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/general-organic-and-biological-chemistry-4e-test-bank

General, Organic and Biological Chemistry, 4e **(Smith)**
Chapter 1 Matter and Measurement

1) Which is NOT an example of a pure substance?
A) Sugar
B) Air
C) Aluminum foil
D) Water
E) A block of dry ice

Answer: B
Difficulty: 1 Easy
Topic: Study of Chemistry
Bloom's: 1. Remember
Subtopic: Classification and States of Matter
Accessibility: Keyboard Navigation
Chapter: 01

2) Which is an example of a physical change?
A) The rusting of an iron nail
B) The burning of propane in a gas grill
C) Baking cookies
D) Polishing tarnished silver
E) Melting of an ice cube in a glass of soda

Answer: E
Difficulty: 1 Easy
Topic: Study of Chemistry
Bloom's: 2. Understand
Subtopic: Classification and States of Matter
Accessibility: Keyboard Navigation
Chapter: 01

3) In which state of matter are the particles close together and highly organized?
A) Solid
B) Liquid
C) Gas
D) All of the choices are correct.

Answer: A
Difficulty: 1 Easy
Topic: Study of Chemistry
Bloom's: 1. Remember
Subtopic: Classification and States of Matter
Accessibility: Keyboard Navigation
Chapter: 01

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4) Which choice describes the behavior of the particles of a liquid?
A) The particles are close together and highly organized.
B) The particles are close together but disorganized.
C) The particles are far apart and very disorganized.
D) None of the choices are correct.

Answer: B
Difficulty: 1 Easy
Topic: Study of Chemistry
Bloom's: 1. Remember
Subtopic: Classification and States of Matter
Accessibility: Keyboard Navigation
Chapter: 01

5) Which state of matter does not have a definite shape or volume?
A) Solid
B) Liquid
C) Gas
D) All of the choices are correct.

Answer: C
Difficulty: 1 Easy
Topic: Study of Chemistry
Bloom's: 1. Remember
Subtopic: Classification and States of Matter
Accessibility: Keyboard Navigation
Chapter: 01

6) Which choice describes the behavior of a solid?
A) A solid has a definite volume, and maintains its shape in any container.
B) A solid has a definite volume, but takes on the shape of its container.
C) A solid has no definite shape or volume.
D) None of the above.

Answer: A
Difficulty: 1 Easy
Topic: Study of Chemistry
Bloom's: 1. Remember
Subtopic: Classification and States of Matter
Accessibility: Keyboard Navigation
Chapter: 01

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7) Which measurement has the fewest number of significant figures?
A) 12.80 m
B) 0.1280 m
C) 0.001280 m
D) 1280 m
E) All of the measurements have the same number of significant figures.

Answer: D
Difficulty: 1 Easy
Topic: Study of Chemistry
Bloom's: 1. Remember
Subtopic: Scientific Notation and Significant Figures
Accessibility: Keyboard Navigation
Chapter: 01

8) Which quantity is an exact number?
A) 3 cars
B) 1,000 m
C) 2 L
D) 453.6 g

Answer: A
Difficulty: 1 Easy
Topic: Study of Chemistry
Bloom's: 1. Remember
Subtopic: Scientific Notation and Significant Figures
Accessibility: Keyboard Navigation
Chapter: 01

9) The number 0.0035880 expressed correctly using scientific notation is _____.
A) 0.0035889
B) 3.5880×10^{3}
C) 3.5880×10^{-3}
D) 3.5880×10^{-4}
E) 3.588×10^{-3}

Answer: C
Difficulty: 1 Easy
Topic: Study of Chemistry
Bloom's: 1. Remember
Subtopic: Scientific Notation and Significant Figures
Accessibility: Keyboard Navigation
Chapter: 01

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10) The measurement 78,005,760 expressed correctly using scientific notation is _____.
A) 7.8005760×10^{7}

B) 7.8005760×10^{-7}

C) 7.8×10^{7}

D) 7.800576×10^{-7}

E) 7.800576×10^{7}

Answer: E
Difficulty: 1 Easy
Topic: Study of Chemistry
Bloom's: 1. Remember
Subtopic: Scientific Notation and Significant Figures
Accessibility: Keyboard Navigation
Chapter: 01

11) When 4.870×10^{-3} is correctly converted to its standard form the number becomes _____.
A) 4870
B) 4870.
C) 0.00487
D) 0.004870
E) 0.0004870

Answer: D
Difficulty: 1 Easy
Topic: Study of Chemistry
Bloom's: 2. Understand
Subtopic: Scientific Notation and Significant Figures
Accessibility: Keyboard Navigation
Chapter: 01

12) Which number is the largest?
A) 4.38×10^{3}

B) 4.38×10^{2}

C) 4.38×10^{-3}

D) 4.38×10^{-2}

E) 438

Answer: A
Difficulty: 1 Easy
Topic: Study of Chemistry
Bloom's: 3. Apply
Subtopic: Scientific Notation and Significant Figures
Accessibility: Keyboard Navigation

