Chapter 01
Chemistry: The Science of Change

1. What is a unifying principle that explains a body of experimental observations?
A. Law
B. Hypothesis
C. Theory
D. Phenomena
E. Prediction

Blooms: 2. Understand
Difficulty: Easy
Gradable: automatic
Subtopic: Scientific Method
Topic: Study of Chemistry

2. Which of the following is a tentative explanation for a set of observations?
A. Law
B. Hypothesis
C. Theory
D. Phenomena
E. Prediction

Blooms: 2. Understand
Difficulty: Easy
Gradable: automatic
Subtopic: Scientific Method
Topic: Study of Chemistry

3. What is the term used for findings that are summarized based on a pattern or trend?
A. Law
B. Hypothesis
C. Theory
D. Phenomena
E. Prediction

Blooms: 2. Understand
Difficulty: Easy
Gradable: automatic
Subtopic: Scientific Method
Topic: Study of Chemistry

4. Which of the following activities is not a part of good science?
A. Proposing a theory
B. Developing a hypothesis
C. Making quantitative observations
D. Designing experiments
E. Indulging in speculation

Blooms: 2. Understand
Difficulty: Easy
Gradable: automatic
Subtopic: Scientific Method
Topic: Study of Chemistry

5. Which of the following is a ‘substance’ according to the definition given in your textbook?
A. Air
B. Tap water
C. Sea water
D. Water
E. Toothpaste

Blooms: 3. Apply
Difficulty: Medium
Gradable: automatic
Subtopic: Classification and States of Matter
Subtopic: Properties of Matter
Topic: Study of Chemistry

6. Which of the following cannot be separated into simpler substances by chemical means?
A. Element
B. Emulsion
C. Compound
D. Homogeneous mixture
E. Heterogeneous mixture

Blooms: 4. Analyze
Difficulty: Medium
Gradable: automatic
Subtopic: Classification and States of Matter
Subtopic: Properties of Matter
Topic: Study of Chemistry

7. If a liquid contains 60% sugar and 40% water throughout its composition then what is it called?
A. Solute
B. Compound
C. Homogeneous mixture
D. Heterogeneous mixture
E. Solvent

Blooms: 4. Analyze
Difficulty: Medium
Gradable: automatic
Subtopic: Classification and States of Matter
Subtopic: Properties of Matter
Topic: Study of Chemistry

8. Which of the following does not have a uniform composition throughout?
A. Element
B. Compound
C. Homogeneous mixture
D. Heterogeneous mixture
E. Solvent

Blooms: 3. Apply
Difficulty: Easy
Gradable: automatic
Subtopic: Classification and States of Matter
Subtopic: Properties of Matter
Topic: Study of Chemistry

9. Which of the following is not an SI base unit?
A. Meter
B. Ampere
C. Second
D. Gram
E. Kelvin

Blooms: 2. Understand
Difficulty: Medium
Gradable: automatic
Subtopic: Measurement (SI Units)
Topic: Study of Chemistry

10. The SI base unit of mass is
A. mg.
B. g.
C. kg.
D. metric ton.
E. lb.

Blooms: 1. Remember
Difficulty: Medium
Gradable: automatic
Subtopic: Measurement (SI Units)
Topic: Study of Chemistry

11. The SI prefix *mega-* (M) means
A. 10^{-6}
B. 10^{-3}
C. 10^{3}
D. 10^{6}
E. 10^{9}

Blooms: 1. Remember
Difficulty: Easy
Gradable: automatic
Subtopic: Measurement (SI Units)
Topic: Study of Chemistry

12. The SI prefixes *milli-* and *mega-* represent, respectively
A. 10^{6} and 10^{-6}
B. 10^{-3} and 10^{6}
C. 10^{3} and 10^{-6}
D. 10^{-3} and 10^{9}
E. 10^{-6} and 10^{-3}
.

Blooms: 1. Remember
Difficulty: Medium
Gradable: automatic
Subtopic: Measurement (SI Units)
Topic: Study of Chemistry

13. How many micrograms are in 65.3 kg?
A. 0.653 μg
B. 6.53×10^{7} μg
C. 6.53×10^{4} μg
D. 6.53×10^{-8} μg
E. 6.53×10^{10} μg

Blooms: 3. Apply
Difficulty: Hard
Gradable: automatic
Subtopic: Dimensional Analysis
Subtopic: Measurement (SI Units)
Subtopic: Scientific Notation and Significant Figures
Topic: Study of Chemistry

14. A dose of medication was prescribed to be 35 microliters. Which of the following expresses that volume in centiliters?
A. 3.5×10^{5} cL
B. 3.5×10^{4} cL
C. 3.5 cL
D. 3.5×10^{-4} cL
E. 3.5×10^{-3} cL

Blooms: 3. Apply
Difficulty: Hard
Gradable: automatic
Subtopic: Dimensional Analysis
Subtopic: Measurement (SI Units)
Subtopic: Scientific Notation and Significant Figures
Topic: Study of Chemistry

15. How many milliliters is 0.0055 L?
A. 0.55 mL
B. 5.5 mL
C. 0.5 mL
D. 0.0000055 mL
E. 182 mL

Blooms: 3. Apply
Difficulty: Medium
Gradable: automatic
Subtopic: Dimensional Analysis
Subtopic: Measurement (SI Units)
Subtopic: Scientific Notation and Significant Figures
Topic: Study of Chemistry

16. How many hertz is 600.11 MHz?
A. 6.0011×10^{-4} Hz
B. 60.011 Hz
C. 6.0011×10^{6} Hz
D. 6.0011×10^{-2} Hz
E. 6.0011×10^{8} Hz

Blooms: 3. Apply
Difficulty: Medium
Gradable: automatic
Subtopic: Dimensional Analysis
Subtopic: Measurement (SI Units)
Subtopic: Scientific Notation and Significant Figures
Topic: Study of Chemistry

17. The distance between carbon atoms in ethylene is 134 picometers. Which of the following expresses that distance in meters?
A. 1.34×10^{-13} m
B. 1.34×10^{-12} m
C. 1.34×10^{-10} m
D. 1.34×10^{-7} m
E. 1.34×10^{-6} m

Blooms: 3. Apply
Difficulty: Medium
Gradable: automatic
Subtopic: Dimensional Analysis
Subtopic: Measurement (SI Units)
Subtopic: Scientific Notation and Significant Figures
Topic: Study of Chemistry

18. Which of these quantities represents the largest mass?
A. 2.0×10^{2} mg
B. 0.0010 kg
C. 1.0×10^{5} μg
D. 2.0×10^{2} cg
E. 10.0 dg

