

Question 1 **Multiple Choice** **0 points****Question**

Which of the following is an example of a quantitative observation?

- Answer**
- The piece of metal is longer than the piece of wood.
 - Solution 1 is much darker than solution 2.
 - The liquid in beaker A is blue.
 - The temperature of the liquid is 60°C.
 - At least two of the above (A-D) are quantitative observations.

Question 2 **Multiple Choice** **0 points****Question**

A quantitative observation

- Answer**
- contains a number and a unit
 - does not contain a number
 - always makes a comparison
 - must be obtained through experimentation
 - is none of these

Question 3 **Multiple Choice** **0 points****Question**

Generally, observed behavior that can be formulated into a statement, sometimes mathematical in nature, is called a(n)

- Answer**
- observation
 - measurement
 - theory
 - natural law
 - experiment

Question 4 **Multiple Choice** **0 points****Question**

The statement "The total mass of materials is not affected by a chemical change in those materials" is called a(n)

- Answer**
- observation
 - measurement
 - theory
 - natural law
 - experiment

Question 5 **True/False** **0 points****Question**

A chemical theory that has been known for a long time becomes a law.

- Answer**
- True
 - False

Question 6 **Multiple Choice** **0 points****Question**

Which of the following metric relationships is incorrect?

- Answer**
- 1 microliter = 10^{-6} liters
 - 1 gram = 10^3 kilograms
 - 10^3 milliliters = 1 liter
 - 1 gram = 10^2 centigrams
 - 10 decimeters = 1 meter

Question 7 **Multiple Choice** **0 points****Question**

For which pair is the SI prefix not matched correctly with its meaning?

- Answer**
- tera = 10^{12}
 - kilo = 1000
 - deci = 10
 - nano = 10^{-9}
 - centi = 0.01

Question 8 **Multiple Choice** **0 points**

Question

A metric unit for length is

- Answer**
- gram
 - milliliter
 - yard
 - kilometer
 - pound

[Add Question Here](#)[Modify](#)[Remove](#)

Question 9

Multiple Choice**0 points****Question**Which of the following is *not* a unit in the SI system?

- Answer**
- ampere
 - candela
 - Kelvin
 - meter
 - calorie

[Add Question Here](#)[Modify](#)[Remove](#)

Question 10

Multiple Choice**0 points****Question**

Order the four metric prefixes from smallest to largest.

- Answer** micro- < milli- < centi- < kilo-
- milli- < micro- < centi- < kilo-
 - kilo- < centi- < micro- < milli-
 - kilo- < centi- < milli- < micro-
 - centi- < micro- < kilo- < milli-

[Add Question Here](#)[Modify](#)[Remove](#)

Question 11

Multiple Choice**0 points****Question**

2.6 kilogram(s) contains this many grams.

- Answer**
- 2.6×10^2
 - 2.6×10^3
 - 26
 - 0.26
 - 2.6×10^{-3}

[Add Question Here](#)[Modify](#)[Remove](#)

Question 12

Multiple Choice**0 points****Question**

Convert 0.7470 m to mm.

- Answer** 747.0 mm
- 7.470×10^{-3} mm
 - 7.470×10^{-4} mm
 - 0.07470 mm
 - none of these

[Add Question Here](#)[Modify](#)[Remove](#)

Question 13

Multiple Choice**0 points****Question**

5.2 seconds contain this many picoseconds.

- Answer** 5.2×10^{12}
- 5.2×10^{-12}
 - 5.2×10^{-9}
 - 5.2×10^9
 - 5.2×10^{15}

[Add Question Here](#)[Modify](#)[Remove](#)

Question 14

Multiple Choice**0 points****Question**

4.57 seconds contain this many nanoseconds.