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Chapter: 01

13) Which number is the smallest?
A) 4.38×10^{3}
B) 4.38×10^{2}
C) 4.38×10^{-3}
D) 4.38×10^{-2}
E) 438

Answer: C
Difficulty: 1 Easy
Topic: Study of Chemistry
Bloom's: 2. Understand
Subtopic: Scientific Notation and Significant Figures
Accessibility: Keyboard Navigation
Chapter: 01

14) When 0.022189 is correctly rounded to two significant figures the number becomes _____.
A) 0.02
B) 0.022
C) 22
D) 0.023

Answer: B
Difficulty: 1 Easy
Topic: Study of Chemistry
Bloom's: 2. Understand
Subtopic: Scientific Notation and Significant Figures
Accessibility: Keyboard Navigation
Chapter: 01

15) When 5.5490×10^{8} is correctly rounded to three significant figures the number becomes _____.
A) 5.55
B) 5.55×10^{8}
C) 555
D) 554
E) 5.54×10^{8}

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

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Accessibility: Keyboard Navigation
Chapter: 01

16) Which number contains four significant figures?
A) 3.978
B) 0.780
C) 0.0085
D) 1700
E) Two or more of the numbers contain four significant figures.

Answer: A
Difficulty: 1 Easy
Topic: Study of Chemistry
Bloom's: 2. Understand
Subtopic: Scientific Notation and Significant Figures
Accessibility: Keyboard Navigation
Chapter: 01

17) Carry out the following calculation and report the answer using the proper number of significant figures: 38.251 + 73.1
A) 111
B) 111.3
C) 111.4
D) 111.35
E) 111.351

Answer: C
Difficulty: 2 Medium
Topic: Study of Chemistry
Bloom's: 3. Apply
Subtopic: Scientific Notation and Significant Figures
Accessibility: Keyboard Navigation
Chapter: 01

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18) Carry out the following calculation and report the answer using the proper number of significant figures:
549.101 + 8.12 + 95.0076 – 651.9
A) 3.286
B) 0.3286
C) 0.33
D) 0.3
E) 1268.1

Answer: D
Difficulty: 2 Medium
Topic: Study of Chemistry
Bloom's: 2. Understand
Subtopic: Scientific Notation and Significant Figures
Accessibility: Keyboard Navigation
Chapter: 01

19) Carry out the following calculation and report the answer using the proper number of significant figures:
38.251 × 73.1
A) 2796.1481
B) 2796.15
C) 2796.1
D) 2796
E) 2.80×10^3

Answer: E
Difficulty: 2 Medium
Topic: Study of Chemistry
Bloom's: 3. Apply
Subtopic: Scientific Notation and Significant Figures
Accessibility: Keyboard Navigation
Chapter: 01

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20) Carry out the following calculation and report the answer using the proper number of significant figures:

$$\frac{16.75\ \text{ft}}{0.54\ \text{s}}$$

A) 31.0185 ft/s
B) 31.01 ft/s
C) 31.02 ft/s
D) 31.0 ft/s
E) 31 ft/s

Answer: E
Difficulty: 3 Hard
Topic: Study of Chemistry
Bloom's: 5. Evaluate
Subtopic: Scientific Notation and Significant Figures; Dimensional Analysis
Accessibility: Keyboard Navigation
Chapter: 01

21) What is the correct metric relationship between milliliters and microliters?
A) 1 milliliter = 1 microliter
B) 1,000 milliliters = 1 microliter
C) 1 milliliter = 1,000 microliters
D) 1,000,000 milliliters = 1 microliter
E) 1 milliliter = 1,000,000 microliters

Answer: C
Difficulty: 2 Medium
Topic: Study of Chemistry
Bloom's: 4. Analyze
Subtopic: Measurements (Metric and SI Units)
Accessibility: Keyboard Navigation
Chapter: 01

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22) Which metric relationship is INCORRECT?
A) 1 milligram = 1,000 grams
B) 1 dL = 100 mL
C) 1 km = 1,000 m
D) 100 cg = 1 g
E) 1 liter = 1,000,000 microliters

Answer: A
Difficulty: 2 Medium
Topic: Study of Chemistry
Bloom's: 4. Analyze
Subtopic: Measurements (Metric and SI Units)
Accessibility: Keyboard Navigation
Chapter: 01

23) Which is the proper conversion factor for converting a mass expressed in pounds (lb) to the same mass expressed in grams (g)?
A)
$$\frac{1\ \text{lb}}{454\ \text{g}}$$
B)
$$\frac{1\ \text{g}}{454\ \text{lb}}$$
C)
$$\frac{454\ \text{g}}{1\ \text{lb}}$$
D)
$$\frac{454\ \text{lb}}{1\ \text{g}}$$

