TT TEXTBOOK TESTBANKS

Test Bank for General Chemistry 12th Ebbing

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Chapter 01 Chemistry and Measurement

1. Which one of the following discoveries led mankind to observe changes in certain rocks and minerals, which further led to the development of ceramics, glass, and metals?

a. fire
b. rubber
c. plastic
d. neoprene
e. plasma

ANSWER: a
POINTS: 1
REFERENCES: 1.1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.1.1 - Provide examples of the contributions of chemistry to humanity.
TOPICS: Modern Chemistry: A Brief Glimpse
KEYWORDS: remember
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2. _____ have replaced copper wires in long-distance communication as they are cheaper and less bulky than copper cables carrying the same information.

a. Aluminum wires
b. Ethernet cables
c. Optical fibers
d. Semaphore lines
e. Wireless antennas

ANSWER: c
POINTS: 1
REFERENCES: 1.1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.1.1 - Provide examples of the contributions of chemistry to humanity.
TOPICS: Modern Chemistry: A Brief Glimpse
KEYWORDS: apply
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3. Individual organisms store their genetic information in _____, which consist of two intertwined molecular chains.

a. deoxyribonucleic acids
b. prokaryotic cells
c. peptide amino acids
d. eukaryotic cells
e. thylakoid membranes

ANSWER: a
POINTS: 1

REFERENCES: 1.1
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.1.1 - Provide examples of the contributions of chemistry to humanity.
TOPICS: Modern Chemistry: A Brief Glimpse
KEYWORDS: remember
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4. Which of the following is an example of the contribution of chemistry in the energy sector? Select all that apply.
   a. Creation of batteries and solar cells.
   b. Invention of nuclear reactors.
   c. Development of renewable energy policies.
   d. Synthesis of biofuel from organic matter.
   e. Hardening of wind energy.

ANSWER: a, d
POINTS: 1
REFERENCES: 1.2
QUESTION TYPE: Multiple Response
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.1.1 - Provide examples of the contributions of chemistry to humanity.
TOPICS: Contributions of Chemistry to Humanity
KEYWORDS: apply
OTHER: general chemistry
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5. What is a scientific theory?
   a. It is a collection of experimental data.
   b. It is an assertion of scientific fact.
   c. It is a guess about natural phenomena.
   d. It is a fundamental relationship of nature.
   e. It is an explanation of natural phenomena that has undergone significant testing.

ANSWER: e
POINTS: 1
REFERENCES: 1.2
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.2.1 - Explain how the scientific method is an approach to practicing chemistry.
TOPICS: general concepts scientific method
KEYWORDS: understand
OTHER: general chemistry
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6. An *untested* explanation of a series of experimental observations is called _____.

a. a hypothesis
b. a theory
c. a law
d. an experiment
e. the scientific method

ANSWER: a
POINTS: 1
REFERENCES: 1.2
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.2.1 - Explain how the scientific method is an approach to practicing chemistry.
TOPICS: general concepts scientific method
KEYWORDS: understand
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7. Which of the following statements concerning experiment and explanation is/are true?
1. A *law* is always given in the form of a mathematical expression.
2. Once a *hypothesis* passes one or two tests it is considered a theory.
3. Observation is a key component of the *scientific method*.

a. 1 only
b. 2 only
c. 3 only
d. 1 and 2
e. 1, 2, and 3

ANSWER: c
POINTS: 1
REFERENCES: 1.2
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.2.1 - Explain how the scientific method is an approach to practicing chemistry.
TOPICS: general concepts scientific method
KEYWORDS: understand
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8. A(n) _____ is an observation of natural phenomena carried out in a controlled manner so that the results can be duplicated and rational conclusions made.

a. theory
b. experiment

c. hypothesis
d. anomaly
e. law

ANSWER: b
POINTS: 1
REFERENCES: 1.2
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.2.1 - Explain how the scientific method is an approach to practicing chemistry.
TOPICS: Experiment and Explanation
KEYWORDS: understand
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9. A(n) _____ is a concise statement or mathematical equation about a fundamental relationship or regularity of nature.
a. experiment
b. hypothesis
c. anomaly
d. law
e. theory

ANSWER: d
POINTS: 1
REFERENCES: 1.2
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.2.1 - Explain how the scientific method is an approach to practicing chemistry.
TOPICS: Experiment and Explanation
KEYWORDS: understand
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10. A saline solution similar to that used for intravenous drips is made by dissolving 0.45 g sodium chloride in 50.00 g water. Which of the following statements concerning the saline solution and the law of conservation of mass is/are correct?
1. The mass of the saline solution is greater than the mass of water.
2. The mass of the saline solution is equal to the combined mass of sodium chloride and water.
3. The mass of the saline solution is greater than the mass of the sodium chloride.
a. 1 only
b. 2 only
c. 3 only
d. 1 and 2
e. 1, 2, and 3

ANSWER: e

POINTS: 1
REFERENCES: 1.3
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.3.1 - Apply the law of the conservation of mass.
TOPICS: general concepts matter
KEYWORDS: apply
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11. A 54.0-g sample of sodium is burned in the air to form sodium oxide. The mass of sodium oxide must be
    a. less than 54.0 g.
    b. greater than 54.0 g.
    c. equal to 54.0 g.
    d. equal to the mass of sodium plus the mass of oxygen reacting.
    e. equal to 54.0 g plus the mass of unreacted sodium.

ANSWER: b
POINTS: 1
REFERENCES: 1.3
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.3.1 - Apply the law of the conservation of mass.
TOPICS: general concepts matter
KEYWORDS: apply
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12. A sample of magnesium is burned in oxygen to form magnesium oxide. What mass of oxygen is consumed if 74.62 g magnesium oxide is formed from 45.00 g magnesium?
    a. 29.62 g
    b. 28.62 g
    c. 29.38 g
    d. 119.38 g
    e. 119.62 g

ANSWER: a
POINTS: 1
REFERENCES: 1.3
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.3.1 - Apply the law of the conservation of mass.
TOPICS: general concepts matter
KEYWORDS: apply
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13. In a certain chemical reaction, 9.11 g of compound A is added to 8.82 g of compound B. Once the reaction is complete, 1.38 g of compound A and 1.61 g of compound B remain. What mass of products was produced?

a. 20.92 g
b. 17.93 g
c. 14.94 g
d. 19.31 g
e. 19.54 g

ANSWER: c
POINTS: 1
REFERENCES: 1.3
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.3.1 - Apply the law of the conservation of mass.
TOPICS: general concepts matter
KEYWORDS: apply | Law of Conservation of Mass
OTHER: general chemistry
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14. A 7.45 g sample of calcium carbonate completely decomposes into calcium oxide (lime) and carbon dioxide gas when heated. If 4.17 g calcium oxide is produced, what mass of carbon dioxide must have been formed?

a. 3.28 g
b. 11.62 g
c. 31.10 g
d. 3.29 g
e. 11.65 g

ANSWER: a
POINTS: 1
REFERENCES: 1.3
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.3.1 - Apply the law of the conservation of mass.
TOPICS: general concepts matter
KEYWORDS: apply
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15. A sample of cesium carbonate, weighing 3.80 g, requires 1.90 g of hydrogen bromide gas to completely decompose to water, cesium bromide, and carbon dioxide gas. The total mass of water and cesium bromide formed is 5.20 g and no hydrogen bromide or cesium carbonate remains. According to the law of conservation of mass, what mass of carbon dioxide must have been formed?

a. 0.50 g
b. 1.40 g
c. 5.49 g

d. 10.90 g
e. 1.90 g

ANSWER: a
POINTS: 1
REFERENCES: 1.3
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.3.1 - Apply the law of the conservation of mass.
TOPICS: general concepts matter
KEYWORDS: apply
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16. Sodium oxide reacts with water to produce sodium hydroxide. Suppose 11.1 g of sodium oxide is combined with 38.7 g of water. When the reaction is complete, all the sodium oxide has been consumed. According to the law of conservation of mass, which is a true statement?

a. The mass of sodium hydroxide produced must equal 49.8 g.
b. The mass of unreacted water must equal 27.6 g.
c. The mass of sodium hydroxide produced must equal 11.1 g.
d. The mass of water consumed must equal 11.1 g.
e. The mass of sodium hydroxide produced plus the mass of unreacted water must equal 49.8 g.