- Answer**
- 4.57×10^7
 - 4.57×10^9
 - 4.57×10^{12}
 - 4.57×10^{10}
 - 4.57×10^8

[Add Question Here](#)[Modify](#)[Remove](#)

Question 15

Multiple Choice**0 points****Question**

The distance of 45 km equals

- Answer**
- 0.045 m
 - 0.45 m

- 450 m
- 4500 m
- ✓ 4.5×10^4 m

[Add Question Here](#)

Question 16 **Multiple Choice** **0 points**

[Modify](#) [Remove](#)

Question

What is the measure of resistance an object has to a change in its state of motion?

Answer

- ✓ mass
- weight
- volume
- length
- none of these

[Add Question Here](#)

Question 17 **Multiple Choice** **0 points**

[Modify](#) [Remove](#)

Question

The degree of agreement among several measurements of the same quantity is called _____. It reflects the reproducibility of a given type of measurement.

Answer

- accuracy
- error
- ✓ precision
- significance
- certainty

[Add Question Here](#)

Question 18 **Multiple Choice** **0 points**

[Modify](#) [Remove](#)

Question

As part of the calibration of a new laboratory balance, a 1.000-g mass is weighed with the following results:

Trial	Mass
1	1.201 ± 0.001
2	1.202 ± 0.001
3	1.200 ± 0.001

The balance is:

Answer

- Both accurate and precise.
- Accurate but imprecise.
- ✓ Precise but inaccurate.
- Both inaccurate and imprecise.
- Accuracy and precision are impossible to determine with the available information.

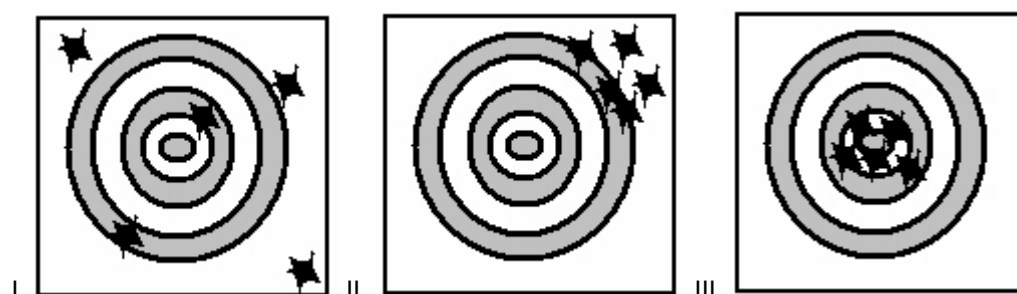
[Add Question Here](#)

Question 19 **Multiple Choice** **0 points**

[Modify](#) [Remove](#)

Question

Consider the following three archery targets:



Reference: Ref 1-1

Which of the following figure(s) represent a result having high precision?

Answer

- Figure I only
- Figure II only
- Figure III only
- Figure I and Figure II
- ✓ Figure II and Figure III

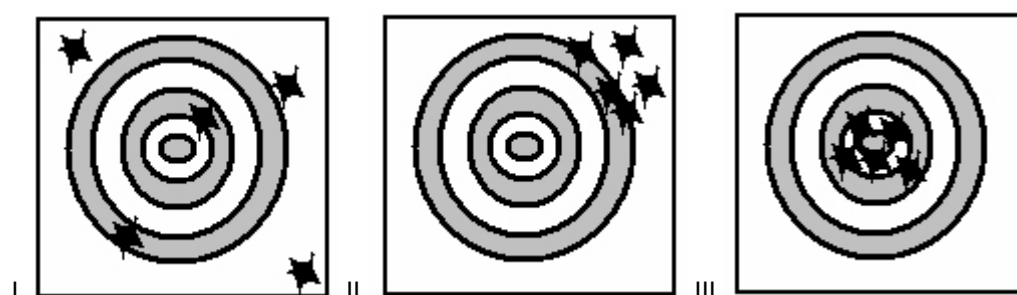
[Add Question Here](#)

Question 20 **Multiple Choice** **0 points**

[Modify](#) [Remove](#)

Question

Consider the following three archery targets:



Reference: Ref 1-1

Which of the following statements concerning these figures is correct?