Answer: C
Difficulty: 2 Medium
Topic: Study of Chemistry
Bloom's: 4. Analyze
Subtopic: Dimensional Analysis; Measurements (Metric and SI Units)
Accessibility: Keyboard Navigation
Chapter: 01

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24) Which length is the longest?
A) 12 m
B) 12,000 mm
C) 12,000 μm
D) 12,000 cm
E) 0.0012 km

Answer: D
Difficulty: 3 Hard
Topic: Study of Chemistry
Bloom's: 4. Analyze
Subtopic: Measurements (Metric and SI Units)
Accessibility: Keyboard Navigation
Chapter: 01

25) A syringe has a volume of 5.0 mL. What is this volume in deciliters?
A) 0.00050 dL
B) 0.0050 dL
C) 0.050 dL
D) 0.50 dL
E) 50. dL

Answer: C
Difficulty: 2 Medium
Topic: Study of Chemistry
Bloom's: 5. Evaluate
Subtopic: Dimensional Analysis; Measurements (Metric and SI Units)
Accessibility: Keyboard Navigation
Chapter: 01

26) What is the mass in kilograms of an individual who weighs 197 lb?
A) 197 kg
B) 8.95 kg
C) 89.5 kg
D) 90 kg
E) 433 kg

Answer: C
Difficulty: 2 Medium
Topic: Study of Chemistry
Bloom's: 5. Evaluate
Subtopic: Dimensional Analysis; Measurements (Metric and SI Units)
Accessibility: Keyboard Navigation
Chapter: 01

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27) If a balloon has a volume of 21.6 cups, what is the volume of this balloon expressed in L?
A) 86.4 L
B) 81.51 L
C) 5.72 L
D) 5.094 L
E) 5.09 L

Answer: E
Difficulty: 3 Hard
Topic: Study of Chemistry
Bloom's: 5. Evaluate
Subtopic: Dimensional Analysis; Measurements (Metric and SI Units)
Accessibility: Keyboard Navigation
Chapter: 01

28) Which volume is equivalent to 225 mL?
A) 2.25×10^{5} μL
B) 2.25×10^{2} μL
C) 2.25 L
D) 2.25×10^{-5} μL
E) 0.225 μL

Answer: A
Difficulty: 3 Hard
Topic: Study of Chemistry
Bloom's: 5. Evaluate
Subtopic: Dimensional Analysis; Measurements (Metric and SI Units)
Accessibility: Keyboard Navigation
Chapter: 01

29) If a package of nuts weighs 41.3 oz, what is the mass of the package expressed in milligrams?
A) 1.17 mg
B) 1.17×10^{3} mg
C) 1.17×10^{6} mg
D) 117 mg
E) 3.00×10^{5} mg

Answer: C
Difficulty: 3 Hard
Topic: Study of Chemistry
Bloom's: 5. Evaluate
Subtopic: Dimensional Analysis; Measurements (Metric and SI Units)
Accessibility: Keyboard Navigation
Chapter: 01

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30) If a tree is 89.5 cm tall, what is the tree's height expressed in yards?
A) 0.979 yd
B) 6.31 yd
C) 18.9 yd
D) 35.2 yd
E) 227 yd

Answer: A
Difficulty: 3 Hard
Topic: Study of Chemistry
Bloom's: 5. Evaluate
Subtopic: Dimensional Analysis; Measurements (Metric and SI Units)
Accessibility: Keyboard Navigation
Chapter: 01

31) If honey has a density of 1.36 g/mL, what is the mass of 1.25 qt, reported in kilograms?
A) 1.60 kg
B) 1.6×10^3 kg
C) 0.974 kg
D) 974 kg
E) 1.80 kg

Answer: A
Difficulty: 3 Hard
Topic: Study of Chemistry
Bloom's: 5. Evaluate
Subtopic: Dimensional Analysis; Measurements (Metric and SI Units); Density and Specific Gravity
Accessibility: Keyboard Navigation
Chapter: 01

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32) If a piece of rock has a volume of 0.73 L and a mass of 1524 g, what is the density of the rock in g/mL?
A) 2.1×10^3 g/mL
B) 0.48 g/mL
C) 4.8×10^{-4} g/mL
D) 2.1 g/mL
E) 2.088 g/mL

Answer: D
Difficulty: 3 Hard
Topic: Study of Chemistry
Bloom's: 5. Evaluate
Subtopic: Dimensional Analysis; Measurements (Metric and SI Units); Density and Specific Gravity
Accessibility: Keyboard Navigation
Chapter: 01

33) A hiker with hypothermia has a body temperature of 82 °F. What is his body temperature in °C?
A) 14 °C
B) 28 °C
C) 31 °C
D) 50 °C

Answer: B
Difficulty: 2 Medium
Topic: Study of Chemistry
Bloom's: 5. Evaluate
Subtopic: Temperature
Accessibility: Keyboard Navigation
Chapter: 01