Blooms: 4. Analyze
Difficulty: Hard
Gradable: automatic
Subtopic: Dimensional Analysis
Subtopic: Measurement (SI Units)
Topic: Study of Chemistry

19. The mass of a sample is 550 milligrams. Which of the following expresses that mass in kilograms?
A. 5.5×10^{8} kg
B. 5.5×10^{5} kg
C. 5.5×10^{-4} kg
D. 5.5×10^{-6} kg
E. 5.5×10^{-1} kg

Blooms: 3. Apply
Difficulty: Hard
Gradable: automatic
Subtopic: Measurement (SI Units)
Subtopic: Scientific Notation and Significant Figures
Topic: Study of Chemistry

20. The average distance between the Earth and the Moon is 240,000 miles. Express this distance in kilometers. (1 mi = 1609 m)
A. 6.1×10^{5} km
B. 5.3×10^{5} km
C. 3.9×10^{5} km
D. 1.5×10^{5} km
E. 9.4×10^{4} km

Blooms: 3. Apply
Difficulty: Medium
Gradable: automatic
Subtopic: Dimensional Analysis
Subtopic: Measurement (SI Units)
Subtopic: Scientific Notation and Significant Figures
Topic: Study of Chemistry

21. How many inches are in 382.5 cm? (1 in = 2.54 cm)?
A. 150.6 in
B. 6.641×10^{-3} in
C. 151 in
D. 971.6 in
E. 972 in

Blooms: 3. Apply
Difficulty: Medium
Gradable: automatic
Subtopic: Dimensional Analysis
Subtopic: Measurement (SI Units)
Subtopic: Scientific Notation and Significant Figures
Topic: Study of Chemistry

22. How many cubic inches are in 1.00 liter? (1 in = 2.54 cm)
A. 61.0 in^3
B. 155 in^3
C. 394 in^3
D. 1.64×10^4 in^3
E. none of them

Blooms: 3. Apply
Difficulty: Hard
Gradable: automatic
Subtopic: Dimensional Analysis
Subtopic: Measurement (SI Units)
Subtopic: Scientific Notation and Significant Figures
Topic: Study of Chemistry

23. How many inches are in 382.5 cm? (1 in = 2.54 cm)
A. 150.6 in
B. 6.641×10^{-3} in
C. 151 in
D. 971.6 in
E. 972 in

Blooms: 3. Apply
Difficulty: Medium
Gradable: automatic
Subtopic: Dimensional Analysis
Subtopic: Measurement (SI Units)
Subtopic: Scientific Notation and Significant Figures
Topic: Study of Chemistry

24. Given that 1 inch = 2.54 cm, 1.00 cm^3 is equal to
A. 16.4 in^3
B. 6.45 in^3
C. 0.394 in^3
D. 0.155 in^3
E. 0.0610 in^3

Blooms: 3. Apply
Difficulty: Hard
Gradable: automatic
Subtopic: Dimensional Analysis
Subtopic: Measurement (SI Units)
Subtopic: Scientific Notation and Significant Figures
Topic: Study of Chemistry

25. A large pizza has a diameter of 15 inches. Express this diameter in centimeters. (1 in = 2.54 cm)
A. 38 cm
B. 24 cm
C. 18 cm
D. 9.3 cm
E. 5.9 cm

Blooms: 3. Apply
Difficulty: Medium
Gradable: automatic
Subtopic: Dimensional Analysis
Subtopic: Measurement (SI Units)
Subtopic: Scientific Notation and Significant Figures
Topic: Study of Chemistry

26. The average distance between the Earth and the Moon is 240,000 miles. Express this distance in meters. (1 mi = 1609 m)
A. 6.1×10^5 m
B. 5.3×10^5 m
C. 3.9×10^8 m
D. 1.5×10^5 m
E. 9.4×10^4 m

Blooms: 3. Apply
Difficulty: Medium
Gradable: automatic
Subtopic: Dimensional Analysis
Subtopic: Measurement (SI Units)
Subtopic: Scientific Notation and Significant Figures
Topic: Study of Chemistry

27. What is the volume in milliliters of a 32.0 fl oz can of juice? (1 fl oz = 29.6 mL)
A. 1.08 mL
B. 947 mL
C. 0.925 mL
D. 0.95 mL
E. 1.1 mL

Blooms: 3. Apply
Difficulty: Medium
Gradable: automatic
Subtopic: Dimensional Analysis
Subtopic: Measurement (SI Units)
Subtopic: Scientific Notation and Significant Figures
Topic: Study of Chemistry

28. How many mm^3 are in 16.7 cm^3?
A. 1.67×10^{-5} mm^3
B. 1.67×10^{-8} mm^3
C. 1.67×10^7 mm^3
D. 1.67×10^4 mm^3
E. 1.67×10^{-4} mm^3

Blooms: 3. Apply
Difficulty: Hard
Gradable: automatic
Subtopic: Dimensional Analysis
Subtopic: Measurement (SI Units)
Subtopic: Scientific Notation and Significant Figures
Topic: Study of Chemistry

29. If a patient in the hospital is running a temperature of 39.5°C, what is this in degrees Fahrenheit?
A. 99°F
B. 101.3°F
C. 102.4°F
D. 103.1°F
E. 104°F

Blooms: 3. Apply
Difficulty: Medium
Gradable: automatic
Subtopic: Dimensional Analysis
Subtopic: Measurement (SI Units)
Subtopic: Scientific Notation and Significant Figures
Topic: Study of Chemistry

30. If normal body temperature is 98.6°F then what is this in degrees Celsius?
A. 34°C
B. 35.5°C
C. 36.4°C
D. 37.0°C
E. 38.7°C

Blooms: 3. Apply
Difficulty: Medium
Gradable: automatic
Subtopic: Dimensional Analysis
Subtopic: Measurement (SI Units)
Subtopic: Scientific Notation and Significant Figures
Topic: Study of Chemistry

31. Express 122.0°F in °C.
A. 50.0°C
B. 64.4°C
C. 67.8°C
D. 162.0°C
E. 219.6°C

Blooms: 3. Apply
Difficulty: Medium
Gradable: automatic
Subtopic: Dimensional Analysis
Subtopic: Measurement (SI Units)
Subtopic: Scientific Notation and Significant Figures
Topic: Study of Chemistry

32. The boiling point for liquid helium is 4.0 K. What is the temperature in degrees Fahrenheit?
A. –452.5°F
B. –498.9°F
C. –237.2°F
D. 131.8°F
E. 530.9°F

Blooms: 3. Apply
Difficulty: Hard
Gradable: automatic
Subtopic: Dimensional Analysis
Subtopic: Measurement (SI Units)
Subtopic: Scientific Notation and Significant Figures
Topic: Study of Chemistry

33. If the temperature is 38.0°F then what is the temperature in kelvins?
A. 3.33 K
B. 100.4 K
C. 276.5 K
D. 311.15 K
E. 235.15 K

Blooms: 3. Apply
Difficulty: Hard
Gradable: automatic
Subtopic: Dimensional Analysis
Subtopic: Measurement (SI Units)
Subtopic: Scientific Notation and Significant Figures
Topic: Study of Chemistry

34. Dry ice (carbon dioxide) changes from a solid to a gas at –78.5°C. What is this temperature in °F?
A. –173°F
B. –12.6°F
C. –109°F
D. –75.6°F
E. None of them is within 2°F of the right answer.