Answer

Figure I represents systematic error and Figure II represents random error.

- ✓ Figure I represents random error and Figure II represents systematic error.
- Figure I and Figure II represent random error.
- Figure I and Figure II represent systematic error.
- Figure III represents no errors.

[Add Question Here](#)

Question 21 **Multiple Choice**

0 points

[Modify](#)

[Remove](#)

Question

Which of the following is the least probable concerning five measurements taken in the lab?

Answer

- The measurements are accurate and precise.
- ✓ The measurements are accurate but not precise.
- The measurements are precise but not accurate.
- The measurements are neither accurate nor precise.
- All of these are equally probable.

[Add Question Here](#)

Question 22 **Multiple Choice**

0 points

[Modify](#)

[Remove](#)

Question

You measure water in two containers: a 10-mL graduated cylinder with marks at every mL, and a 1-mL pipet marked at every 0.1 mL. If you have some water in each of the containers and add them together, to what decimal place could you report the total volume of water?

Answer

- 0.01 mL
- ✓ 0.1 mL
- 1 mL
- 10 mL
- none of these

[Add Question Here](#)

Question 23 **Multiple Choice**

0 points

[Modify](#)

[Remove](#)

Question

The agreement of a particular value with the true value is called

Answer

- ✓ accuracy
- error
- precision
- significance
- certainty

[Add Question Here](#)

Question 24 **Multiple Choice**

0 points

[Modify](#)

[Remove](#)

Question

The amount of uncertainty in a measured quantity is determined by:

Answer

- ✓ both the skill of the observer and the limitations of the measuring instrument
- neither the skill of the observer nor the limitations of the measuring instrument
- the limitations of the measuring instrument only
- the skill of the observer only
- none of these

[Add Question Here](#)

Question 25 **Multiple Choice**

0 points

[Modify](#)

[Remove](#)

Question

A scientist obtains the number 0.045006700 on a calculator. If this number actually has four (4) significant figures, how should it be written?

Answer

- 0.4567
- 0.4501
- 0.0450
- 0.04500
- ✓ 0.04501

[Add Question Here](#)

Question 26 **Multiple Choice**

0 points

[Modify](#)

[Remove](#)

Question

Express the number 0.000473 in scientific notation.

Answer

- 473×10^{-6}
- 4.73×10^2
- 4.73×10^4
- ✓ 4.73×10^{-4}
- 0.473×10^{-3}

[Add Question Here](#)

Question 27 **Multiple Choice**

0 points

[Modify](#)

[Remove](#)

Question

Express 165,000 in exponential notation.

Answer

- 1.65000×10^5
- ✓ 1.65×10^5
- 1.6500×10^{-5}
- 1.65×10^{-5}

165×10^3

[Add Question Here](#)[Modify](#) [Remove](#)Question 28 **Multiple Choice** **0 points****Question**

Express the number 0.0370 in scientific notation.

Answer

- 370×10^{-4}
- 3.70×10^2
- 3.7×10^{-2}
- 3.70×10^{-2}
- 0.370×10^{-1}

[Add Question Here](#)[Modify](#) [Remove](#)Question 29 **Multiple Choice** **0 points****Question**Express the number 3.44×10^{-3} in common decimal form.**Answer**

- 0.00344
- 3.44
- 3440
- 0.0344
- 0.000344

[Add Question Here](#)[Modify](#) [Remove](#)Question 30 **Multiple Choice** **0 points****Question**Express the number 1.75×10^4 in common decimal form.**Answer**

- 175000
- 0.0000175
- 0.000175
- 17500
- 1750

[Add Question Here](#)[Modify](#) [Remove](#)Question 31 **Multiple Choice** **0 points****Question**