34) On an autumn day in Washington, DC, the outdoor temperature was 21 °C. What was this outdoor temperature in °F?
A) 44 °F
B) 57 °F
C) 69 °F
D) 70 °F

Answer: D
Difficulty: 2 Medium
Topic: Study of Chemistry
Bloom's: 5. Evaluate
Subtopic: Temperature
Accessibility: Keyboard Navigation
Chapter: 01

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35) An oven is set for a temperature of 298 °F. What is the oven temperature in K?
A) 166 K
B) 421 K
C) 148 K
D) 571 K
E) 439 K

Answer: B
Difficulty: 3 Hard
Topic: Study of Chemistry
Bloom's: 5. Evaluate
Subtopic: Temperature
Accessibility: Keyboard Navigation
Chapter: 01

36) Which of the following temperatures is the hottest?
A) 100 °C
B) 100 °F
C) 100 K
D) All would feel equally warm.

Answer: A
Difficulty: 2 Medium
Topic: Study of Chemistry
Bloom's: 4. Analyze
Subtopic: Temperature
Accessibility: Keyboard Navigation
Chapter: 01

37) The recommended dietary allowance for calcium for teenage children is 1,300 mg per day. If a typical 8.0-fl oz glass of reduced-fat milk contains 298 mg of calcium, how many fluid ounces of milk does a teenager need to drink to get the entire recommended amount of calcium from this milk?
A) 4.4 fl oz
B) 1.8 fl oz
C) 3.5 fl oz
D) 35 fl oz
E) 32 fl oz

Answer: D
Difficulty: 3 Hard
Topic: Study of Chemistry
Bloom's: 5. Evaluate
Subtopic: Dimensional Analysis; Measurements (Metric and SI Units)
Accessibility: Keyboard Navigation
Chapter: 01

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38) What is the density of a sample of rubbing alcohol if it has a specific gravity of 0.789?
A) 1.27 g/mL
B) 0.789 g/mL
C) 1.00 g/mL
D) 0.895 g/mL

Answer: B
Difficulty: 1 Easy
Topic: Study of Chemistry
Bloom's: 2. Understand
Subtopic: Density and Specific Gravity
Accessibility: Keyboard Navigation
Chapter: 01

39) Which of the following conversions is correct and expresses the answer using the proper number of significant figures?
A)

$$3.779\ \cancel{\text{lb}} \times \frac{454\ \cancel{\text{g}}}{1\ \cancel{\text{lb}}} \times \frac{1{,}000\ \text{mg}}{1\ \cancel{\text{g}}} = 1.7 \times 10^{6}\ \text{mg}$$

B)

$$553\ \cancel{\text{dL}} \times \frac{1\ \cancel{\text{L}}}{10\ \cancel{\text{dL}}} \times \frac{10^{3}\ \text{mL}}{1\ \cancel{\text{L}}} = 5.5 \times 10^{4}\ \text{mL}$$

C)

$$623\ \cancel{\mu\text{m}} \times \frac{1\ \cancel{\text{m}}}{10^{9}\ \cancel{\mu\text{m}}} \times \frac{39.4\ \text{in}}{1\ \cancel{\text{m}}} = 2.45 \times 10^{-5}\ \text{in}$$

D)

$$623\ \cancel{\mu\text{m}} \times \frac{1\ \cancel{\text{m}}}{10^{6}\ \cancel{\mu\text{m}}} \times \frac{39.4\ \text{in}}{1\ \cancel{\text{m}}} = 2.45 \times 10^{-2}\ \text{in}$$

Answer: C
Difficulty: 3 Hard
Topic: Study of Chemistry
Bloom's: 5. Evaluate
Subtopic: Scientific Notation and Significant Figures; Dimensional Analysis; Measurements (Metric and SI Units)
Accessibility: Keyboard Navigation
Chapter: 01

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40) What is the mass in grams of 85.32 mL of blood plasma with a density of 1.03 g/mL?
A) 85.32 g
B) 82.83 g
C) 82.8 g
D) 87.88 g
E) 87.9 g

Answer: E
Difficulty: 2 Medium
Topic: Study of Chemistry
Bloom's: 5. Evaluate
Subtopic: Dimensional Analysis; Measurements (Metric and SI Units); Density and Specific Gravity
Accessibility: Keyboard Navigation
Chapter: 01

41) If a 185-lb patient is prescribed 145 mg of the cholesterol lowering drug Tricor daily, what dosage is the patient receiving in mg/kg of his body weight?
A) 0.784 mg/kg
B) 1.28 mg/kg
C) 0.356 mg/kg
D) 1.72 mg/kg
E) 0.580 mg/kg

Answer: D
Difficulty: 3 Hard
Topic: Study of Chemistry
Bloom's: 5. Evaluate
Subtopic: Dimensional Analysis; Measurements (Metric and SI Units)
Accessibility: Keyboard Navigation
Chapter: 01

42) The estimated average daily requirement of folic acid for pregnant females is 520 micrograms. Which accurately expresses this value?
A) 520 mg
B) 520 Mg
C) 520 mG
D) 520 µg