Blooms: 3. Apply
Difficulty: Hard
Gradable: automatic
Subtopic: Dimensional Analysis
Subtopic: Measurement (SI Units)
Subtopic: Scientific Notation and Significant Figures
Topic: Study of Chemistry

35. The boiling point for liquid nitrogen is 77 K. What is the temperature in degrees Fahrenheit?
A. –127°F
B. –289°F
C. –321°F
D. 177°F
E. 662°F

Blooms: 3. Apply
Difficulty: Hard
Gradable: automatic
Subtopic: Dimensional Analysis
Subtopic: Measurement (SI Units)
Subtopic: Scientific Notation and Significant Figures
Topic: Study of Chemistry

36. Acetone, which is used as a solvent and as a reactant in the manufacture of Plexiglas®, boils at 56.1°C. What is the boiling point in degrees Fahrenheit?
A. 159°F
B. 133°F
C. 101°F
D. 69.0°F
E. 43.4°F

Blooms: 3. Apply
Difficulty: Medium
Gradable: automatic
Subtopic: Dimensional Analysis
Subtopic: Measurement (SI Units)
Subtopic: Scientific Notation and Significant Figures
Topic: Study of Chemistry

37. Isopropyl alcohol, commonly known as rubbing alcohol, boils at 82.4°C. What is the boiling point in kelvins?
A. 387.6 K
B. 355.6 K
C. 323.6 K
D. 190.8 K
E. –190.8 K

Blooms: 3. Apply
Difficulty: Medium
Gradable: automatic
Subtopic: Dimensional Analysis
Subtopic: Measurement (SI Units)
Subtopic: Scientific Notation and Significant Figures
Topic: Study of Chemistry

38. Acetic acid boils at 244.2°F. What is its boiling point in degrees Celsius?
A. 382.0°C
B. 167.7°C
C. 153.4°C
D. 117.9°C
E. 103.7°C

Blooms: 3. Apply
Difficulty: Medium
Gradable: automatic
Subtopic: Dimensional Analysis
Subtopic: Measurement (SI Units)
Subtopic: Scientific Notation and Significant Figures
Topic: Study of Chemistry

39. What is the volume of a container that contains 14.3 g of a substance having a density of 0.988 g/cm^3?
A. 14.1 cm^3
B. 0.0691 cm^3
C. 14.5 cm^3
D. 141 cm^3
E. 691 cm^3

Blooms: 4. Analyze
Difficulty: Medium
Gradable: automatic
Subtopic: Dimensional Analysis
Subtopic: Measurement (SI Units)
Subtopic: Scientific Notation and Significant Figures
Topic: Study of Chemistry

40. If you have a graduated cylinder containing 15.5 mL and this volume changes to 95.2 mL after a metal with a mass of 7.95 g is dropped into the graduated cylinder, then what is the density of this metal?
A. 0.0835 g/mL
B. 0.513 g/mL
C. 0.0718 g/mL
D. 10.0 g/mL
E. 9.97×10^{-2} g/mL

Blooms: 4. Analyze
Difficulty: Hard
Gradable: automatic
Subtopic: Dimensional Analysis
Subtopic: Measurement (SI Units)
Subtopic: Scientific Notation and Significant Figures
Topic: Study of Chemistry

41. The density of mercury, the only metal to exist as a liquid at room temperature, is 13.6 g/cm3. What is that density in pounds per cubic inch? (1 in = 2.54 cm; 1 lb = 454 g)
A. 849 lb/in^3
B. 491 lb/in^3
C. 376 lb/in^3
D. 0.491 lb/in^3
E. 1.83×10^{-3} lb/in^3

Blooms: 4. Analyze
Difficulty: Hard
Gradable: automatic
Subtopic: Dimensional Analysis
Subtopic: Measurement (SI Units)
Subtopic: Scientific Notation and Significant Figures
Topic: Study of Chemistry

42. Radio waves travel at the speed of light, which is 3.00×10^8 m/s. How many minutes does it take for a radio message to reach Earth from Saturn if Saturn is 7.9×10^8 km from Earth?
A. 4.4×10^{-2} min
B. 1.6×10^5 min
C. 4.0×10^{15} min
D. 44 min
E. 2.6 min

Blooms: 4. Analyze
Difficulty: Hard
Gradable: automatic
Subtopic: Dimensional Analysis
Subtopic: Measurement (SI Units)
Subtopic: Scientific Notation and Significant Figures
Topic: Study of Chemistry

43. The speed needed to escape the pull of Earth's gravity is 11.3 km/s. What is this speed in mi/h? (1 mile = 1609 m)
A. 65,500 mi/h
B. 25,300 mi/h
C. 18,200 mi/h
D. 1,090 mi/h
E. 5.02×10^{-3} mi/h

Blooms: 4. Analyze
Difficulty: Hard
Gradable: automatic
Subtopic: Dimensional Analysis
Subtopic: Measurement (SI Units)
Subtopic: Scientific Notation and Significant Figures
Topic: Study of Chemistry

44. Radio waves travel at the speed of light, which is 3.00×10^8 m/s. How many kilometers will radio messages to outer space travel in exactly one year? (365.24 days = 1 y)
A. 9.46×10^{15} km
B. 7.30×10^8 km
C. 7.10×10^{10} km
D. 9.47×10^{12} km
E. 3.33×10^{-3} km

Blooms: 4. Analyze
Difficulty: Hard
Gradable: automatic
Subtopic: Dimensional Analysis
Subtopic: Measurement (SI Units)
Subtopic: Scientific Notation and Significant Figures
Topic: Study of Chemistry

45. The diameter of Earth is 12.7 Mm. Express this diameter in centimeters.
A. 1.27×10^5 cm
B. 1.27×10^6 cm
C. 1.27×10^7 cm
D. 1.27×10^8 cm
E. 1.27×10^9 cm

Blooms: 4. Analyze
Difficulty: Hard
Gradable: automatic
Subtopic: Dimensional Analysis
Subtopic: Measurement (SI Units)
Subtopic: Scientific Notation and Significant Figures
Topic: Study of Chemistry