ANSWER: e
POINTS: 1
REFERENCES: 1.3
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.3.1 - Apply the law of the conservation of mass.
TOPICS: general concepts matter
KEYWORDS: analyze | Law of Conservation of Mass
OTHER: general chemistry
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17. After a certain chemical reaction has been completed, it is found that 19.6 g of product was produced. According to the law of conservation of mass, which statement must be true?

a. The total mass consumed of all reactants was 19.6 g.
b. The mass consumed by each reactant was 19.6 g.
c. The mass of reactants consumed depends on the number of reactants present.
d. Before the reaction started, there were 19.6 g total of all reactants.
e. Before the reaction started, there were 19.6 g of each reactant.

ANSWER: a
POINTS: 1
REFERENCES: 1.3
QUESTION TYPE: Multiple Choice

HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.3.1 - Apply the law of the conservation of mass.
TOPICS: general concepts matter
KEYWORDS: apply | Law of Conservation of Mass
OTHER: general chemistry
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18. The state of matter for an object that has both definite volume and definite shape is the
    a. gaseous state.
    b. solid state.
    c. mixed state.
    d. elemental state.
    e. liquid state.

ANSWER: b
POINTS: 1
REFERENCES: 1.4
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.4.1 - Compare and contrast the three common states of matter: solid, liquid, and gas.
TOPICS: general concepts matter
KEYWORDS: remember | states of matter
OTHER: general chemistry
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19. The state of matter for an object that has a definite volume but *not* a definite shape is the
    a. elemental state.
    b. gaseous state.
    c. mixed state.
    d. liquid state.
    e. solid state.

ANSWER: d
POINTS: 1
REFERENCES: 1.4
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.4.1 - Compare and contrast the three common states of matter: solid, liquid, and gas.
TOPICS: general concepts matter
KEYWORDS: remember | states of matter
OTHER: general chemistry
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20. What happens to solids when they are heated at high temperatures?
    a. Immediately solid becomes gas.
    b. Solids melt into liquid.
    c. Solids maintain their shape and volume.
    d. Solids become more rigid.
    e. Solids undergo explosion.

ANSWER: b
POINTS: 1
REFERENCES: 1.4
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.4.1 - Compare and contrast the three common states of matter: solid, liquid, and gas.
TOPICS: general concepts matter
KEYWORDS: understand
OTHER: general chemistry
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21. A chemist heats a sample of water to 100°C and notices the formation of steam. What type of change takes place during heating?
    a. physical change from a gaseous state to a liquid state
    b. physical change from liquid state to gaseous state
    c. chemical change from liquid state to gaseous state
    d. physical change from gaseous state to solid state
    e. chemical change from solid state to liquid state

ANSWER: b
POINTS: 1
REFERENCES: 1.4
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.4.1 - Compare and contrast the three common states of matter: solid, liquid, and gas.
TOPICS: general concepts matter
KEYWORDS: apply
OTHER: general chemistry
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22. Two types of pure substances are
    a. compounds and heterogeneous solutions.
    b. compounds and elements.

c. elements and homogeneous solutions.
d. compounds and homogeneous solutions.
e. elements and heterogeneous solutions.

ANSWER: b
POINTS: 1
REFERENCES: 1.4
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.4.2 - Describe the classifications of matter: elements, compounds, and mixtures (heterogeneous and homogeneous).
TOPICS: general concepts matter
KEYWORDS: remember | states of matter
OTHER: general chemistry
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23. A sample that *cannot* be separated into two or more substances by physical means is
a. a heterogeneous mixture.
b. a compound.
c. either a compound or an element.
d. an element.
e. a homogeneous mixture.

ANSWER: c
POINTS: 1
REFERENCES: 1.4
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.4.2 - Describe the classifications of matter: elements, compounds, and mixtures (heterogeneous and homogeneous).
TOPICS: general concepts matter
KEYWORDS: remember | states of matter
OTHER: general chemistry
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24. A solution is a
a. pure element.
b. pure mixture.
c. heterogeneous mixture.
d. homogeneous mixture.
e. pure compound.

ANSWER: d
POINTS: 1
REFERENCES: 1.4

QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.4.2 - Describe the classifications of matter: elements, compounds, and mixtures (heterogeneous and homogeneous).
TOPICS: general concepts matter
KEYWORDS: remember | states of matter
OTHER: general chemistry
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25. Which of the following is a mixture?
    a. a homogeneous solution of sugar dissolved in water
    b. bromine (a liquid with the formula Br_2)
    c. sucrose (table sugar: the formula is $C_{12}H_{22}O_{11}$)
    d. graphite (an allotrope of carbon)
    e. calcium oxide (CaO, also called lime)

ANSWER: a
POINTS: 1
REFERENCES: 1.4
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.4.2 - Describe the classifications of matter: elements, compounds, and mixtures (heterogeneous and homogeneous).
TOPICS: general concepts matter
KEYWORDS: states of matter | understand
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26. A clear colorless liquid in an open beaker was heated to boiling. The liquid began to boil at 110°C, and as vapors escaped, the temperature of boiling gradually increased to 115°C, at which point the heating was stopped. Based on this information, we can say that the material in the beaker was a
    a. pure compound.
    b. homogeneous solution.
    c. pure substance.
    d. pure element.
    e. heterogeneous solution.

ANSWER: e
POINTS: 1
REFERENCES: 1.4
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.4.2 - Describe the classifications of matter: elements, compounds, and mixtures (heterogeneous and homogeneous).
TOPICS: general concepts matter

KEYWORDS: states of matter | understand
OTHER: general chemistry
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27. Heating a certain pure solid completely decomposes it into a solid and a gas, each of which is also a pure substance. Which of the following is/are reasonable conclusions regarding these observations?
1. The solid is a compound and the gas is an element.
2. At least one of the products is an element.
3. The original solid is not an element.

a. 1 only
b. 2 only
c. 3 only
d. 1 and 2
e. 1, 2, and 3

ANSWER: c
POINTS: 1
REFERENCES: 1.4
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.4.2 - Describe the classifications of matter: elements, compounds, and mixtures (heterogeneous and homogeneous).
TOPICS: general concepts matter
KEYWORDS: understand
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28. All of the following are examples of mixtures *except*

a. supermarket salt.
b. distilled water.
c. soft water.
d. hard water.
e. drugstore hydrogen peroxide.

ANSWER: b
POINTS: 1
REFERENCES: 1.4
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.4.2 - Describe the classifications of matter: elements, compounds, and mixtures (heterogeneous and homogeneous).
TOPICS: general concepts matter
KEYWORDS: states of matter | understand
OTHER: general chemistry
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29. All of the following are homogeneous mixtures *except*
    a. sodium chloride and potassium chloride.
    b. hydrogen gas and chlorine gas.
    c. sodium chloride and potassium chloride solution.
    d. mercury-zinc solution.
    e. hydrochloric acid solution.

ANSWER: a
POINTS: 1
REFERENCES: 1.4
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.4.2 - Describe the classifications of matter: elements, compounds, and mixtures (heterogeneous and homogeneous).
TOPICS: general concepts matter
KEYWORDS: states of matter | understand
OTHER: general chemistry
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30. Which of the following is a homogeneous mixture?
    a. gasoline
    b. vegetable oil and water
    c. sugar dissolved in water
    d. gasoline and sugar dissolved in water
    e. vegetable oil and gasoline

ANSWER: d
POINTS: 1
REFERENCES: 1.4
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.4.2 - Describe the classifications of matter: elements, compounds, and mixtures (heterogeneous and homogeneous).
TOPICS: general concepts matter
KEYWORDS: states of matter | understand
OTHER: general chemistry
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31. Which of the following statements are correct? Select all that apply.
    a. The combustion of methane (a component of natural gas) is a chemical change.
    b. The melting of ice is a physical change.
    c. The dissolution of sugar in water is a chemical change.
    d. The decomposition of sugar into carbon and water when mixed with sulfuric acid is a chemical change.

e. The evaporation of gasoline is a physical change.

ANSWER: a, b, d, e
POINTS: 1
REFERENCES: 1.4
QUESTION TYPE: Multiple Response
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.4.3 - Identify a process as either a physical or a chemical change.
TOPICS: general concepts matter
KEYWORDS: understand
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32. All the following are examples of chemical changes *except*

a. aging.
b. photosynthesis.
c. fermentation.
d. perspiration.
e. respiration.

