FALSE

Difficulty: 1 Easy

Topic: Components of Matter

Bloom's: 1. Remember

Gradable: automatic

Subtopic: Chemical Formulas; Elements and the Periodic Table

Accessibility: Keyboard Navigation

113) A bottle of liquid mercury has a mass of 5.00×10^2 g. What is the volume of the mercury in mL? ($d_{\text{mercury}} = 13.6$ g/mL)

Difficulty: 2 Medium

Topic: Study of Chemistry

Bloom's: 3. Apply

Gradable: manual

Subtopic: Properties of Matter; Scientific Notation and Significant Figures; Measurement; Dimensional Analysis

Accessibility: Keyboard Navigation

114) Pentane has a boiling point of 36°C. What is this temperature equivalent to in kelvins?

Difficulty: 1 Easy

Topic: Study of Chemistry

Bloom's: 2. Understand

Gradable: manual

Subtopic: Measurement

Accessibility: Keyboard Navigation

115) A pump for a small swimming pool will circulate 3.00×10^2 gallons per hour (gph) through the filter. If the pool contains 1.30×10^3 gallons of water, how many hours will it take to filter the entire contents of the pool?

Difficulty: 2 Medium

Topic: Study of Chemistry

Bloom's: 3. Apply

Gradable: manual

Subtopic: Scientific Notation and Significant Figures; Measurement; Dimensional Analysis

Accessibility: Keyboard Navigation

116) If the price of gasoline is \$4.25/gallon, what would the price be per liter of gasoline? (1 L = 1.057 qt., 4 qt. = 1 gal.)

Difficulty: 2 Medium

Topic: Study of Chemistry

Bloom's: 3. Apply

Gradable: manual

Subtopic: Scientific Notation and Significant Figures; Measurement; Dimensional Analysis

Accessibility: Keyboard Navigation

117) The samples shown in the figure have the same mass. Which one has the greater density, the one on the left or the one on the right?



Difficulty: 2 Medium

Topic: Study of Chemistry

Bloom's: 3. Apply

Gradable: manual

Subtopic: Properties of Matter; Measurement

Accessibility: Keyboard Navigation

118) The length of a sofa is 2.05 m. Convert this length to units of cm.

Difficulty: 1 Easy

Topic: Study of Chemistry

Bloom's: 2. Understand

Gradable: manual

Subtopic: Scientific Notation and Significant Figures; Measurement; Dimensional Analysis

Accessibility: Keyboard Navigation

119) The length of a sofa is 2.05 m. Convert this length to units of mm.

Difficulty: 1 Easy

Topic: Study of Chemistry

Bloom's: 2. Understand

Gradable: manual

Subtopic: Scientific Notation and Significant Figures; Measurement; Dimensional Analysis

Accessibility: Keyboard Navigation

120) The length of a sofa is 2.05 m. Convert this length to units of km.

Difficulty: 1 Easy

Topic: Study of Chemistry

Bloom's: 2. Understand

Gradable: manual

Subtopic: Scientific Notation and Significant Figures; Measurement; Dimensional Analysis

Accessibility: Keyboard Navigation

121) The density of iron is 7.9 g/cm^3 . If $453.6 \text{ g} = 1 \text{ pound}$, what is this mass in pounds?

Difficulty: 1 Easy

Topic: Study of Chemistry

Bloom's: 2. Understand

Gradable: manual

Subtopic: Scientific Notation and Significant Figures; Measurement; Dimensional Analysis

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