Answer: D
Difficulty: 1 Easy
Topic: Study of Chemistry
Bloom's: 1. Remember
Subtopic: Measurements (Metric and SI Units)
Accessibility: Keyboard Navigation
Chapter: 01

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43) For a person between the ages of 10 and 29, the normal range of blood triglycerides is 53×10^4 mg/dL. What is the correct interpretation of the units in this measurement?
A) milligrams times deciliter
B) micrograms per deciliter
C) megagrams per deciliter
D) milligrams per deciliter

Answer: D
Difficulty: 1 Easy
Topic: Study of Chemistry
Bloom's: 1. Remember
Subtopic: Dimensional Analysis; Measurements (Metric and SI Units)
Accessibility: Keyboard Navigation
Chapter: 01

44) A patient's urine sample has a density of 1.02 g/mL. If 1250 mL of urine was excreted by the patient in one day, what mass of urine was eliminated?
A) 1.28 kg
B) 1225 g
C) 1275 g
D) 128 g

Answer: A
Difficulty: 3 Hard
Topic: Study of Chemistry
Bloom's: 5. Evaluate
Subtopic: Dimensional Analysis; Measurements (Metric and SI Units); Density and Specific Gravity
Accessibility: Keyboard Navigation
Chapter: 01

45) The density of human urine is normally between 1.003 and 1.030 g/mL, and is often used as a diagnostic tool. If a 25.00 mL sample of urine from a patient has a mass of 26.875 g, how does the density of the urine sample compare to the normal range?
A) The density of the sample is lower than the normal range
B) The density of the sample is greater than the normal range
C) The density of the sample is within the normal range
D) There is insufficient information to make a comparison

Answer: B
Difficulty: 2 Medium
Topic: Study of Chemistry
Bloom's: 2. Understand
Subtopic: Dimensional Analysis; Density and Specific Gravity
Accessibility: Keyboard Navigation
Chapter: 01

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46) Which volume has the most uncertainty associated with the measurement?
A) 10 mL
B) 10.0 mL
C) 10.00 mL
D) All have the same degree of uncertainty.

Answer: A
Difficulty: 2 Medium
Topic: Study of Chemistry
Bloom's: 2. Understand
Subtopic: Scientific Notation and Significant Figures; Measurements (Metric and SI Units)
Accessibility: Keyboard Navigation
Chapter: 01

47) Air has a density of 0.001226 g/mL. What volume of air would have a mass of 1.0 lb?
A) 2.7 mL
B) 815.6 mL
C) 37 mL
D) 3.7×10^2 L

Answer: D
Difficulty: 3 Hard
Topic: Study of Chemistry
Bloom's: 5. Evaluate
Subtopic: Scientific Notation and Significant Figures; Dimensional Analysis; Measurements (Metric and SI Units); Density and Specific Gravity
Accessibility: Keyboard Navigation
Chapter: 01

48) A beaker contains 145.675 mL of a saline solution. If 24.2 mL of the saline solution are removed from the beaker, what volume of solution remains?
A) 121.475 mL
B) 121.4 mL
C) 121.5 mL
D) 121 mL

Answer: C
Difficulty: 2 Medium
Topic: Study of Chemistry
Bloom's: 4. Analyze
Subtopic: Measurements (Metric and SI Units)
Accessibility: Keyboard Navigation
Chapter: 01

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49) PVC plastic, which is used in pipes, is an example of a synthetic material.

Answer: TRUE
Difficulty: 1 Easy
Topic: Study of Chemistry
Bloom's: 1. Remember
Subtopic: Properties of Matter
Accessibility: Keyboard Navigation
Chapter: 01

50) Nitrogen gas (N_2) would properly be classified as a compound.

Answer: FALSE
Difficulty: 2 Medium
Topic: Study of Chemistry
Bloom's: 2. Understand
Subtopic: Classification and States of Matter
Accessibility: Keyboard Navigation
Chapter: 01

51) Changes in state such as melting and boiling are physical changes.

Answer: TRUE
Difficulty: 1 Easy
Topic: Study of Chemistry
Bloom's: 1. Remember
Subtopic: Classification and States of Matter
Accessibility: Keyboard Navigation
Chapter: 01

52) A compound cannot be broken down into simpler substances.

Answer: FALSE
Difficulty: 1 Easy
Topic: Study of Chemistry
Bloom's: 1. Remember
Subtopic: Classification and States of Matter
Accessibility: Keyboard Navigation
Chapter: 01

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53) The water molecules in this image are best described as being in the liquid state.

Answer: FALSE
Difficulty: 1 Easy
Topic: Study of Chemistry
Bloom's: 2. Understand
Subtopic: Classification and States of Matter
Accessibility: Keyboard Navigation
Chapter: 01

54) The base unit for mass in the metric system is kilograms (kg).