46. Some molecules move with speeds approaching the "escape velocity" from Earth, which is 7.0 miles per second. What is this speed in cm/h? (1 mi = 1609 m)
A. 313 cm/h
B. 4.1×10^5 cm/h
C. 4.1×10^9 cm/h
D. 1.1×10^6 cm/h
E. 1.6×10^9 cm/h

Blooms: 4. Analyze
Difficulty: Hard
Gradable: automatic
Subtopic: Dimensional Analysis
Subtopic: Measurement (SI Units)
Subtopic: Scientific Notation and Significant Figures
Topic: Study of Chemistry

47. The city of Los Angeles is now approximately 2400 miles south of Anchorage, Alaska. It is moving slowly northward as the San Andreas fault slides along. If Los Angeles is to arrive near Anchorage in 76 million years, at what average rate will it have to move in mm per month? (1 mi = 1609 m)
A. 2.0×10^{-10} mm/mo.
B. 6.6×10^{-6} mm/mo.
C. 4.2 mm/mo.
D. 9.5 mm/mo.
E. 51 mm/mo.

Blooms: 4. Analyze
Difficulty: Hard
Gradable: automatic
Subtopic: Dimensional Analysis
Subtopic: Measurement (SI Units)
Subtopic: Scientific Notation and Significant Figures
Topic: Study of Chemistry

48. Which of the following speeds is the greatest? (1 mi = 1609 m)
A. 40 mi/h
B. 2.0×10^5 mm/min
C. 40 km/h
D. 0.74 km/min
E. 400 m/min

Blooms: 5. Evaluate
Difficulty: Hard
Gradable: automatic
Subtopic: Dimensional Analysis
Subtopic: Measurement (SI Units)
Subtopic: Scientific Notation and Significant Figures
Topic: Study of Chemistry

49. Iron has a density of 7.87 g/cm^3. What mass of iron would be required to cover a football playing surface of 120 yds × 60. yds to a depth of 1.0 mm? (1 inch = 2.54 cm)
A. 76 kg
B. 47 Mg
C. 7.6×10^5 g
D. 4.7×10^8 g
E. 1.9×10^7 g

Blooms: 4. Analyze
Difficulty: Hard
Gradable: automatic
Subtopic: Dimensional Analysis
Subtopic: Measurement (SI Units)
Subtopic: Scientific Notation and Significant Figures
Topic: Study of Chemistry

50. The recommended daily allowance (RDA) of calcium is 1.2 g. Calcium carbonate contains 12.0% calcium by mass. How many grams of calcium carbonate are needed to provide the RDA of calcium?
A. 0.10 g
B. 0.14 g
C. 1.2 g
D. 10. g
E. 14 g

Blooms: 4. Analyze
Difficulty: Hard
Gradable: automatic
Subtopic: Dimensional Analysis
Subtopic: Measurement (SI Units)
Subtopic: Scientific Notation and Significant Figures
Topic: Study of Chemistry

51. One of the common intravenous fluids, called physiological saline, is a homogeneous mixture of NaCl in water. In this mixture, 0.89% of the mass is contributed by the NaCl. What mass of NaCl is found in 450. mL of physiological saline? ((Density of physiological saline = 1.005 g/cm^3)
A. 2.0 g
B. 4.0 g
C. 5.1 g
D. 508 g
E. 400 g

Blooms: 4. Analyze
Difficulty: Hard
Gradable: automatic
Subtopic: Dimensional Analysis
Subtopic: Measurement (SI Units)
Subtopic: Scientific Notation and Significant Figures
Topic: Study of Chemistry

52. An empty flask's mass is 17.4916 g, and its mass is 43.9616 g when filled with water at 20.0°C (density = 0.9982 g/mL). The density of "heavy water" at 20.0°C is 1.1053 g/mL. What is the mass of the flask when filled with heavy water at 20.0°C?
A. 29.2573 g
B. 46.8016 g
C. 46.7489 g
D. 29.3100 g
E. 43.9140 g

Blooms: 4. Analyze
Difficulty: Hard
Gradable: automatic
Subtopic: Dimensional Analysis
Subtopic: Measurement (SI Units)
Subtopic: Scientific Notation and Significant Figures
Topic: Study of Chemistry

53. A flask has a mass of 78.23 g when empty and 593.63 g when filled with water. When the same flask is filled with concentrated sulfuric acid, H_2SO_4, its mass is 1026.57 g. What is the density of concentrated sulfuric acid? (Assume water has a density of 1.00 g/cm^3 at the temperature of the measurement.)
A. 1.992 g/cm^3
B. 1.840 g/cm^3
C. 1.729 g/cm^3
D. 1.598 g/cm^3
E. 0.543 g/cm^3

Blooms: 4. Analyze
Difficulty: Hard
Gradable: automatic
Subtopic: Dimensional Analysis
Subtopic: Measurement (SI Units)
Subtopic: Scientific Notation and Significant Figures
Topic: Study of Chemistry

54. Talc is a mineral with low conductivity for heat and electricity which is not attacked by acid. It is used in talcum powder and face powder. Suppose a sample of talc weighs 13.65 g with a density of 1.75 g/cm^3 in mineral oil. If this same sample of talc in air weighs 35.97 g, assuming no volume change, what is the density of the talc sample in air?
A. 4.61 g/cm^3
B. 2.82 g/cm^3
C. 2.63 g/cm^3
D. 2.44 g/cm^3
E. 1.61 g/cm^3

Blooms: 4. Analyze
Difficulty: Hard
Gradable: automatic
Subtopic: Dimensional Analysis
Subtopic: Measurement (SI Units)
Subtopic: Scientific Notation and Significant Figures
Topic: Study of Chemistry

55. Which of the following is an example of an *observation*?
A. Gases expand as their temperature increases because the gas molecules are moving more rapidly.
B. Paraffin wax begins to melt at 57°C.
C. Three samples of wax are heated to 75°C.
D. The force acting on an object is equal to its mass times its acceleration.
E. Will all waxes melt at the same temperature?

Blooms: 2. Understand
Difficulty: Easy
Gradable: automatic
Subtopic: Properties of Matter
Subtopic: Scientific Method
Topic: Study of Chemistry

56. Which of the following is a *chemical* change?
A. Boiling water
B. Melting wax
C. Broiling a steak on a grill
D. Condensing water vapor into rainfall
E. Carving a piece of wood

Blooms: 3. Apply
Difficulty: Easy
Gradable: automatic
Subtopic: Classification and States of Matter
Subtopic: Properties of Matter
Topic: Study of Chemistry

57. Which of these is an example of a *physical* property?
A. Corrosiveness of sulfuric acid
B. Toxicity of cyanide
C. Flammability of gasoline
D. Neutralization of stomach acid with an antacid
E. Lead becomes a liquid when heated to 601°C.