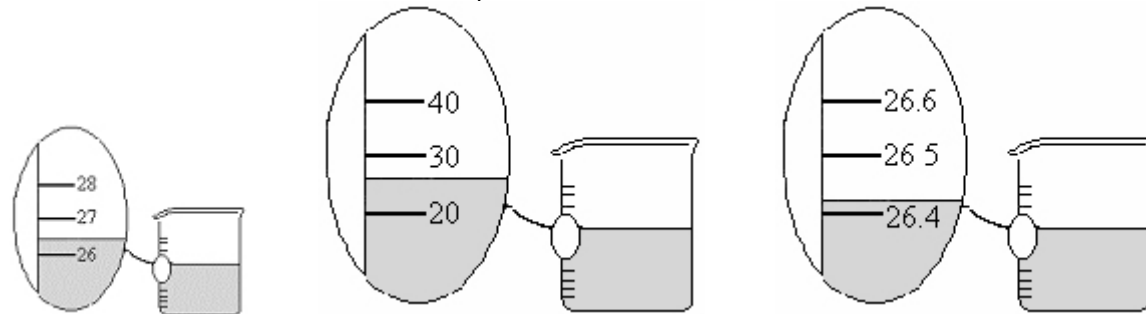
We generally report a measurement by recording all of the certain digits plus ____ uncertain digit(s).

Answer

- no
- one
- two
- three
- four

[Add Question Here](#)[Modify](#) [Remove](#)Question 32 **Multiple Choice** **0 points****Question**

The beakers shown below have different precisions as shown.



Suppose you pour the water from these three beakers into one container. What would be the volume in the container reported to the correct number of significant figures?

Answer

- 78.817 mL
- 78.82 mL
- 78.8 mL
- 80 mL
- 79 mL

[Add Question Here](#)[Modify](#) [Remove](#)Question 33 **Multiple Choice** **0 points****Question**

You are asked to determine the perimeter of the cover of your textbook. You measure the length as 37.34 cm and the width as 24.83 cm. How many significant figures should you report for the perimeter?

Answer

- 1
- 2
- 3
- 4
- 5

[Add Question Here](#)[Modify](#) [Remove](#)Question 34 **Multiple Choice** **0 points**

Question

Consider the numbers 23.68 and 4.12. The sum of these numbers has ____ significant figures, and the product of these numbers has ____ significant figures.

Answer

- 3, 3
- 4, 4
- 3, 4
- 4, 3
- none of these

[Add Question Here](#)[Modify](#)[Remove](#)

Question 35

Multiple Choice**0 points****Question**

Using the rules of significant figures, calculate the following:

$$\frac{6.167 + 66}{5.10}$$

Answer

- 14.2
- 15
- 14
- 80
- 14.15

[Add Question Here](#)[Modify](#)[Remove](#)

Question 36

Multiple Choice**0 points****Question**

Using the rules of significant figures, calculate the following: $4.0021 - 1.204$

Answer

- 2.798
- 3
- 2.7981
- 2.80
- 2.8

[Add Question Here](#)[Modify](#)[Remove](#)

Question 37

Multiple Choice**0 points****Question**

How many significant figures are there in the number 0.04560700?

Answer

- 4
- 5
- 7
- 8
- 9

[Add Question Here](#)[Modify](#)[Remove](#)

Question 38

Multiple Choice**0 points****Question**

How many significant figures are there in the number 0.0006952?

Answer

- 7
- 3
- 8
- 4
- 0

[Add Question Here](#)[Modify](#)[Remove](#)

Question 39

Multiple Choice**0 points****Question**

How many significant figures are there in the number 3.1400?

Answer

- 1
- 2
- 3
- 4
- 5

[Add Question Here](#)[Modify](#)[Remove](#)

Question 40

Multiple Choice**0 points****Question**

How many significant figures should be reported for the difference between 18.8694 mL and 18.57 mL?

Answer

- 1
- 2
- 3
- 4
- 6

[Add Question Here](#)[Modify](#)[Remove](#)

Question 41

Multiple Choice**0 points****Question**

What is the best answer to report for $\frac{3.478 \text{ g} \times 1.164 \text{ g}}{2.00 \text{ mL}} - 0.573 \text{ g/mL}$?