Answer: FALSE
Difficulty: 1 Easy
Topic: Study of Chemistry
Bloom's: 1. Remember
Subtopic: Measurements (Metric and SI Units)
Accessibility: Keyboard Navigation
Chapter: 01

55) The base unit for volume in the metric system is liter (L).

Answer: TRUE
Difficulty: 1 Easy
Topic: Study of Chemistry
Bloom's: 1. Remember
Subtopic: Measurements (Metric and SI Units)
Accessibility: Keyboard Navigation
Chapter: 01

56) An inexact number results from a measurement or observation and contains some uncertainty.

Answer: TRUE
Difficulty: 1 Easy
Topic: Study of Chemistry
Bloom's: 2. Understand
Subtopic: Scientific Notation and Significant Figures
Accessibility: Keyboard Navigation
Chapter: 01

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57) A zero counts as a significant figure when it occurs at the end of a number that contains a decimal point.

Answer: TRUE
Difficulty: 1 Easy
Topic: Study of Chemistry
Bloom's: 1. Remember
Subtopic: Scientific Notation and Significant Figures
Accessibility: Keyboard Navigation
Chapter: 01

58) 8 mL is larger than 8 dL.

Answer: FALSE
Difficulty: 2 Medium
Topic: Study of Chemistry
Bloom's: 2. Understand
Subtopic: Measurements (Metric and SI Units)
Accessibility: Keyboard Navigation
Chapter: 01

59) Specific gravity is a quantity that compares the density of a substance with the density of water.

Answer: TRUE
Difficulty: 1 Easy
Topic: Study of Chemistry
Bloom's: 1. Remember
Subtopic: Density and Specific Gravity
Accessibility: Keyboard Navigation
Chapter: 01

60) The specific gravity of a substance has units of g/mL.

Answer: FALSE
Difficulty: 2 Medium
Topic: Study of Chemistry
Bloom's: 1. Remember
Subtopic: Density and Specific Gravity
Accessibility: Keyboard Navigation
Chapter: 01

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61) When the liquid carbon tetrachloride (density = 1.59 g/mL) is added to water, the top layer will be the water layer.

Answer: TRUE
Difficulty: 2 Medium
Topic: Study of Chemistry
Bloom's: 3. Apply
Subtopic: Density and Specific Gravity
Accessibility: Keyboard Navigation
Chapter: 01

62) When a piece of magnesium (density = 1.738 g/mL) is placed in a container of liquid carbon tetrachloride (density = 1.59 g/mL), the piece of magnesium will float on top of the carbon tetrachloride.

Answer: FALSE
Difficulty: 2 Medium
Topic: Study of Chemistry
Bloom's: 3. Apply
Subtopic: Density and Specific Gravity
Accessibility: Keyboard Navigation
Chapter: 01

63) In reading a number with a decimal point from left to right, all digits starting with the first nonzero number are significant figures.

Answer: TRUE
Difficulty: 1 Easy
Topic: Study of Chemistry
Bloom's: 1. Remember
Subtopic: Scientific Notation and Significant Figures
Accessibility: Keyboard Navigation
Chapter: 01

64) The number 900,027,300 has four significant figures.

Answer: FALSE
Difficulty: 1 Easy
Topic: Study of Chemistry
Bloom's: 2. Understand
Subtopic: Scientific Notation and Significant Figures
Accessibility: Keyboard Navigation
Chapter: 01

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65) The number 900,027,300 has nine significant figures.

Answer: FALSE
Difficulty: 1 Easy
Topic: Study of Chemistry
Bloom's: 2. Understand
Subtopic: Scientific Notation and Significant Figures
Accessibility: Keyboard Navigation
Chapter: 01

66) The two conversion factors for the equality 1 in = 2.54 cm are properly shown below.

$$\frac{1\text{ in}}{2.54\text{ cm}} \quad \text{and} \quad \frac{2.54\text{ in}}{1\text{ cm}}$$

Answer: FALSE
Difficulty: 1 Easy
Topic: Study of Chemistry
Bloom's: 2. Understand
Subtopic: Dimensional Analysis
Accessibility: Keyboard Navigation
Chapter: 01

67) Dissolving sugar in water involves a chemical change.

Answer: FALSE
Difficulty: 2 Medium
Topic: Study of Chemistry
Bloom's: 3. Apply
Subtopic: Classification and States of Matter
Accessibility: Keyboard Navigation
Chapter: 01

68) One-thousand (1,000) ms is the same length of time as one (1) μs.

Answer: FALSE
Difficulty: 2 Medium
Topic: Study of Chemistry
Bloom's: 4. Analyze
Subtopic: Measurements (Metric and SI Units)
Accessibility: Keyboard Navigation
Chapter: 01

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69) Assuming the numbers are measured values, when multiplying 762.85 by 15 the answer should be reported with two significant figures.