ANSWER: d
POINTS: 1
REFERENCES: 1.4
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.4.3 - Identify a process as either a physical or a chemical change.
TOPICS: general concepts matter
KEYWORDS: physical and chemical change | understand
OTHER: general chemistry
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33. Which of the following is an example of a chemical change?

a. alcohol evaporating
b. water boiling
c. skin burning in the sun
d. iodine vaporizing
e. ice melting

ANSWER: c
POINTS: 1
REFERENCES: 1.4
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.4.3 - Identify a process as either a physical or a chemical change.
TOPICS: general concepts matter
KEYWORDS: physical and chemical change | understand

OTHER: general chemistry
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34. Which of the following is an example of a chemical change?
    a. silver tarnishing
    b. iodine sublimating
    c. alcohol boiling
    d. sucrose dissolving
    e. sodium chloride melting

ANSWER: a
POINTS: 1
REFERENCES: 1.4
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.4.3 - Identify a process as either a physical or a chemical change.
TOPICS: general concepts matter
KEYWORDS: physical and chemical change | understand
OTHER: general chemistry
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35. The boiling of water is a
    a. physical change because the water merely disappears.
    b. chemical change because heat is needed for the process to occur.
    c. physical change because gaseous and liquid water are chemically same.
    d. chemical and physical change.
    e. chemical change because a gas (steam) is given off.

ANSWER: c
POINTS: 1
REFERENCES: 1.4
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.4.3 - Identify a process as either a physical or a chemical change.
TOPICS: general concepts matter
KEYWORDS: physical and chemical change | understand
OTHER: general chemistry
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36. The number of significant figures in 7.3748×10^{-1} dm is
    a. 5
    b. 6
    c. 3

d. 7
e. 4

ANSWER: a
POINTS: 1
REFERENCES: 1.5
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.5.1 - Use the rules of significant figures to determine the uncertainty associated with measured data. TOPICS: general concepts measurement
KEYWORDS: remember
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37. How many significant figures are there in the value 0.0227 nm?
a. 4
b. 3
c. 2
d. 5
e. 6

ANSWER: b
POINTS: 1
REFERENCES: 1.5
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.5.1 - Use the rules of significant figures to determine the uncertainty associated with measured data. TOPICS: general concepts measurement
KEYWORDS: remember
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38. How many significant figures are there in the measured value 73.150?
a. 2
b. 3
c. 6
d. 5
e. 4

ANSWER: d
POINTS: 1
REFERENCES: 1.5
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.5.1 - Use the rules of significant figures to determine the uncertainty associated with measured data. TOPICS: general concepts measurement
KEYWORDS: remember | significant figures

OTHER: general chemistry
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39. The number of significant figures in 0.090900×10^{-4} is
    a. 6
    b. 4
    c. 3
    d. 7
    e. 5

ANSWER: e
POINTS: 1
REFERENCES: 1.5
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.5.1 - Use the rules of significant figures to determine the uncertainty associated with measured data. TOPICS: general concepts measurement
KEYWORDS: remember | scientific notation | significant figures
OTHER: general chemistry
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40. How many significant figures are there in the number 8.100?
    a. 1
    b. 5
    c. 3
    d. 4
    e. 2

ANSWER: d
POINTS: 1
REFERENCES: 1.5
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.5.1 - Use the rules of significant figures to determine the uncertainty associated with measured data. TOPICS: general concepts measurement
KEYWORDS: remember
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41. How many significant figures are there in the number 0.04560700?
    a. 4
    b. 9
    c. 8
    d. 5

e. 7

ANSWER: e
POINTS: 1
REFERENCES: 1.5
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.5.1 - Use the rules of significant figures to determine the uncertainty associated with measured data. TOPICS: general concepts measurement
KEYWORDS: remember | significant figures
OTHER: general chemistry
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42. The correct value of the expression is $\frac{(1\times10^{160})\times(1\times10^{-160})^4}{(1\times10^{120})^{1/3}}$ is

a. 1×10^{-520}
b. 1×10^{510}
c. 1×10^{-350}
d. 1×10^{-430}
e. 1×10^{-120}

ANSWER: a
POINTS: 1
REFERENCES: 1.5
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.5.3 - Represent numbers using scientific notation.
TOPICS: general concepts | measurement
KEYWORDS: apply | scientific notation | significant figures
OTHER: general chemistry
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43. Express the result of the following calculation in scientific notation: 503 cm × 355 cm

a. $17.9 \times 10^4 cm^2$
b. $1.79 \times 10^5 cm^2$
c. $2 \times 10^4 cm^2$
d. $2 \times 10^6 cm^2$
e. $2 \times 10^5 cm^2$

ANSWER: b
POINTS: 1
REFERENCES: 1.5

QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.5.3 - Represent numbers using scientific notation.
TOPICS: general concepts measurement
KEYWORDS: apply
OTHER: general chemistry
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44. Express the result of the following calculation in scientific notation: 0.0557 cm^2 ÷ 98.4 cm

a. 6×10^5 cm
b. 6×10^4 cm
c. 6×10^{-3} cm
d. 6×10^{-4} cm
e. 6×10^3 cm

ANSWER: d
POINTS: 1
REFERENCES: 1.5
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.5.3 - Represent numbers using scientific notation.
TOPICS: general concepts measurement
KEYWORDS: apply | scientific notation | significant figures
OTHER: general chemistry
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45. Express the number 0.000114 in scientific notation.

a. 0.114×10^{-3}
b. 1.14×10^4
c. 1.14×10^2
d. 1.14×10^{-4}
e. 1.14×10^{-6}

ANSWER: d
POINTS: 1
REFERENCES: 1.5
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.5.3 - Represent numbers using scientific notation.
TOPICS: general concepts measurement
KEYWORDS: scientific notation | significant figures | understand

OTHER: general chemistry
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46. What is the best answer to the following expression? (59.54 cm + 0.773 cm + 4.7403 cm – 53.1 cm)
    a. 12.12523 cm
    b. 11.9533 cm
    c. 11.953 cm
    d. 11.95 cm
    e. 12.0 cm

ANSWER: e
POINTS: 1
REFERENCES: 1.5
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.5.2 - Perform calculations using significant figures.
TOPICS: general concepts measurement
KEYWORDS: apply | significant figures
OTHER: general chemistry
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47. How many significant figures should be reported for the difference between 235.9237 mL and 235.57 mL?
    a. 7
    b. 1
    c. 2
    d. 3
    e. 5

ANSWER: c
POINTS: 1
REFERENCES: 1.5
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.5.2 - Perform calculations using significant figures.
TOPICS: general concepts measurement
KEYWORDS: apply | significant figures
OTHER: general chemistry
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48. The mass of a sample is measured by difference: first the mass of a beaker is measured (71.6 g), and a small amount of the sample is added to the beaker. The mass of the sample plus beaker is then measured to be 78.836 g. The number of significant figures that should be reported for the mass of the sample is
    a. 2

b. 1
c. 5
d. 4
e. 3

ANSWER: a
POINTS: 1
REFERENCES: 1.5
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.5.2 - Perform calculations using significant figures.
TOPICS: general concepts measurement
KEYWORDS: apply | significant figures
OTHER: general chemistry
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49. What is the best answer to the following expression involving a sum of measurements?
(52.706 cm + 0.734 cm + 14.4 cm)

a. 68.2 cm
b. 67.8400 cm
c. 67.84 cm
d. 67.840 cm
e. 67.8 cm

ANSWER: e
POINTS: 1
REFERENCES: 1.5
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.5.2 - Perform calculations using significant figures.
TOPICS: general concepts measurement
KEYWORDS: apply | significant figures
OTHER: general chemistry
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50. What is the correct answer to the following expression?
$2.96 \times 10^{-10} + 1.01 \times 10^{-12}$

a. 2.9701×10^{-10}
b. 2.970×10^{-10}
c. 3.97×10^{-10}
d. 3.0×10^{-10}
e. 2.97×10^{-10}

ANSWER: e

POINTS: 1
REFERENCES: 1.5
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.5.2 - Perform calculations using significant figures.
TOPICS: general concepts measurement
KEYWORDS: apply | scientific notation | significant figures
OTHER: general chemistry
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51. What is the best answer to report for $\frac{(4.416\ g + 7.656\ g)}{4.79\ mL} + 0.380\ g/mL$?