Blooms: 3. Apply
Difficulty: Easy
Gradable: automatic
Subtopic: Classification and States of Matter
Subtopic: Properties of Matter
Topic: Study of Chemistry

58. Which one of these represents a *physical* change?
A. Water, when heated, forms steam.
B. Bleach turns hair yellow.
C. Sugar, when heated, becomes brown.
D. Milk turns sour.
E. Apples, when exposed to air, turn brown.

Blooms: 3. Apply
Difficulty: Easy
Gradable: automatic
Subtopic: Classification and States of Matter
Subtopic: Properties of Matter
Topic: Study of Chemistry

59. Which one of these represents a *chemical* change?
A. Boiling water to form steam
B. Turning hair yellow with bleach
C. Melting butter
D. Mixing powdered charcoal and oxygen at room temperature
E. Cutting a bar of sodium metal into pieces with a knife

Blooms: 3. Apply
Difficulty: Easy
Gradable: automatic
Subtopic: Classification and States of Matter
Subtopic: Properties of Matter
Topic: Study of Chemistry

60. Which of the following is an *extensive* property of oxygen?
A. Boiling point
B. Temperature
C. Average kinetic energy of molecules
D. Density
E. Mass

Blooms: 3. Apply
Difficulty: Easy
Gradable: automatic
Subtopic: Classification and States of Matter
Subtopic: Properties of Matter
Topic: Study of Chemistry

61. When the value of something does not depend on the amount of the matter then what is this called?
A. Empirical property
B. Intensive property
C. Inclusive property
D. Extensive property
E. Exclusive property

Blooms: 3. Apply
Difficulty: Easy
Gradable: automatic
Subtopic: Classification and States of Matter
Subtopic: Properties of Matter
Topic: Study of Chemistry

62. Which of the following is an *extensive* property?
A. Density
B. Temperature
C. Mass
D. Specific Heat
E. Pressure

Blooms: 3. Apply
Difficulty: Easy
Gradable: automatic
Subtopic: Scientific Notation and Significant Figures
Topic: Study of Chemistry

63. The number 1.050×10^9 has how many significant figures?
A. 2
B. 3
C. 4
D. 9
E. 13

Blooms: 3. Apply
Difficulty: Medium
Gradable: automatic
Subtopic: Scientific Notation and Significant Figures
Topic: Study of Chemistry

64. After carrying out the operation (13.7 + 0.027) ÷ 8.221, how many significant figures are appropriate to show in the result?
A. 1
B. 2
C. 3
D. 4
E. 5

Blooms: 3. Apply
Difficulty: Medium
Gradable: automatic
Subtopic: Scientific Notation and Significant Figures
Topic: Study of Chemistry

65. How many significant figures are in 0.006570?
A. 3
B. 4
C. 5
D. 6
E. 7

Blooms: 3. Apply
Difficulty: Medium
Gradable: automatic
Subtopic: Scientific Notation and Significant Figures
Topic: Study of Chemistry

66. The result of $(3.8621 \times 1.5630) - 5.98$ is properly written as
A. 0.06.
B. 0.056.
C. 0.0565.
D. 0.05646.
E. 0.056462.

Blooms: 3. Apply
Difficulty: Medium
Gradable: automatic
Subtopic: Scientific Notation and Significant Figures
Topic: Study of Chemistry

67. Select the answer with the correct number of decimal places for the following sum: 13.914 cm + 243.1 cm + 12.00460 cm =
A. 269.01860 cm
B. 269.0186 cm
C. 269.019 cm
D. 269.02 cm
E. 269.0 cm

Blooms: 3. Apply
Difficulty: Medium
Gradable: automatic
Subtopic: Scientific Notation and Significant Figures
Topic: Study of Chemistry

68. How many significant figures does the sum 8.5201 + 1.93 contain?
A. 1
B. 2
C. 3
D. 4
E. 5

Blooms: 3. Apply
Difficulty: Medium
Gradable: automatic
Subtopic: Scientific Notation and Significant Figures
Topic: Study of Chemistry

69. Select the answer that expresses the result of this calculation with the correct number of significant figures.
$\frac{13.602 \times 1.90 \times 3.06}{4.2 \times 1.4097}$
A. 13.3568
B. 13.357
C. 13.36
D. 13.4
E. 13

Blooms: 3. Apply
Difficulty: Medium
Gradable: automatic
Subtopic: Scientific Notation and Significant Figures
Topic: Study of Chemistry

70. Which is correct if 0.01234 is rewritten in scientific notation?
A. 1.234×10^{-3}
B. 12.3×10^{4}
C. 1×10^{-1}
D. 1.234×10^{2}
E. 1.234×10^{-2}

Blooms: 3. Apply
Difficulty: Easy
Gradable: automatic
Subtopic: Scientific Notation and Significant Figures
Topic: Study of Chemistry

71. You prepare 1000. mL of tea and transfer it to a 1.00 quart pitcher for storage. Which of the following statements is true? (1 L = 1.0567 qt)
A. The pitcher will be filled to 100% of its capacity with no tea spilled.
B. The pitcher will be filled to about 95% of its capacity.
C. The pitcher will be filled to about 50% of its capacity.
D. The pitcher will be completely filled and a small amount of tea will overflow.
E. The pitcher will be completely filled and most of the tea will overflow.

Blooms: 5. Evaluate
Difficulty: Medium
Gradable: automatic
Subtopic: Dimensional Analysis
Topic: Study of Chemistry

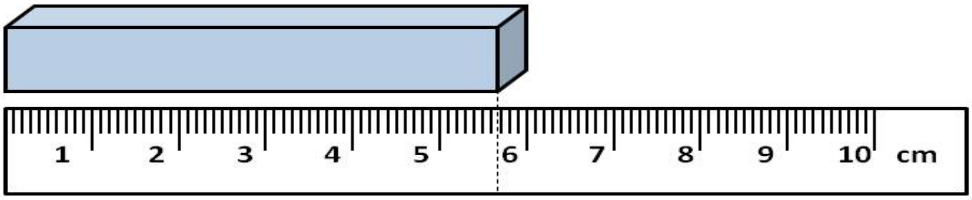
72. Which is correct if 52.068881 is rewritten in scientific notation and rounded to three significant figures?
A. 5.21×10^{-1}
B. 5.20×10^{-1}
C. 5.21×10^{1}
D. 5.20×10^{1}
E. 5.21×10^{2}