Answer: TRUE
Difficulty: 2 Medium
Topic: Study of Chemistry
Bloom's: 1. Remember
Subtopic: Scientific Notation and Significant Figures
Accessibility: Keyboard Navigation
Chapter: 01

70) When subtracting 15 from 762.85 the answer should be reported with two significant figures.

Answer: FALSE
Difficulty: 2 Medium
Topic: Study of Chemistry
Bloom's: 1. Remember
Subtopic: Scientific Notation and Significant Figures
Accessibility: Keyboard Navigation
Chapter: 01

71) In scientific notation, a number is written as $y \times 10^x$, where x can be any positive or negative number or fraction.

Answer: FALSE
Difficulty: 1 Easy
Topic: Study of Chemistry
Bloom's: 1. Remember
Subtopic: Scientific Notation and Significant Figures
Accessibility: Keyboard Navigation
Chapter: 01

72) If the density of a substance is greater than 1 g/mL, the mass of a sample of this substance will be greater than the volume of the sample.

Answer: TRUE
Difficulty: 2 Medium
Topic: Study of Chemistry
Bloom's: 4. Analyze
Subtopic: Density and Specific Gravity
Accessibility: Keyboard Navigation
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73) Dividing a number by 10^5 is the same as multiplying a number by 10^{-5}.

Answer: TRUE
Difficulty: 2 Medium
Topic: Study of Chemistry
Bloom's: 2. Understand
Subtopic: Scientific Notation and Significant Figures
Accessibility: Keyboard Navigation
Chapter: 01

74) The measurement 10.3 cm has more significant figures than the measurement 10.3 m.

Answer: FALSE
Difficulty: 2 Medium
Topic: Study of Chemistry
Bloom's: 2. Understand
Subtopic: Scientific Notation and Significant Figures
Accessibility: Keyboard Navigation
Chapter: 01

75) The density of olive oil is greater at 200 °C than at 25 °C.

Answer: FALSE
Difficulty: 2 Medium
Topic: Study of Chemistry
Bloom's: 2. Understand
Subtopic: Density and Specific Gravity
Accessibility: Keyboard Navigation
Chapter: 01

76) One Kelvin is the same size as one degree Celsius.

Answer: TRUE
Difficulty: 1 Easy
Topic: Study of Chemistry
Bloom's: 2. Understand
Subtopic: Temperature
Accessibility: Keyboard Navigation
Chapter: 01

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77) The temperature 60 °C is higher than 60 °F.

Answer: TRUE
Difficulty: 2 Medium
Topic: Study of Chemistry
Bloom's: 5. Evaluate
Subtopic: Temperature
Accessibility: Keyboard Navigation
Chapter: 01

78) The temperature –60 °C is higher than –60 °F.

Answer: FALSE
Difficulty: 3 Hard
Topic: Study of Chemistry
Bloom's: 5. Evaluate
Subtopic: Temperature
Accessibility: Keyboard Navigation
Chapter: 01

79) The temperature 60 °C is higher than 60 K.

Answer: TRUE
Difficulty: 2 Medium
Topic: Study of Chemistry
Bloom's: 5. Evaluate
Subtopic: Temperature
Accessibility: Keyboard Navigation
Chapter: 01

80) Elements and compounds are both classified as pure substances.

Answer: TRUE
Difficulty: 2 Medium
Topic: Study of Chemistry
Bloom's: 2. Understand
Subtopic: Classification and States of Matter
Accessibility: Keyboard Navigation
Chapter: 01

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81) The terms used in conversion factors must always be exact numbers.

Answer: FALSE
Difficulty: 2 Medium
Topic: Study of Chemistry
Bloom's: 2. Understand
Subtopic: Scientific Notation and Significant Figures; Dimensional Analysis
Accessibility: Keyboard Navigation
Chapter: 01

82) The number 87,927,000 is larger than the number 9.7×10^6.

Answer: TRUE
Difficulty: 2 Medium
Topic: Study of Chemistry
Bloom's: 4. Analyze
Subtopic: Scientific Notation and Significant Figures
Accessibility: Keyboard Navigation
Chapter: 01

83) The number 0.0007270 is larger than the number 5.7×10^{-3}.

Answer: FALSE
Difficulty: 2 Medium
Topic: Study of Chemistry
Bloom's: 4. Analyze
Subtopic: Scientific Notation and Significant Figures
Accessibility: Keyboard Navigation
Chapter: 01

84) A mixture can be separated into its components by physical changes.

Answer: TRUE
Difficulty: 1 Easy
Topic: Study of Chemistry
Bloom's: 2. Understand
Subtopic: Classification and States of Matter
Accessibility: Keyboard Navigation
Chapter: 01

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85) For a number written in scientific notation, a negative exponent indicates the value of the number is less than 1.

Answer: TRUE
Difficulty: 1 Easy
Topic: Study of Chemistry
Bloom's: 2. Understand
Subtopic: Scientific Notation and Significant Figures; Measurements (Metric and SI Units)
Accessibility: Keyboard Navigation
Chapter: 01

86) The meaning of the metric prefix *milli-* is 1000.