Answer

- 1.4470 g/mL
- 1.447 g/mL
- ✓ 1.45 g/mL
- 1.4 g/mL
- 1 g/mL

[Add Question Here](#)

[Modify](#) [Remove](#)

Question 42 **Multiple Choice** **0 points**

Question
What is the best answer to report for $(451 \times 0.0025) + 24.97$?

- Answer**
- 26.098
 - 26.10
 - 26.0975
 - 26
 - ✓ 26.1

[Add Question Here](#)

[Modify](#) [Remove](#)

Question 43 **Multiple Choice** **0 points**

Question
Convert 1027.8 g to mg.

- Answer**
- 1.0278 mg
 - 10.278 mg
 - 102.78 mg
 - 1.0278×10^3 mg
 - ✓ 1.0278×10^6 mg

[Add Question Here](#)

[Modify](#) [Remove](#)

Question 44 **Multiple Choice** **0 points**

Question
Express the volume 638.9 cm³ in liters.

- Answer**
- 638.9 L
 - 63.89 L
 - 6.389 L
 - ✓ 0.6389 L
 - 0.06389 L

[Add Question Here](#)

[Modify](#) [Remove](#)

Question 45 **Multiple Choice** **0 points**

Question
Convert 49.6 m³ to mm³.

- Answer**
- 4.96×10^7 mm³
 - ✓ 4.96×10^{10} mm³
 - 4.96×10^4 mm³
 - 4.96×10^{-5} mm³
 - 4.96×10^{-8} mm³

[Add Question Here](#)

[Modify](#) [Remove](#)

Question 46 **Multiple Choice** **0 points**

Question
The pressure of the earth's atmosphere at sea level is 14.7 lb/in². What is the pressure when expressed in g/cm²? (2.54 cm = 1 in., 2.205 lb = 1 kg)

- Answer**
- 2.62×10^3 g/cm²
 - ✓ 1.03×10^3 g/cm²
 - 5.02×10^0 g/cm²
 - 4.30×10^4 g/cm²
 - 2.09×10^{-1} g/cm²

[Add Question Here](#)

[Modify](#) [Remove](#)

Question 47 **Multiple Choice** **0 points**

Question
Convert 4489 mL to qts. (1 L = 1.06 qt)

- Answer**
- 4758 qts
 - 4.235 qts
 - 4.235×10^{-3} qts
 - 4235 qts
 - ✓ 4.758 qts

[Add Question Here](#)

[Modify](#) [Remove](#)

Question 48 **Multiple Choice** **0 points**

Question
Convert 94.4 lb to g. (1 lb = 453.6 g)

- Answer**
- 2.08×10^{-1} g
 - 4.28×10^3 g
 - 2.08×10^5 g

- 4.28×10^2 g
- 4.28×10^4 g

[Add Question Here](#)

[Modify](#) [Remove](#)

Question 49 **Multiple Choice** **0 points**

Question
Convert 91.0 mi to km. (1 m = 1.094 yds, 1 mi = 1760 yds)

- Answer**
- 9.96×10^1 km
 - 5.66×10^1 km
 - 1.46×10^8 km
 - 8.32×10^1 km
 - 1.46×10^2 km

[Add Question Here](#)

[Modify](#) [Remove](#)

Question 50 **Multiple Choice** **0 points**

Question
The density of liquid mercury is 13.6 g/mL. What is its density in units of lb/in³? (2.54 cm = 1 in., 2.205 lb = 1 kg)

- Answer**
- 1.57×10^{-2} lb/in³
 - 4.91×10^{-1} lb/in³
 - 1.01×10^{-1} lb/in³
 - 7.62×10^{-2} lb/in³
 - 1.83 lb/in³

[Add Question Here](#)

[Modify](#) [Remove](#)

Question 51 **Multiple Choice** **0 points**

Question
Convert 0.0816 ft³ to L. (2.54 cm = 1 in., 1 L = 1 dm³)