a. 2.900 g/mL
b. 2.9003 g/mL
c. 2.9 g/mL
d. 2.90 g/mL
e. 2.90025 g/mL

ANSWER: d
POINTS: 1
REFERENCES: 1.5
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.5.2 - Perform calculations using significant figures.
TOPICS: general concepts measurement
KEYWORDS: apply | significant figures
OTHER: general chemistry
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52. The best answer to report for the expression 352.94 – 36.0342 is _____.

a. 317.10
b. 316.9058
c. 316.906
d. 316.9
e. 316.91

ANSWER: e
POINTS: 1
REFERENCES: 1.5
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.5.2 - Perform calculations using significant figures.
TOPICS: general concepts measurement

KEYWORDS: apply | significant figures
OTHER: general chemistry
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53. Three different samples were weighed using a different type of balance for each sample. The three were found to have masses of 0.1900411 kg, 2.119 mg, and 4635.0 g. The total mass of the samples should be reported as

a. 4825.0 g
b. 4825.5 g
c. 4825.043 g
d. 4825.043219 g
e. 4825.0432 g

ANSWER: a
POINTS: 1
REFERENCES: 1.5
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.5.2 - Perform calculations using significant figures.
TOPICS: general concepts measurement
KEYWORDS: apply | significant figures
OTHER: general chemistry
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54. The measurements of three different masses on three different balances are 1.21 kg, 536 mg, and 23.14 g. The total mass should be reported as

a. 1233.68 g
b. 1234.1 g
c. 1233.7 g
d. 1234.5 g
e. 1233.676 g

ANSWER: d
POINTS: 1
REFERENCES: 1.5
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.5.2 - Perform calculations using significant figures.
TOPICS: general concepts measurement
KEYWORDS: Apply | significant figures
OTHER: general chemistry
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55. Four samples were weighed using three different balances. (All are as accurate as the precision indicates.) The masses

are 0.94 kg, 58.2 g, 1.55 g, and 250 mg. The total mass should be reported as

a. 1.000 kg
b. 1.0000 kg
c. 1.00 kg
d. 1.00000 kg
e. 1.0 kg

ANSWER: e
POINTS: 1
REFERENCES: 1.5
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.5.2 - Perform calculations using significant figures.
TOPICS: general concepts measurement
KEYWORDS: apply | significant figures
OTHER: general chemistry
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56. The answer that should be reported for the total mass of solution when 77.46 mg of benzene is added to 3.87 g of toluene is

a. 3.94746 g
b. 3.95 g
c. 3.9475 g
d. 3.947 g
e. 3.9 g

ANSWER: b
POINTS: 1
REFERENCES: 1.5
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.5.2 - Perform calculations using significant figures.
TOPICS: general concepts measurement
KEYWORDS: apply | significant figures
OTHER: general chemistry
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57. The radius of a circle is measured to be 4.03 cm. How should the circle's area be reported? ($A = \pi r^2$)

a. 51.0 cm^2
b. 51.022 cm^2
c. 51.02225 cm^2
d. 51.0222 cm^2
e. 51.02 cm^2

ANSWER: a
POINTS: 1
REFERENCES: 1.5
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.5.2 - Perform calculations using significant figures.
TOPICS: general concepts measurement
KEYWORDS: apply | significant figures
OTHER: general chemistry
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58. Which of the following statements concerning the SI system is/are correct?
1. Prefixes indicate a power of ten multiplier for a given SI base unit of measurement.
2. Degrees Celsius (°C) is the SI base unit for temperature.
3. The kilogram (kg) is the SI base unit for mass.

a. 1 only
b. 2 only
c. 3 only
d. 1 and 3
e. 1, 2, and 3

ANSWER: d
POINTS: 1
REFERENCES: 1.6
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.6.1 - Summarize the SI (metric) system of units including the SI prefixes.
TOPICS: general concepts measurement
KEYWORDS: remember
OTHER: general chemistry
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59. Which of the following statements concerning the common temperature scales is/are true?
1. Fahrenheit is an absolute temperature scale.
2. The normal boiling point of water (100°C) is equal to 273 K.
3. The *difference* between the boiling point and freezing point of a substance is the same for the Celsius and the Kelvin scales.

a. 1 only
b. 2 only
c. 3 only
d. 2 and 3
e. 1, 2, and 3

ANSWER: c
POINTS: 1

REFERENCES: 1.6
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.6.1 - Summarize the SI (metric) system of units including the SI prefixes.
TOPICS: general concepts measurement
KEYWORDS: remember
OTHER: general chemistry
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60. A student is working on converting a number that has a unit with the SI prefix milli- to a unit that has the prefix mega-. Using your knowledge about the relative sizes that milli- and mega- represent, how should the student convert the number?

a. The student should multiply the number by 10^9
b. The student should multiply the number by 10^6
c. The student should divide the number by 10^6
d. The student should use the number as it is
e. The student should divide the number by 10^9

ANSWER: e
POINTS: 1
REFERENCES: 1.6
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.6.1 - Summarize the SI (metric) system of units including the SI prefixes.
TOPICS: general concepts measurement
KEYWORDS: apply | prefixes | SI unit
OTHER: general chemistry
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61. In the area of nano-chemistry, particles defined as nanoparticles range in size from 1 to 2500 nm. 1 nm is equivalent to 1×10^{-9} m. If the size of the particles that make up a particular material is 1.23×10^{-8} cm, what is this size in nanometers?

a. 1.2300 nm
b. 1.23 nm
c. 0.123 nm
d. 1.230 nm
e. 1.231 nm

ANSWER: c
POINTS: 1
REFERENCES: 1.6
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False

LEARNING OBJECTIVES: GENE.EBBI.13.1.6.1 - Summarize the SI (metric) system of units including the SI prefixes.
TOPICS: general concepts measurement
KEYWORDS: apply
OTHER: general chemistry
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62. The distance between atoms is sometimes given in picometers, where 1 pm is equivalent to 1×10^{-12} m. If the distance between the layers of atoms in a particular compound is given as 338 pm, what is the distance in cm?

a. 3.38×10^{-6} cm
b. 3.38×10^{-14} cm
c. 3.38×10^{-12} cm
d. 3.38×10^{-8} cm
e. 3.38×10^{-10} cm

ANSWER: d
POINTS: 1
REFERENCES: 1.6
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.6.1 - Summarize the SI (metric) system of units including the SI prefixes.
TOPICS: general concepts measurement
KEYWORDS: apply | prefixes | SI unit
OTHER: general chemistry
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63. Order the four metric units from smallest to largest.
1) kiloliter 2) centiliter 3) nanoliter 4) milliliter

a. 1) < 2) < 4) < 3)
b. 3) < 4) < 2) < 1)
c. 4) < 3) < 2) < 1)
d. 2) < 3) < 1) < 4)
e. 1) < 2) < 3) < 4)

ANSWER: b
POINTS: 1
REFERENCES: 1.6
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.6.1 - Summarize the SI (metric) system of units including the SI prefixes.
TOPICS: general concepts measurement
KEYWORDS: understand
OTHER: general chemistry
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64. Which is the largest mass?
    a. 10 dg
    b. 10 cg
    c. 10 pg
    d. 10 ng
    e. 10 mg

ANSWER: a
POINTS: 1
REFERENCES: 1.6
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.6.1 - Summarize the SI (metric) system of units including the SI prefixes.
TOPICS: general concepts measurement
KEYWORDS: prefixes | SI unit | understand
OTHER: general chemistry
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65. One-hundredth of a nanogram is
    a. 10^{-14} g
    b. 10^{-10} g
    c. 10^{-8} g
    d. 10^{-11} g
    e. 10^{-12} g

ANSWER: d
POINTS: 1
REFERENCES: 1.6
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.6.1 - Summarize the SI (metric) system of units including the SI prefixes.
TOPICS: general concepts measurement
KEYWORDS: prefixes | SI unit | understand
OTHER: general chemistry
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66. How many 100-mg aspirin tablets can be made from 10.0 kg of aspirin?
    a. 10,000,000
    b. 1,000,000
    c. 1000
    d. 10,000

e. 100,000

ANSWER: e
POINTS: 1
REFERENCES: 1.6
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.6.1 - Summarize the SI (metric) system of units including the SI prefixes.
TOPICS: general concepts measurement
KEYWORDS: apply | prefixes | SI unit
OTHER: general chemistry
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67. Which of the following sets of units are in the order of increasing size? Select all that apply.

a. cPa < dPa < kPa
b. µL < dL < L
c. ns < ms < s
d. pm < mm < nm
e. µg < mg < cg

ANSWER: a, b, c, e
POINTS: 1
REFERENCES: 1.6
QUESTION TYPE: Multiple Response
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.6.1 - Summarize the SI (metric) system of units including the SI prefixes.
TOPICS: general concepts measurement
KEYWORDS: prefixes | SI unit | understand
OTHER: general chemistry
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68. The mass of 99 kg equals

a. 9.90 g
b. 9.900 g
c. 9.9×10^4 g
d. 0.099 g
e. 0.99 g

ANSWER: c
POINTS: 1
REFERENCES: 1.6
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.6.1 - Summarize the SI (metric) system of units including the SI prefixes.