Answer: FALSE
Difficulty: 2 Medium
Topic: Study of Chemistry
Bloom's: 2. Understand
Subtopic: Measurements (Metric and SI Units)
Accessibility: Keyboard Navigation
Chapter: 01

87) A _____ change converts one material to another.

Answer: chemical
Difficulty: 1 Easy
Topic: Study of Chemistry
Bloom's: 1. Remember
Subtopic: Classification and States of Matter
Accessibility: Keyboard Navigation
Chapter: 01

88) The measurement 0.030500 m has _____ significant figures.
A) 2
B) 3
C) 4
D) 5
E) 6
F) 7

Answer: D
Difficulty: 1 Easy
Topic: Study of Chemistry
Bloom's: 2. Understand
Subtopic: Scientific Notation and Significant Figures; Measurements (Metric and SI Units)
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89) The measurement 4008 L has _____ significant figures.

Answer: four
Difficulty: 1 Easy
Topic: Study of Chemistry
Bloom's: 2. Understand
Subtopic: Scientific Notation and Significant Figures; Measurements (Metric and SI Units)
Accessibility: Keyboard Navigation
Chapter: 01

90) The measurement 32.0 m has _____ significant figures.

Answer: three
Difficulty: 1 Easy
Topic: Study of Chemistry
Bloom's: 2. Understand
Subtopic: Scientific Notation and Significant Figures; Measurements (Metric and SI Units)
Accessibility: Keyboard Navigation
Chapter: 01

91) The measurement 0.0002 g has _____ significant figures.

Answer: one
Difficulty: 1 Easy
Topic: Study of Chemistry
Bloom's: 2. Understand
Subtopic: Scientific Notation and Significant Figures; Measurements (Metric and SI Units)
Accessibility: Keyboard Navigation
Chapter: 01

92) The measurement 9.0×10^3 km has _____ significant figures.

Answer: two
Difficulty: 1 Easy
Topic: Study of Chemistry
Bloom's: 2. Understand
Subtopic: Scientific Notation and Significant Figures; Measurements (Metric and SI Units)
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93) When the measurement 340,942 s is rounded to two significant figures, the value is properly reported as _____.
A) 34
B) 340
C) 340,000
D) 340,000.
E) 3.4×10^5
F) 34×10^4

Answer: E
Difficulty: 1 Easy
Topic: Study of Chemistry
Bloom's: 3. Apply
Subtopic: Scientific Notation and Significant Figures; Measurements (Metric and SI Units)
Accessibility: Keyboard Navigation
Chapter: 01

94) To use conversion factors to solve a problem, set up the problem with any unwanted unit in the numerator of one term and the _____ of another term, so that unwanted units cancel.

Answer: denominator
Difficulty: 1 Easy
Topic: Study of Chemistry
Bloom's: 2. Understand
Subtopic: Dimensional Analysis
Accessibility: Keyboard Navigation
Chapter: 01

95) If you have equal masses of two different substances (A and B), and the density of A is twice the density of B, then the volume of A is _____ the volume of B.
A) One-quarter
B) One-half
C) The same as
D) Two times
E) Four times

Answer: B
Difficulty: 3 Hard
Topic: Study of Chemistry
Bloom's: 5. Evaluate
Subtopic: Dimensional Analysis; Density and Specific Gravity
Accessibility: Keyboard Navigation
Chapter: 01

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96) Every measurement is composed of a number and a _____.

Answer: unit
Difficulty: 1 Easy
Topic: Study of Chemistry
Bloom's: 1. Remember
Subtopic: Measurements (Metric and SI Units)
Accessibility: Keyboard Navigation
Chapter: 01

97) A small banana contains 323 mg of the nutrient potassium. You would need to eat approximately _____ small bananas in one day to obtain the recommended daily intake of 3.5 g of potassium.

Answer: 11
Difficulty: 3 Hard
Topic: Study of Chemistry
Bloom's: 5. Evaluate
Subtopic: Dimensional Analysis
Accessibility: Keyboard Navigation
Chapter: 01

98) The measurement 5342 nm is the same length as _____ cm, written in scientific notation.
A) 5.342×10^{10}

B) 5.342×10^{7}

C) 5.342×10^{5}

D) 5.342×10^{-4}

E) 5.342×10^{-8}

Answer: D
Difficulty: 3 Hard
Topic: Study of Chemistry
Bloom's: 5. Evaluate
Subtopic: Scientific Notation and Significant Figures; Dimensional Analysis; Measurements (Metric and SI Units)
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99) When crude oil leaks into the ocean from an oil tanker, the crude oil floats because it is _____ dense than water.

Answer: less
Difficulty: 1 Easy
Topic: Study of Chemistry
Bloom's: 2. Understand
Subtopic: Density and Specific Gravity
Accessibility: Keyboard Navigation
Chapter: 01

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