Blooms: 3. Apply
Difficulty: Medium
Gradable: automatic
Subtopic: Scientific Notation and Significant Figures
Topic: Study of Chemistry

73. Which is correct if 15,390,000 is rounded to two significant figures?
A. 15
B. 1.5×10^{-7}
C. 1.5×10^{8}
D. 15,400,000
E. 15,000,000

Blooms: 3. Apply
Difficulty: Medium
Gradable: automatic
Subtopic: Scientific Notation and Significant Figures
Topic: Study of Chemistry

74. What is the length of the box, using the proper number of significant figures and units?



A. 5.5 cm
B. 5 cm
C. 6 cm
D. 5.67 cm
E. 5.6 cm

Blooms: 4. Analyze
Difficulty: Medium
Gradable: automatic
Subtopic: Measurement (SI Units)
Subtopic: Scientific Notation and Significant Figures
Topic: Study of Chemistry

75. The dark meat of a 20-pound turkey requires an internal temperature of 180°F to be fully cooked. What minimum temperature reading should be displayed on a food thermometer that only measures in degrees Celsius?
A. 82°C
B. 354°C
C. 261°C
D. –192°C
E. –310°C

Blooms: 3. Apply
Difficulty: Easy
Gradable: automatic
Subtopic: Dimensional Analysis
Subtopic: Scientific Notation and Significant Figures
Topic: Study of Chemistry

76. 50.0 grams of acetic acid are required for an experiment. What volume, in milliliters, of a 1.105 g/cm^3 acetic acid solution must be measured for the experiment?
A. 0.0452 mL
B. 45.2 mL
C. 55.3 mL
D. 0.452 mL
E. 4.52 mL

Blooms: 4. Analyze
Difficulty: Medium
Gradable: automatic
Subtopic: Dimensional Analysis
Subtopic: Measurement (SI Units)
Subtopic: Scientific Notation and Significant Figures
Topic: Study of Chemistry

77. A geology student found an irregularly shaped rock, with a mass of 28.63 grams, and placed it into a graduated cylinder containing 13.31 mL of water. If the water level increased to 19.73 mL after the rock was placed in the cylinder, what is the density of the rock, in g/mL?
A. 4.46 g/mL
B. 4460 g/mL
C. 2.20 g/mL
D. 0.455 g/mL
E. 44.6 g/mL

Blooms: 4. Analyze
Difficulty: Medium
Gradable: automatic
Subtopic: Dimensional Analysis
Subtopic: Measurement (SI Units)
Subtopic: Scientific Notation and Significant Figures
Topic: Study of Chemistry

78. An average Mastiff puppy weighs 2.72 kilograms. How many pounds is an average Mastiff puppy? (1lb = 453.6 g)
A. 1.24 lb
B. 10.0 lb
C. 59.8 lb
D. 6.00 lb
E. 72.0 lb

Blooms: 4. Analyze
Difficulty: Easy
Gradable: automatic
Subtopic: Dimensional Analysis
Subtopic: Measurement (SI Units)
Subtopic: Scientific Notation and Significant Figures
Topic: Study of Chemistry

79. If the density of corn syrup is 1.380 g/mL and a sample of corn syrup has a mass of 32 grams, what is the volume of corn syrup, in liters?
A. 43 L
B. 23 L
C. 0.043 L
D. 0.023 L
E. 2.3 L

Blooms: 4. Analyze
Difficulty: Medium
Gradable: automatic
Subtopic: Dimensional Analysis
Subtopic: Measurement (SI Units)
Subtopic: Scientific Notation and Significant Figures
Topic: Study of Chemistry

80. A smart phone has dimensions of 4.9 inches (height), 2.3 inches (width) and 8.0 millimeters (depth). What is the volume of the smart phone in cubic centimeters? (1 in = 2.54 cm)
A. 58 cm^3
B. 1.7 x 10^5 cm^3
C. 90 cm^3
D. 3.4 cm^3
E. 34 cm^3

Blooms: 4. Analyze
Difficulty: Medium
Gradable: automatic
Subtopic: Dimensional Analysis
Subtopic: Measurement (SI Units)
Subtopic: Scientific Notation and Significant Figures
Topic: Study of Chemistry

81. There are 58 counties in California and about 660,000 people in each county. How many million people live in California?
A. 383 million people
B. 38 million people
C. 40 million people
D. 58 million people
E. 11 million people

Blooms: 3. Apply
Difficulty: Medium
Gradable: automatic
Subtopic: Dimensional Analysis
Topic: Study of Chemistry

82. Which of the following represents the greatest mass?
A. 2.0×10^3 mg
B. 10.0 dg
C. 0.0010 kg
D. 1.0×10^6 μg
E. 3.0×10^{12} pg

Blooms: 5. Evaluate
Difficulty: Medium
Gradable: automatic
Subtopic: Scientific Notation and Significant Figures
Topic: Study of Chemistry

83. Walking fast can consume 5.0 kcal per minute. How many hours of exercise are required to consume 450 kcal, the energy in a large candy bar?
A. 7.5 hr
B. 1.25 hr
C. 1.75 hr
D. 1.5 hr
E. 1 hr

Blooms: 3. Apply
Difficulty: Medium
Gradable: automatic
Subtopic: Dimensional Analysis
Topic: Study of Chemistry

84. A laboratory technician analyzed a sample three times for percent iron and got the following results: 22.43% Fe, 24.98% Fe, and 21.02% Fe. The actual percent iron in the sample was 22.81%. The analyst's
A. precision was poor but the average result was accurate.
B. accuracy was poor but the precision was good.
C. work was only qualitative.
D. work was precise.

Blooms: 2. Understand
Difficulty: Medium
Gradable: automatic
Subtopic: Measurement (SI Units)
Topic: Study of Chemistry

85. The density of magnesium is 1.7 g/cm^3, and the density of iron is 7.9 g/cm^3. Consider a block of iron with a mass of 819 g. What is the mass of a block of magnesium that has the same volume as the block of iron?
A. 1.8×10^2 g
B. 61 g
C. 2.8×10^3 g
D. 3.8×10^3 g
E. None of the.