TOPICS: general concepts measurement
KEYWORDS: prefixes | SI unit | understand
OTHER: general chemistry
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69. 4.9 seconds contain these many picoseconds.

a. 4.9×10^{9}
b. 4.9×10^{12}
c. 4.9×10^{-9}
d. 4.9×10^{-12}
e. 4.9×10^{15}

ANSWER: b
POINTS: 1
REFERENCES: 1.6
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.6.1 - Summarize the SI (metric) system of units including the SI prefixes.
TOPICS: general concepts measurement
KEYWORDS: prefixes | SI unit | understand
OTHER: general chemistry
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70. 4.41 seconds contain these many nanoseconds.

a. 4.41×10^{9}
b. 4.41×10^{10}
c. 4.41×10^{12}
d. 4.41×10^{8}
e. 4.41×10^{7}

ANSWER: a
POINTS: 1
REFERENCES: 1.6
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.6.1 - Summarize the SI (metric) system of units including the SI prefixes.
TOPICS: general concepts measurement
KEYWORDS: prefixes | SI unit | understand
OTHER: general chemistry
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71. The boiling point of chlorine is 172 K. This temperature corresponds to
    a. –82°C
    b. 101°C
    c. 172°C
    d. –172°C
    e. –101°C

ANSWER: e
POINTS: 1
REFERENCES: 1.6
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.6.2 - Convert from one temperature scale to another.
TOPICS: general concepts measurement
KEYWORDS: SI unit | temperature | understand
OTHER: general chemistry
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72. The melting point of nitrogen is 63 K. What is this temperature in degrees Celsius?
    a. 63°C
    b. –336°C
    c. –63°C
    d. –210°C
    e. 483°C

ANSWER: d
POINTS: 1
REFERENCES: 1.6
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.6.2 - Convert from one temperature scale to another.
TOPICS: general concepts measurement
KEYWORDS: SI unit | temperature | understand
OTHER: general chemistry
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73. The melting point of a solid is 41°F. This corresponds to
    a. 296 K
    b. 314 K
    c. 289 K
    d. 278 K
    e. 314 K

ANSWER: d
POINTS: 1

REFERENCES: 1.6
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.6.2 - Convert from one temperature scale to another.
TOPICS: general concepts measurement
KEYWORDS: SI unit | temperature | understand
OTHER: general chemistry
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74. A particular liquid boils at –260°F. What is its boiling point on the Kelvin scale?
    a. 146 K
    b. 129 K
    c. 111 K
    d. 161 K
    e. 229 K

ANSWER: c
POINTS: 1
REFERENCES: 1.6
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.6.2 - Convert from one temperature scale to another.
TOPICS: general concepts measurement
KEYWORDS: SI unit | temperature | understand
OTHER: general chemistry
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75. The melting point and the normal boiling point of water can be used to calibrate thermometers. What are these respective temperatures in kelvins?
    a. 273 and 373
    b. 32 and 212
    c. 100 and 273
    d. 0 and 100
    e. 0 and 373

ANSWER: a
POINTS: 1
REFERENCES: 1.6
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.6.2 - Convert from one temperature scale to another.
TOPICS: general concepts measurement
KEYWORDS: SI unit | temperature | understand
OTHER: general chemistry

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76. The melting point of a certain solid is –39°C. This corresponds to
    a. –13°F
    b. –39°F
    c. –38°F
    d. –12°F
    e. 10°F

ANSWER: c
POINTS: 1
REFERENCES: 1.6
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.6.2 - Convert from one temperature scale to another.
TOPICS: general concepts measurement
KEYWORDS: SI unit | temperature | understand
OTHER: general chemistry
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77. The melting point of a particular solid is 2631 K. This corresponds to
    a. 4276°F
    b. 2904°C
    c. 2297°C
    d. 4212°F
    e. 1342°F

ANSWER: a
POINTS: 1
REFERENCES: 1.6
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.6.2 - Convert from one temperature scale to another.
TOPICS: general concepts measurement
KEYWORDS: SI unit | temperature | understand
OTHER: general chemistry
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78. The Rankine (^{o}Ra) temperature scale is often used in engineering. Like the Kelvin scale, the Rankine scale is an absolute temperature scale; but the size of a Rankine degree is the same as the size of a Fahrenheit degree. Thus, 0 K = 0^{o}Ra and 0^{o}F = 459.67^{o}Ra. What is the temperature of 23.3 ºC expressed on the Rankine scale?
    a. 533.6^{o}Ra

b. 296.5°Ra
c. 23.3°Ra
d. 41.9°Ra
e. 315.1°Ra

ANSWER: a
POINTS: 1
REFERENCES: 1.6
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.6.2 - Convert from one temperature scale to another.
TOPICS: general concepts measurement
KEYWORDS: apply | SI unit | temperature
OTHER: general chemistry
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79. The Rankine (°Ra) temperature scale is often used in engineering. Like the Kelvin scale, the Rankine scale is an absolute temperature scale; but the size of a Rankine degree is the same as the size of a Fahrenheit degree. Thus, 0 K = 0°Ra and 0°F = 459.67°Ra. What is the temperature 330.7°Ra expressed on the Fahrenheit scale?

a. 790.4°F
b. 955.9°F
c. 603.9°F
d. 330.7°F
e. –129.0°F

ANSWER: e
POINTS: 1
REFERENCES: 1.6
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.6.2 - Convert from one temperature scale to another.
TOPICS: general concepts measurement
KEYWORDS: apply | SI unit | temperature
OTHER: general chemistry
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80. A piece of metal (mass = 18.300 g) is placed in 11.00 mL of chloroform (d = 1.498 g/mL) in a 25-mL graduated cylinder. The chloroform level increases to 15.46 mL. The best value for the density of this metal from this data is

a. 1.18 g/mL
b. 2.74 g/mL
c. 4.10 g/mL
d. 6.15 g/mL

e. 4.12 g/mL

ANSWER: e
POINTS: 1
REFERENCES: 1.7
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.7.1 - Relate the mass, volume, and density of a substance.
TOPICS: general concepts measurement
KEYWORDS: apply | density | SI unit
OTHER: general chemistry
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81. An irregularly shaped metal was weighed, and the following difference was reported:
Watch glass + metal = 56.7813 g
Watch glass = 35.4725 g
The volume of the metal was determined by placing the metal in a graduated cylinder that had water in it and measuring the volume difference.
Graduated cylinder + water + metal = 14.15 mL
Graduated cylinder + water = 11.25 mL
The density should be reported as

a. 7.348 g/mL
b. 7.35 g/mL
c. 7.4 g/mL
d. 7.3 g/mL
e. 7.3479 g/mL

ANSWER: b
POINTS: 1
REFERENCES: 1.7
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.7.1 - Relate the mass, volume, and density of a substance.
TOPICS: general concepts measurement
KEYWORDS: apply | density | SI unit
OTHER: general chemistry
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82. In addition to mass, which property of matter must be known to calculate its volume?

a. specific heat
b. temperature
c. molecular weight
d. density
e. pressure

ANSWER: d

POINTS: 1
REFERENCES: 1.7
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.7.1 - Relate the mass, volume, and density of a substance.
TOPICS: general concepts measurement
KEYWORDS: density | remember | SI unit
OTHER: general chemistry
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83. A 0.391-kg methylene chloride sample has a 1.326 g/cm3 density. Calculate its volume.

a. 339 cm^3
b. 299cm^3
c. 391 cm^3
d. 295 cm^3
e. 375cm^3

ANSWER: d
POINTS: 1
REFERENCES: 1.7
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.7.1 - Relate the mass, volume, and density of a substance.
TOPICS: general concepts measurement
KEYWORDS: apply | density | SI unit
OTHER: general chemistry
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84. Calculate the mass of aluminum that occupies the same volume as 95.7 g of cobalt. The density of cobalt is 8.90 g/cm^3 and the density of aluminum is 2.71 g/cm^3.

a. 25.2 g
b. 29.1 g
c. 20.2 g
d. 31.8 g
e. 39.6 g

ANSWER: b
POINTS: 1
REFERENCES: 1.7
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.7.1 - Relate the mass, volume, and density of a substance.