- Answer**
- 2.31×10^1 L
 - 2.31 L
 - 2.49×10^{-3} L
 - 2.88×10^{-3} L
 - 2.68 L

[Add Question Here](#)

[Modify](#) [Remove](#)

Question 52 **Multiple Choice** **0 points**

Question
In March 2008, gold reached a milestone value of \$1000 per troy ounce. At that price, what was the cost of a gram of gold? (1 troy ounce = 31.10 g)

- Answer**
- less than \$1
 - between \$1 and \$10
 - between \$10 and \$50
 - between \$50 and \$100
 - over \$100

[Add Question Here](#)

[Modify](#) [Remove](#)

Question 53 **Multiple Choice** **0 points**

Question
It is estimated that uranium is relatively common in the earth's crust, occurring in amounts of 4 g / metric ton. A metric ton is 1000 kg. At this concentration, what mass of uranium is present in 1.2 mg of the earth's crust?

- Answer**
- 5 ng
 - 5 μ g
 - 5 mg
 - 5×10^{-5} g
 - 5 cg

[Add Question Here](#)

[Modify](#) [Remove](#)

Question 54 **Multiple Choice** **0 points**

Question
A 20.0 mL sample of glycerol has a mass of 25.8 grams. What is the density of glycerol in ounces/quart?

(1.00 ounce = 28.4 grams, and 1.00 liter = 1.06 quarts)

- Answer**
- 42.9 oz/qt
 - 4.29×10^{-2} oz/qt
 - 857 oz/qt
 - 48.1 oz/qt
 - 25.8 oz/qt

[Add Question Here](#)

[Modify](#) [Remove](#)

Question 55 **Multiple Choice** **0 points**

Question
During a physics experiment, an electron is accelerated to 83 percent of the speed of light. What is the speed of the electron in miles per hour? (speed of light = 3.00×10^8 m/s, 1 km = 0.6214 mi)

- Answer**
- 2.5×10^8 mi/h
 - 5.6×10^{11} mi/h

- 6.7×10^8 mi/h
- 9.3×10^6 mi/h
- 5.6×10^8 mi/h

[Add Question Here](#)

Question 56 **Multiple Choice**

0 points

[Modify](#) [Remove](#)

Question

In the spring of 2008, petrol cost £1.039 per litre in London. On the same day, the exchange rate was \$1 = £0.481. What was the price of London petrol in dollars (\$) per gallon? (1 gal = 3.7854 L)

Answer

- \$ 3.93 /gal
- \$ 1.89 /gal
- \$ 8.18 /gal
- \$ 1.75 /gal
- \$ 7.87 /gal

[Add Question Here](#)

Question 57 **Multiple Choice**

0 points

[Modify](#) [Remove](#)

Question

For spring break you and some friends plan a road trip to a sunny destination that is 2185 miles away. If you drive a car that gets 29 miles per gallon and gas costs \$3.289/gal, about how much will it cost to get to your destination?

Answer

- \$ 500
- \$ 190
- \$ 250
- \$ 660
- \$ 7200

[Add Question Here](#)

Question 58 **Multiple Choice**

0 points

[Modify](#) [Remove](#)

Question

Convert 5.4 kg to lb. (1 kg = 2.205 lb)

Answer

- 12 lbs
- 1.2 lbs
- 2.4 lbs
- 0.012 lbs
- 11.91 lbs

[Add Question Here](#)

Question 59 **Multiple Choice**

0 points

[Modify](#) [Remove](#)

Question

Manganese makes up 1.3×10^{-4} percent by mass of the elements found in a normal healthy body. How many grams of manganese would be found in the body of a person weighing 200 lb? (2.205 lb = 1 kg)

Answer

- 0.57 g
- 0.12 g
- 12 g
- 57 g
- 1.2×10^{-4} g

[Add Question Here](#)

Question 60 **Multiple Choice**

0 points

[Modify](#) [Remove](#)