Blooms: 5. Evaluate
Difficulty: Difficult
Gradable: automatic
Subtopic: Measurement (SI Units)
Topic: Study of Chemistry

86. The ripening of fruit, once picked, is an example of physical change.
FALSE

Blooms: 3. Apply
Difficulty: Easy
Gradable: automatic
Subtopic: Properties of Matter
Topic: Study of Chemistry

87. When applying the scientific method, it is important to avoid any form of hypothesis.
FALSE

Blooms: 3. Apply
Difficulty: Easy
Gradable: automatic
Subtopic: Scientific Method
Topic: Study of Chemistry

88. When applying the scientific method, a model or theory should be based on experimental data.
TRUE

Blooms: 3. Apply
Difficulty: Easy
Gradable: automatic
Subtopic: Scientific Method
Topic: Study of Chemistry

89. Matter is anything that has mass and occupies space.
TRUE

Blooms: 4. Analyze
Difficulty: Easy
Gradable: automatic
Subtopic: Classification and States of Matter
Subtopic: Properties of Matter
Topic: Study of Chemistry

90. The density of a substance is an intensive property.
TRUE

Blooms: 4. Analyze
Difficulty: Easy
Gradable: automatic
Subtopic: Classification and States of Matter
Subtopic: Properties of Matter
Topic: Study of Chemistry

91. The volume of a substance is an intensive property.
FALSE

Blooms: 4. Analyze
Difficulty: Easy
Gradable: automatic
Subtopic: Classification and States of Matter
Subtopic: Properties of Matter
Topic: Study of Chemistry

92. Boiling point and melting point are extensive properties.
FALSE

Blooms: 4. Analyze
Difficulty: Easy
Gradable: automatic
Subtopic: Properties of Matter
Topic: Study of Chemistry

93. The rusting of a piece of iron under environmental conditions is a physical change.
FALSE

Blooms: 4. Analyze
Difficulty: Easy
Gradable: automatic
Subtopic: Properties of Matter
Topic: Study of Chemistry

94. The number 6.0448, rounded to 3 decimal places, becomes 6.045.
TRUE

Blooms: 3. Apply
Difficulty: Easy
Gradable: automatic
Subtopic: Scientific Notation and Significant Figures
Topic: Study of Chemistry

95. A scoop of vanilla ice cream is a pure substance.
FALSE

Blooms: 4. Analyze
Difficulty: Easy
Gradable: automatic
Subtopic: Classification and States of Matter
Subtopic: Properties of Matter
Topic: Study of Chemistry

96. A particular temperature in degrees Celsius is larger than the temperature in kelvins.
FALSE

Blooms: 4. Analyze
Difficulty: Easy
Gradable: automatic
Subtopic: Dimensional Analysis
Subtopic: Measurement (SI Units)
Topic: Study of Chemistry

97. Zero kelvin 0 K < 0°F < 0°C.
TRUE

Blooms: 4. Analyze
Difficulty: Medium
Gradable: automatic
Subtopic: Measurement (SI Units)
Topic: Study of Chemistry

98. 77 K is colder than 4 K.
FALSE

Blooms: 4. Analyze
Difficulty: Easy
Gradable: automatic
Subtopic: Measurement (SI Units)
Topic: Study of Chemistry

99. The juice from an orange is a mixture.
TRUE

Blooms: 4. Analyze
Difficulty: Easy
Gradable: automatic
Subtopic: Classification and States of Matter
Subtopic: Properties of Matter
Topic: Study of Chemistry

100. _____ tells how close a measurement is to the true value.
Accuracy

Blooms: 3. Apply
Difficulty: Medium
Gradable: automatic
Subtopic: Measurement (SI Units)
Topic: Study of Chemistry

101. Melting ice is a _____ change.
physical

Blooms: 4. Analyze
Difficulty: Easy
Gradable: automatic
Subtopic: Properties of Matter
Topic: Study of Chemistry

102. Burning wood in a fireplace is a _____ change.
chemical

Blooms: 4. Analyze
Difficulty: Easy
Gradable: automatic
Subtopic: Properties of Matter
Topic: Study of Chemistry

103. A(n) _____ is a substance composed of atoms of two or more elements chemically united in fixed proportions.
compound

Blooms: 3. Apply
Difficulty: Easy
Gradable: automatic
Subtopic: Classification and States of Matter
Subtopic: Properties of Matter
Topic: Study of Chemistry

104. A(n) _____ is a substance that cannot be separated into simpler substances by chemical means.
element

Blooms: 3. Apply
Difficulty: Easy
Gradable: automatic
Subtopic: Classification and States of Matter
Subtopic: Properties of Matter
Topic: Study of Chemistry

105. A(n) _____ is a combination of two or more substances in which the substances retain their distinct identities.
mixture

Blooms: 3. Apply
Difficulty: Easy
Gradable: automatic
Subtopic: Classification and States of Matter
Subtopic: Properties of Matter
Topic: Study of Chemistry

106. A(n) _____ is something that has a definite composition.
pure substance

Blooms: 3. Apply
Difficulty: Easy
Gradable: automatic
Subtopic: Classification and States of Matter
Subtopic: Properties of Matter
Topic: Study of Chemistry

107. _____, _____, and _____ are the three states of matter.
liquid, solid, and gas

Blooms: 3. Apply
Difficulty: Easy
Gradable: automatic
Subtopic: Classification and States of Matter
Subtopic: Properties of Matter
Topic: Study of Chemistry

108. A(n) _____ _____ has a uniform composition throughout.
homogeneous mixture

Blooms: 3. Apply
Difficulty: Easy
Gradable: automatic
Subtopic: Classification and States of Matter
Subtopic: Properties of Matter
Topic: Study of Chemistry

109. A(n) _____ _____ does not have a uniform composition throughout.
heterogeneous mixture

Blooms: 3. Apply
Difficulty: Easy
Gradable: automatic
Subtopic: Classification and States of Matter
Subtopic: Properties of Matter
Topic: Study of Chemistry

110. _____ tells how closely multiple measurements of the same thing are to one another.
Precision

Blooms: 2. Understand
Difficulty: Medium
Gradable: automatic
Subtopic: Measurement (SI Units)
Topic: Study of Chemistry

111. _____ is the term used to indicate a measuring device is accurate. (Hint: Often used when measuring the volume of a liquid.)
Graduated or Calibrated

Blooms: 2. Understand
Difficulty: Medium
Gradable: automatic
Subtopic: Measurement (SI Units)
Topic: Study of Chemistry

112. What is something that has a definite composition?
pure substance

Blooms: 3. Apply
Difficulty: Easy
Gradable: manual
Subtopic: Classification and States of Matter
Subtopic: Properties of Matter
Topic: Study of Chemistry

113. What is a combination of two or more substances in which the substances retain their distinct identities?
mixture

Blooms: 3. Apply
Difficulty: Easy
Gradable: manual
Subtopic: Classification and States of Matter
Subtopic: Properties of Matter
Topic: Study of Chemistry

114. What is a substance that cannot be separated into simpler substances by chemical means?
element

Blooms: 3. Apply
Difficulty: Easy
Gradable: manual
Subtopic: Classification and States of Matter
Subtopic: Properties of Matter
Topic: Study of Chemistry