TOPICS: general concepts measurement
KEYWORDS: apply | density | SI unit
OTHER: general chemistry
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85. Four cubes of equal mass are made of lead (density = 11.3 g/cm^3), silver (10.5 g/cm^3), iron (7.90 g/cm^3), aluminum (2.70 g/cm^3), and magnesium (1.77 g/cm^3). Which cube has the longest edge?

a. lead
b. iron
c. silver
d. magnesium
e. aluminum

ANSWER: d
POINTS: 1
REFERENCES: 1.7
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.7.1 - Relate the mass, volume, and density of a substance.
TOPICS: general concepts measurement
KEYWORDS: apply | density | SI unit
OTHER: general chemistry
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86. What volume of a pure liquid (density 0.860 g/mL) has a mass of 0.360 kg?

a. 4.19×10^{2} mL
b. 2.39×10^{-3} mL
c. 3.10×10^{-1} mL
d. 2.38×10^{-1} mL
e. 4.19×10^{-1} mL

ANSWER: a
POINTS: 1
REFERENCES: 1.7
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.7.1 - Relate the mass, volume, and density of a substance.
TOPICS: general concepts measurement
KEYWORDS: apply | density | SI unit
OTHER: general chemistry
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87. A thin sheet of iridium metal that is 3.12 cm by 5.21 cm has a mass of 87.2 g and a thickness of 2.360 mm. What is the density of iridium?

a. 22.75 g/cm^3
b. 2.260 g/cm^3
c. 3.360 g/cm^3
d. 22.650 g/cm^3
e. 33.600 g/cm^3

ANSWER: a
POINTS: 1
REFERENCES: 1.7
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.7.1 - Relate the mass, volume, and density of a substance.
TOPICS: general concepts measurement
KEYWORDS: apply | density | SI unit
OTHER: general chemistry
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88. What length of a cylindrical piece of tungsten wire having a radius of 2.11 mm has a mass of 66.6 g? The density of tungsten is 19.25 g/cm^3.

a. 2.47×10^{-3} m
b. 1.79×10^{2} m
c. 2.47×10^{-1} m
d. 4.04×10^{-2} m
e. 4.04×10^{-4} m

ANSWER: c
POINTS: 1
REFERENCES: 1.7
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.7.1 - Relate the mass, volume, and density of a substance.
TOPICS: general concepts measurement
KEYWORDS: apply | density | SI unit
OTHER: general chemistry
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89. What is the mass of NH_3 in an 80.0-cm^3 sample that has a density of 0.92 g/cm^3 and consists of 20% (by mass) NH_3?

a. 15 g
b. 20 g

c. 45 g
d. 74 g
e. 25 g

ANSWER: a
POINTS: 1
REFERENCES: 1.7
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.7.1 - Relate the mass, volume, and density of a substance.
TOPICS: general concepts measurement
KEYWORDS: apply | density | SI unit
OTHER: general chemistry
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90. What is the mass of H_2SO_4 in a 41.8-cm^3 sample of sulfuric acid that has a density of 1.49 g/cm^3 and consists of 51.9% H_2SO_4?

a. 12.0 g
b. 62.3 g
c. 14.6 g
d. 11.85 g
e. 32.3 g

ANSWER: e
POINTS: 1
REFERENCES: 1.7
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.7.1 - Relate the mass, volume, and density of a substance.
TOPICS: general concepts measurement
KEYWORDS: apply | density | SI unit
OTHER: general chemistry
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91. A 3.60 cm^3 sample of solid tin metal has a density of 5.770 g/cm^3. What volume does this sample of tin occupy in its liquid state? The density of liquid tin is 6.990 g/cm^3.

a. 2.97 cm^3
b. 4.36 cm^3
c. 2.99 cm^3
d. 1.45 cm^3
e. 3.23 cm^3

ANSWER: a

POINTS: 1
REFERENCES: 1.7
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.7.1 - Relate the mass, volume, and density of a substance.
TOPICS: general concepts measurement
KEYWORDS: apply
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92. How many feet (ft) are contained in 0.496 km, given that 1 mi = 1.609 km and 5280 ft = 1 mi (exact)?
    a. 1627.0 ft
    b. 1510.5 ft
    c. 1625.3 ft
    d. 1520.0 ft
    e. 1695.5 ft

ANSWER: a
POINTS: 1
REFERENCES: 1.8
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.8.1 - Apply dimensional analysis to convert from one unit of measurement to another.
TOPICS: general concepts measurement
KEYWORDS: understand
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93. Convert 12.36 cm^3 to cubic inches (in^3), given that 1 inch = 2.54 cm (exact).
    a. 0.754 in^3
    b. 0.865 in^3
    c. 1.390 in^3
    d. 1.425 in^3
    e. 1.525 in^3

ANSWER: a
POINTS: 1
REFERENCES: 1.8
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.8.1 - Apply dimensional analysis to convert from one unit of measurement to another.
TOPICS: general concepts measurement
KEYWORDS: understand

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94. Which response has the correct number of significant figures and units for the following mathematical operation?

$$7.55\times10^{5}\text{ ergs}\times\frac{1.000\text{ J}}{1.000\times10^{7}\text{ ergs}}\times\frac{1.000\text{ cal}}{4.184\text{ J}}\times\frac{1\text{ kcal}}{1000\text{ cal}}$$

a. 1.804×10^{-5} kcal
b. 2.0×10^{-5} kcal
c. 1.604×10^{-5} kcal
d. 1.80×10^{-5} kcal
e. 1.81×10^{-5} kcal

ANSWER: d
POINTS: 1
REFERENCES: 1.8
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.8.1 - Apply dimensional analysis to convert from one unit of measurement to another.
TOPICS: general concepts measurement
KEYWORDS: apply | factor label method
OTHER: general chemistry
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95. The average speed of oxygen molecules at 690°C is 1.60×10^{5} cm/s. Which of the following calculations would convert this speed to units of miles per hour?

a. $\frac{1\text{ s}}{1.60\times10^{5}\text{ cm}}\times\frac{2.54\text{ cm}}{1\text{ in}}\times\frac{1\text{ ft}}{12\text{ in}}\times\frac{1\text{ mi}}{5280\text{ ft}}\times\frac{3600\text{ s}}{1\text{ h}}$

b. $\frac{1.60\times10^{5}\text{ cm}}{1\text{ s}}\times\frac{1\text{ in}}{2.54\text{ cm}}\times\frac{12\text{ in}}{1\text{ ft}}\times\frac{5280\text{ ft}}{1\text{ mi}}\times\frac{1\text{ h}}{3600\text{ s}}$

c. $\frac{1.60\times10^{5}\text{ cm}}{1\text{ s}}\times\frac{1\text{ in}}{2.54\text{ cm}}\times\frac{1\text{ ft}}{12\text{ in}}\times\frac{1\text{ mi}}{5280\text{ ft}}\times\frac{3600\text{ s}}{1\text{ h}}$

d. $\frac{1.60\times10^{5}\text{ cm}}{1\text{ s}}\times\frac{2.54\text{ cm}}{1\text{ in}}\times\frac{12\text{ in}}{1\text{ ft}}\times\frac{5280\text{ ft}}{1\text{ mi}}\times\frac{3600\text{ s}}{1\text{ h}}$

e. $\frac{1\text{ s}}{1.60\times10^{5}}\times\frac{2.54\text{ cm}}{1\text{ in}}\times\frac{12\text{ in}}{1\text{ ft}}\times\frac{5280\text{ ft}}{1\text{ mi}}\times\frac{1\text{ h}}{3600\text{ s}}$