Question

In 1928, 13.9 g of a new element was isolated from 660 kg of the ore molybdenite. The percent by mass of this element in the ore was:

Answer

- 21 %
- 6.6 %
- 13.9 %
- 0.0021 %
- 9.2 %

[Add Question Here](#)

Question 61 **Multiple Choice**

0 points

[Modify](#) [Remove](#)

Question

432 Kelvin equals

Answer

- 159 °F
- 273 °F
- 705 °F
- 159 °C
- 705 °C

[Add Question Here](#)

Question 62 **Multiple Choice**

0 points

[Modify](#) [Remove](#)

Question

The melting point of a certain element is 396°C. What is this on the Fahrenheit scale?
($T_{°F} = T_{°C} \times (9°F / 5°C) + 32°F$)

Answer

- 493 °F
- 252 °F
- 986 °F
- 745 °F

[Add Question Here](#)Question 63 **Multiple Choice** **0 points**[Modify](#) [Remove](#)**Question**Convert: $-39.9^{\circ}\text{C} = \underline{\hspace{2cm}}$ °F. ($T_{\text{°F}} = T_{\text{°C}} \times (9^{\circ}\text{F} / 5^{\circ}\text{C}) + 32^{\circ}\text{F}$)

- Answer**
- 71.8 °F
 - 104 °F
 - ✓ -39.8 °F
 - 104 °F
 - 233.1 °F

[Add Question Here](#)Question 64 **Multiple Choice** **0 points**[Modify](#) [Remove](#)**Question**As warm water sits in a cool room, you measure the temperature change ($\Delta T = T_{\text{final}} - T_{\text{initial}}$). Which of the following is true?

- Answer** ✓
- The temperature change (ΔT) is bigger if you are measuring in °F.
 - The temperature change (ΔT) is bigger if you are measuring in °C.
 - The temperature change (ΔT) will be the same regardless of the scale you use.
 - Answer A or B is correct, depending on the difference in temperature between the water and the room.
 - None of the above.

[Add Question Here](#)Question 65 **Multiple Choice** **0 points**[Modify](#) [Remove](#)**Question**The melting point of metronidazole is 160.5°C . What is the melting point of metronidazole on the Fahrenheit scale?

$$(T_{\text{°F}} = T_{\text{°C}} \times (9^{\circ}\text{F} / 5^{\circ}\text{C}) + 32^{\circ}\text{F})$$

- Answer**
- 121.2 °F
 - 288.9 °F
 - 192.5 °F
 - 433.5 °F
 - ✓ 320.9 °F

[Add Question Here](#)Question 66 **Multiple Choice** **0 points**[Modify](#) [Remove](#)**Question**In 1984, some drums of uranium hexafluoride were lost in the English Channel, which is known for its cold water (about 15°C). The melting point of uranium hexafluoride is 148°F . In what physical state is the uranium hexafluoride in these drums? ($T_{\text{°F}} = T_{\text{°C}} \times (9^{\circ}\text{F} / 5^{\circ}\text{C}) + 32^{\circ}\text{F}$)

- Answer**
- ✓ solid
 - liquid
 - gas
 - a mixture of solid and liquid
 - not enough information

[Add Question Here](#)Question 67 **Multiple Choice** **0 points**[Modify](#) [Remove](#)**Question**The melting point of indium is 156.2°C . At 323°F , what is the physical state of indium? ($T_{\text{°F}} = T_{\text{°C}} \times (9^{\circ}\text{F} / 5^{\circ}\text{C}) + 32^{\circ}\text{F}$)

- Answer**
- Solid.
 - Liquid.
 - Gas.
 - ✓ Not enough information.
- At 323°F , the indium is partially solid and partially liquid; there is an equilibrium between the two states.

[Add Question Here](#)Question 68 **Multiple Choice** **0 points**[Modify](#) [Remove](#)**Question**On a new temperature scale ($^{\circ}\text{Z}$), water boils at 120.0°Z and freezes at 40.0°Z . Calculate the normal human body temperature using this temperature scale. On the Celsius scale, normal human body temperature could typically be 37.0°C , and water boils at 100.0°C and freezes at 0.00°C .