115. What is a substance composed of atoms of two or more elements chemically united in fixed proportions?
compound

Blooms: 3. Apply
Difficulty: Easy
Gradable: manual
Subtopic: Classification and States of Matter
Subtopic: Properties of Matter
Topic: Study of Chemistry

116. Give examples of three physical properties.
(Answers will vary.) Melting point, boiling point, density, color

Blooms: 2. Understand
Difficulty: Easy
Gradable: manual
Subtopic: Properties of Matter
Topic: Study of Chemistry

117. Give an example of an *extensive* property.
(Answers will vary.) Mass, length, and volume

Blooms: 3. Apply
Difficulty: Easy
Gradable: manual
Subtopic: Properties of Matter
Topic: Study of Chemistry

118. Give an example of an *intensive* property.
(Answers will vary.) Temperature, density, melting point, boiling point

Blooms: 3. Apply
Difficulty: Easy
Gradable: manual
Subtopic: Properties of Matter
Topic: Study of Chemistry

119. Identify this process as a *physical* or *chemical* change: Bacteria convert milk to yogurt.
Chemical

Blooms: 4. Analyze
Difficulty: Easy
Gradable: manual
Subtopic: Properties of Matter
Topic: Study of Chemistry

120. What is the equation for the conversion of Celsius temperatures to Kelvin temperatures?
°C + 273.15 = K

Blooms: 2. Understand
Difficulty: Easy
Gradable: manual
Subtopic: Dimensional Analysis
Subtopic: Measurement (SI Units)
Topic: Study of Chemistry

121. If two numbers are added together, one which has 2 digits after the decimal point and the other which has 1 digit after the decimal point, explain how to round the answer.
The answer will have 1 digit after the decimal point because the least number of digits after the decimal point in the two numbers used in the calculation was 1. Use the least number of digits after the decimal point.

Blooms: 2. Understand
Difficulty: Medium
Gradable: manual
Subtopic: Scientific Notation and Significant Figures
Topic: Study of Chemistry

122. If two numbers are multiplied together, one which has 3 significant figures and the other which has 4 significant figures, explain how to round the answer.
The answer will have 3 significant figures because the least number of significant figures in the two numbers used in the calculation was 3.

Blooms: 2. Understand
Difficulty: Easy
Gradable: manual
Subtopic: Scientific Notation and Significant Figures
Topic: Study of Chemistry

123. What is the equation used to calculate the mass from the density?
mass = density × volume or $m = dV$

Blooms: 2. Understand
Difficulty: Medium
Gradable: manual
Subtopic: Dimensional Analysis
Topic: Study of Chemistry

124. Briefly explain the relationship between hypothesis and experiment in the scientific method.
A hypothesis should be capable of leading to a prediction which is testable by an experiment. If the experimental result differs from the prediction, the hypothesis should be modified.

Blooms: 2. Understand
Difficulty: Medium
Gradable: manual
Subtopic: Scientific Method
Topic: Study of Chemistry

125. Explain the difference between quantitative measurements and qualitative measurements.
A quantitative measurement is expressed with a number, whereas a qualitative measurement does not require an explicit measurement.

Blooms: 2. Understand
Difficulty: Easy
Gradable: manual
Subtopic: Scientific Method
Topic: Study of Chemistry

126. Explain the difference between a physical property and a chemical property.
A physical property can be observed and measured without changing the identity of the substance, whereas a chemical property requires a chemical change from one substance to another substance.

Blooms: 2. Understand
Difficulty: Easy
Gradable: manual
Subtopic: Properties of Matter
Topic: Study of Chemistry

127. Explain the difference between an extensive property and an intensive property.
An extensive property depends on the amount of matter, whereas an intensive property does not depend on the amount of matter.

Blooms: 2. Understand
Difficulty: Medium
Gradable: manual
Subtopic: Properties of Matter
Topic: Study of Chemistry

128. Explain the rule for significant figures for addition and subtraction.
The answer cannot have more digits to the right of the decimal point than any of the original numbers used in the calculation.

Blooms: 2. Understand
Difficulty: Medium
Gradable: manual
Subtopic: Scientific Notation and Significant Figures
Topic: Study of Chemistry

129. Explain the rule for significant figures for multiplication and division.
The number of significant figures in the final product or quotient is determined by the original number that has the smallest number of significant figures.

Blooms: 2. Understand
Difficulty: Easy
Gradable: manual
Subtopic: Scientific Notation and Significant Figures
Topic: Study of Chemistry

130. Explain the difference between a heterogeneous mixture and a homogeneous mixture.
A homogeneous mixture has a uniform composition throughout, whereas a heterogeneous mixture does not have a uniform composition throughout.

Blooms: 2. Understand
Difficulty: Easy
Gradable: manual
Subtopic: Classification and States of Matter
Subtopic: Properties of Matter
Topic: Study of Chemistry

131. Discuss the benefits of using the metric system for measurements.
All measurements in the metric system are a multiple of 10, so it makes it easy to move the decimal point. Additionally, the use of the seven base units with prefixes to denote decimal fractions and decimal multiples of the SI units enables scientists to tailor the magnitude of a unit to a particular application.

Blooms: 2. Understand
Difficulty: Easy
Gradable: manual
Subtopic: Measurement (SI Units)
Topic: Study of Chemistry

132. Explain the difference between a hypothesis and a theory.
A hypothesis is a tentative explanation for observations made, whereas a theory is a unifying principle that explains a body of experimental observations and the laws that are based on them.

Blooms: 2. Understand
Difficulty: Medium
Gradable: manual
Subtopic: Scientific Method
Topic: Study of Chemistry

133. Explain the difference between accuracy and precision.
Accuracy tells us how close a measurement is to the *true* value, whereas precision tells us how closely multiple measurements of the same thing are to one another.

Blooms: 2. Understand
Difficulty: Medium
Gradable: manual
Subtopic: Measurement (SI Units)
Topic: Study of Chemistry

Category	*# of Questions*
Blooms: 1. Remember	3
Blooms: 2. Understand	24
Blooms: 3. Apply	65
Blooms: 4. Analyze	37
Blooms: 5. Evaluate	4
Difficulty: Difficult	1
Difficulty: Easy	54
Difficulty: Hard	26
Difficulty: Medium	52
Gradable: automatic	111
Gradable: manual	22
Subtopic: Classification and States of Matter	27
Subtopic: Dimensional Analysis	53
Subtopic: Measurement (SI Units)	63
Subtopic: Properties of Matter	39
Subtopic: Scientific Method	10
Subtopic: Scientific Notation and Significant Figures	65
Topic: Study of Chemistry	133