ANSWER: c
POINTS: 1
REFERENCES: 1.8
QUESTION TYPE: Multiple Choice

HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.8.1 - Apply dimensional analysis to convert from one unit of measurement to another.
TOPICS: general concepts measurement
KEYWORDS: apply | factor label method
OTHER: general chemistry
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96. The distance from St. Louis, Missouri, to Lincoln, Nebraska, is 444 miles by car. Which of the following series of calculations will yield this distance in units of kilometers?
(1 in = 2.54 cm (exact), 1 mi = 5280 ft (exact), 1 ft = 12 in (exact))

a. $444\ \text{mi} \times \frac{5280\ \text{ft}}{1\ \text{mi}} \times \frac{1\ \text{ft}}{12\ \text{in}} \times \frac{2.54\ \text{cm}}{1\ \text{in}} \times \frac{100\ \text{m}}{1\ \text{cm}} \times \frac{1\ \text{km}}{1000\ \text{m}}$

b. $444\ \text{mi} \times \frac{12\ \text{ft}}{1\ \text{in}} \times \frac{1\ \text{in}}{2.54\ \text{cm}} \times \frac{1760\ \text{yd}}{1\ \text{mi}} \times \frac{1\ \text{km}}{1000\ \text{m}}$

c. $444\ \text{mi} \times \frac{5280\ \text{ft}}{1\ \text{mi}} \times \frac{12\ \text{ft}}{1\ \text{in}} \times \frac{1\ \text{cm}}{2.54\ \text{in}} \times \frac{1\ \text{m}}{100\ \text{cm}} \times \frac{1\ \text{km}}{1000\ \text{m}}$

d. $444\ \text{mi} \times \frac{5280\ \text{ft}}{1\ \text{mi}} \times \frac{12\ \text{in}}{1\ \text{ft}} \times \frac{2.54\ \text{cm}}{1\ \text{in}} \times \frac{1\ \text{m}}{100\ \text{cm}} \times \frac{1\ \text{km}}{1000\ \text{m}}$

e. $444\ \text{mi} \times \frac{12\ \text{in}}{1\ \text{ft}} \times \frac{2.54\ \text{cm}}{1\ \text{ft}} \times \frac{1\ \text{km}}{1000\ \text{m}}$

ANSWER: d
POINTS: 1
REFERENCES: 1.8
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.8.1 - Apply dimensional analysis to convert from one unit of measurement to another.
TOPICS: general concepts measurement
KEYWORDS: apply | factor label method
OTHER: general chemistry
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97. A car averages 28.5 miles per gallon of gasoline. How many liters of gasoline will be needed for a trip of 415 km? Some conversion factors that may be helpful are the following:
1 qt = 0.946 L
1 mile = 1.609 km
4 qt = 1 gal (exact)
1 ft = 12 in (exact)

a. 3×10^1 L

b. 5×10^3 L

c. 2×10^3 L

d. 9×10^1 L

e. 3×10^4 L

ANSWER: a
POINTS: 1
REFERENCES: 1.8
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.8.1 - Apply dimensional analysis to convert from one unit of measurement to another.
TOPICS: general concepts measurement
KEYWORDS: apply | factor label method
OTHER: general chemistry
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98. Which of the following sequence of conversions will yield the correct number of scruples in 66.1 lb? Some equivalents that may be helpful are given as follows:
1.00 scruple = 20.0 grains
1.00 g = 15.4 grains
1.00 grain = 0.0648 g
1.00 lb = 453.6 g
1.00 kg = 2.205 lb

a. $\frac{1.00 \text{ scruple}}{20.0 \text{ grains}} \times \frac{15.4 \text{ grains}}{1.00 \text{ g}} \times \frac{453.6 \text{ g}}{1.00 \text{ lb}} \times 66.1 \text{ lb}$

b. $\frac{1.00 \text{ scruple}}{20.0 \text{ grains}} \times \frac{1.00 \text{ grain}}{0.0648 \text{ g}} \times \frac{1.00 \text{ kg}}{2.205 \text{ lb}} \times \frac{1.00 \text{ lb}}{453.6 \text{ g}} \times \frac{1000 \text{ g}}{1 \text{ kg}} \times 66.1 \text{ lb}$

c. $\frac{20.0 \text{ grains}}{1.00 \text{ scruple}} \times \frac{1.00 \text{ g}}{15.4 \text{ grains}} \times \frac{1.00 \text{ grain}}{0.0648 \text{ g}} \times \frac{453.6 \text{ g}}{1.00 \text{ lb}} \times 66.1 \text{ lb}$

d. $\frac{1.00 \text{ scruple}}{20.0 \text{ grains}} \times \frac{1.00 \text{ grain}}{0.0648 \text{ g}} \times \frac{1.00 \text{ kg}}{2.205 \text{ lb}} \times 66.1 \text{ lb}$

e. $\frac{1.00 \text{ scruple}}{20.0 \text{ grains}} \times \frac{15.4 \text{ grains}}{1.00 \text{ g}} \times \frac{0.0648 \text{ g}}{1.00 \text{ grain}} \times \frac{453.6 \text{ g}}{1.00 \text{ lb}} \times 66.1 \text{ lb}$

ANSWER: a
POINTS: 1
REFERENCES: 1.8
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.8.1 - Apply dimensional analysis to convert from one unit of measurement to another.
TOPICS: general concepts measurement
KEYWORDS: apply | factor label method

OTHER: general chemistry
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99. 6.8 kilograms contain how many grams?

a. 6.8×10^{2}
b. 6.82×10^{-3}
c. 6.8×10^{-3}
d. 6.75×10^{-3}
e. 6.8×10^{3}

ANSWER: e
POINTS: 1
REFERENCES: 1.8
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.8.1 - Apply dimensional analysis to convert from one unit of measurement to another.
TOPICS: general concepts measurement
KEYWORDS: factor label method | understand
OTHER: general chemistry
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100. Convert 4523.0 g to mg.

a. 4.5230×10^{2} mg
b. 4.5230×10^{4} mg
c. 4.5230×10^{6} mg
d. 4.5230×10^{3} mg
e. 4.5230×10^{5} mg

ANSWER: c
POINTS: 1
REFERENCES: 1.8
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.8.1 - Apply dimensional analysis to convert from one unit of measurement to another.
TOPICS: general concepts measurement
KEYWORDS: factor label method | understand
OTHER: general chemistry
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101. The enthalpy of combustion of benzoic acid is –26.4 kJ/g. What is the enthalpy of combustion expressed in joules per kilogram?

a. -2.64×10^{3} J/kg
b. -2.64×10^{4} J/kg
c. -2.64×10^{1} J/kg
d. -2.64×10^{7} J/kg
e. -2.64×10^{10} J/kg

ANSWER: d
POINTS: 1
REFERENCES: 1.8
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.8.1 - Apply dimensional analysis to convert from one unit of measurement to another.
TOPICS: general concepts measurement
KEYWORDS: apply | factor label method
OTHER: general chemistry
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102. The enthalpy of combustion of *n*-octane, C_8H_{18}, is -4.79×10^{7} J/kg. What is the enthalpy of combustion expressed in kJ/g?

a. -4.79×10^{10} kJ/g
b. -4.79×10^{7} kJ/g
c. -4.79×10^{3} kJ/g
d. -4.79×10^{1} kJ/g
e. -4.79×10^{4} kJ/g

ANSWER: d
POINTS: 1
REFERENCES: 1.8
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.8.1 - Apply dimensional analysis to convert from one unit of measurement to another.
TOPICS: general concepts measurement
KEYWORDS: apply | factor label method
OTHER: general chemistry
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103. How many milligrams of ammonium nitrate are equivalent to 1.09×10^{-5} kg of ammonium nitrate?

a. 1.09×10^{10}

b. 1.09×10^{4}
c. 1.09×10^{7}
d. 1.09×10^{-7}
e. 1.09×10^{1}

ANSWER: e
POINTS: 1
REFERENCES: 1.8
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.8.1 - Apply dimensional analysis to convert from one unit of measurement to another.
TOPICS: general concepts measurement
KEYWORDS: apply | factor label method
OTHER: general chemistry
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104. The density of a particular solid is 4.51 g/cm^3 at 25°C. What is its density in kilograms per cubic meter (kg/m^3)?

a. 4.51×10^{10}
b. 4.51×10^{1}
c. 4.51×10^{-2}
d. 4.51×10^{3}
e. 4.51×10^{7}

ANSWER: d
POINTS: 1
REFERENCES: 1.8
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.8.1 - Apply dimensional analysis to convert from one unit of measurement to another.
TOPICS: general concepts measurement
KEYWORDS: apply | factor label method
OTHER: general chemistry
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105. Express the volume 657.8 cm^3 in liters.

a. 6.578 L
b. 0.06578 L
c. 0.6578 L
d. 65.78 L

e. 657.8 L

ANSWER: c
POINTS: 1
REFERENCES: 1.8
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.8.1 - Apply dimensional analysis to convert from one unit of measurement to another.
TOPICS: general concepts measurement
KEYWORDS: factor label method | understand
OTHER: general chemistry
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106. How many cubic millimeters equal one cubic meter?

a. 10^{4}
b. 10^{-9}
c. 10^{3}
d. 10^{9}
e. 10^{-3}

ANSWER: d
POINTS: 1
REFERENCES: 1.8
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.8.1 - Apply dimensional analysis to convert from one unit of measurement to another.
TOPICS: general concepts measurement
KEYWORDS: factor label method | understand
OTHER: general chemistry
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107. A certain substance makes up 4.8×10^{-4} percent by mass of a normal healthy human being. How many grams of that substance would be found in the body of a person weighing 120 lb? (1.0 kg = 2.2 lb)

a. 2.60 g
b. 0.26 g
c. 5.80 g
d. 2.65 g
e. 1.31 g

ANSWER: b
POINTS: 1
REFERENCES: 1.8

QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.8.1 - Apply dimensional analysis to convert from one unit of measurement to another.
TOPICS: general concepts measurement
KEYWORDS: apply | factor label method
OTHER: general chemistry
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108. How many liters are in 15.1 fluid ounces of a soft drink? (1 fl oz = 28.35 mL)

a. 5.0×10^{-4} L
b. 5.0×10^{2} L
c. 4.0×10^{5} L
d. 4.0×10^{2} L
e. 4.28×10^{-1} L

ANSWER: e
POINTS: 1
REFERENCES: 1.8
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.8.1 - Apply dimensional analysis to convert from one unit of measurement to another.
TOPICS: general concepts measurement
KEYWORDS: apply | factor label method
OTHER: general chemistry
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109. How many joules are there in 1.86 kcal? (1 calorie = 4.184 J)

a. 8×10^{-3} J
b. 8×10^{3} J
c. 7×10^{3} J
d. 4×10^{2} J
e. 4×10^{3} J

ANSWER: b
POINTS: 1
REFERENCES: 1.8
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.8.1 - Apply dimensional analysis to convert from one unit of measurement to another.

TOPICS: general concepts measurement
KEYWORDS: apply | factor label method
OTHER: general chemistry
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110. A hogshead is an old English unit of volume equal to 238.48 L. What is the volume of a cube with an edge length of 48.0 m expressed in units of hogshead? (1000 L = 1 m^3)

a. 4.64×10^5 hogshead
b. 4.64×10^2 hogshead
c. 4.64×10^{-1} hogshead
d. 4.69×10^{10} hogshead
e. 4.56×10^4 hogshead

ANSWER: a
POINTS: 1
REFERENCES: 1.8
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.8.1 - Apply dimensional analysis to convert from one unit of measurement to another.
TOPICS: general concepts measurement
KEYWORDS: apply | factor label method
OTHER: general chemistry
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111. A barn is an atomic unit of area equal to 10^{-28} m^2. What is the surface area of the Earth expressed in units of barn? Assume the Earth is a sphere with a radius of 6400 km. (The surface area of a sphere is $4\pi r^2$.)

a. 5.12×10^{42} barn
b. 5.12×10^{-20} barn
c. 5.12×10^{36} barn
d. 5.12×10^{-14} barn
e. 5.12×10^{30} barn

ANSWER: a
POINTS: 1
REFERENCES: 1.8
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.8.1 - Apply dimensional analysis to convert from one unit of measurement to another.
TOPICS: general concepts measurement

KEYWORDS: apply | factor label method
OTHER: general chemistry
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112. A lightyear is a unit of length equal to the distance that light travels in 1 year. What is 1 lightyear expressed in units of meters? The speed of light is 3.00×10^8 m/s.

a. 9.51×10^0 m
b. 9.46×10^{15} m
c. 9.38×10^8 m
d. 9.05×10^{-1} m
e. 9.15×10^{-16} m

ANSWER: b
POINTS: 1
REFERENCES: 1.8
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.8.1 - Apply dimensional analysis to convert from one unit of measurement to another.
TOPICS: general concepts measurement
KEYWORDS: apply | factor label method
OTHER: general chemistry
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113. The SI unit for the diffusion coefficient is m^2/s, but older texts sometimes report diffusion coefficients in units of in^2/min. What is the value of a diffusion coefficient of 18.5 in^2/min expressed in SI units? (2.54 cm = 1 in exactly)

a. 7.83×10^{-3} m^2/s
b. 2.82×10^5 m^2/s
c. 12.10 m^2/s
d. 4.78×10^2 m^2/s
e. 1.99×10^{-4} m^2/s

ANSWER: e
POINTS: 1
REFERENCES: 1.8
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.8.1 - Apply dimensional analysis to convert from one unit of measurement to another.
TOPICS: general concepts measurement
KEYWORDS: apply | factor label method

OTHER: general chemistry
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114. How many rundlets are there in 218 in^3? Some conversion factors that may be useful are given as follows:
1.00 barrel = 42.0 gal
1.00 gal = 231 in^3
1.00 gal = 3.78 L
1.00 rundlet = 6.81×10^4 mL
1.00 L = 1000.0 mL
1.00 barrel = 4.00 firkins

a. 0.524
b. 13,000,000
c. 24,300
d. 907,000
e. 0.0524

ANSWER: e
POINTS: 1
REFERENCES: 1.8
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.8.1 - Apply dimensional analysis to convert from one unit of measurement to another.
TOPICS: general concepts measurement
KEYWORDS: apply | factor label method
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115. A barleycorn is an English unit of length equal to 1/3 of an inch. What is the height of the Empire State Building (449 m) expressed in barleycorns? (2.54 cm = 1 in)

a. 3×10^5 barleycorns
b. 6×10^3 barleycorns
c. 5×10^4 barleycorns
d. 4×10^4 barleycorns
e. 6×10^2 barleycorns

ANSWER: c
POINTS: 1
REFERENCES: 1.8
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.8.1 - Apply dimensional analysis to convert from one unit of measurement to another.

TOPICS: general concepts measurement
KEYWORDS: apply | factor label method
OTHER: general chemistry
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116. A sample of milk is found to have arsenic at a concentration of 3.76 µg/L. What is the concentration in ounces per gallon?
1 qt = 946.4 mL
1 gal = 4 qt
16 oz = 1 lb
1 lb = 0.4536 kg

a. 2.82×10^{3} oz/gal
b. 5.02×10^{-7} oz/gal
c. 2.59×10^{3} oz/gal
d. 4.04×10^{-4} oz/gal
e. 3.50×10^{-8} oz/gal

ANSWER: b
POINTS: 1
REFERENCES: 1.8
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.8.1 - Apply dimensional analysis to convert from one unit of measurement to another.
TOPICS: general concepts measurement
KEYWORDS: apply | factor label method
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117. The daily dietary energy requirement for an adult is 2.00×10^{3} kcal (1 cal = 4.184 J). This is equivalent to

a. 8.37×10^{3} J
b. 8.37×10^{3} kJ
c. 478 kJ
d. 2.00×10^{3} kJ
e. 47.8×10^{4} kJ

ANSWER: b
POINTS: 1
REFERENCES: 1.8
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
LEARNING OBJECTIVES: GENE.EBBI.13.1.8.1 - Apply dimensional analysis to convert from one unit of measurement to another.

TOPICS:	general concepts measurement
KEYWORDS:	apply | factor label method
OTHER:	general chemistry
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