- Answer**
- 2960 °Z
 - 12.3 °Z
 - ✓ 69.6 °Z
 - 111 °Z
 - 29.6 °Z

[Add Question Here](#)Question 69 **Multiple Choice** **0 points**[Modify](#) [Remove](#)**Question**The calibration points for the linear Reaumur scale are the usual melting point of ice and boiling point of water, which are assigned the values 0°R and 80°R , respectively. The boiling point of benzene is 80.1°F . What is this temperature in $^{\circ}\text{R}$?

- Answer**
- 160.1 °R
 - 49.8 °R
 - 26.7 °R
 - 212.2 °R
 - ✓ 21.4 °R

[Add Question Here](#)

Question 70 - Multiple Choice

0 points

[Modify](#) [Remove](#)**Question**

A monolayer containing 3.16×10^{-6} g of oleic acid has an area of 20.0 cm^2 . The density of oleic acid is 0.895 g/mL . What is the thickness of the monolayer (the length of an oleic acid molecule)?

Answer

- $7.06 \times 10^{-5} \text{ cm}$
- $5.66 \times 10^{-6} \text{ cm}$
- $5.66 \times 10^{-5} \text{ cm}$
- $1.77 \times 10^{-7} \text{ cm}$
- $1.41 \times 10^{-7} \text{ cm}$

[Add Question Here](#)

Question 71 - Multiple Choice

0 points

[Modify](#) [Remove](#)**Question**

The density of gasoline is 0.7025 g/mL at 20°C . When gasoline is added to water:

Answer

- It will float on top.
- It will sink to the bottom.
- It will mix so, you can't see it.
- The mixture will improve the running of the motor.
- None of these things will happen.

[Add Question Here](#)

Question 72 - Multiple Choice

0 points

[Modify](#) [Remove](#)**Question**

A piece of bismuth with a mass of 15.65 g is submerged in 46.3 cm^3 of water in a graduated cylinder. The water level increases to 47.9 cm^3 . The correct value for the density of bismuth from these data is:

Answer

- 9.780 g/cm^3
- 9.8 g/cm^3
- 0.10 g/cm^3
- 0.327 g/cm^3
- 3.06 g/cm^3

[Add Question Here](#)

Question 73 - Multiple Choice

0 points

[Modify](#) [Remove](#)**Question**

The density of a liquid is determined by successively weighing 25, 50, 75, 100, and 125 mL of the liquid in a 250-mL beaker.

Reference: Ref 1-2

If volume of liquid is plotted along the horizontal axis, and total mass of beaker plus liquid is plotted on the vertical axis:

Answer

- The x, or horizontal, intercept is the negative value of the weight of the beaker.
- The y, or vertical, intercept is the weight of the empty beaker.
- The slope of the line is 1.0.
- The line will pass through the origin.
- The slope of the line is independent of the identity of the liquid.

[Add Question Here](#)

Question 74 - Multiple Choice

0 points

[Modify](#) [Remove](#)**Question**

The density of a liquid is determined by successively weighing 25, 50, 75, 100, and 125 mL of the liquid in a 250-mL beaker.

Reference: Ref 1-2

Considering the plot of total mass (y-axis) versus volume (x-axis), which of the following is true?

Answer

- The plot should be rather linear because the slope measures the density of a liquid.
- The plot should be curved upward because the slope measures the density of a liquid.
- The plot should be curved upward because the mass of the liquid is higher in successive trials.
- The plot should be linear because the mass of the beaker stays constant.
- None of the above.

[Add Question Here](#)

Question 75 - Multiple Choice

0 points

[Modify](#) [Remove](#)**Question**

A 20.0 mL sample of glycerol has a mass of 25.2 grams. What is the mass of a 48-mL sample of glycerol?

Answer

- 10.5 g
- 38 g
- $2.4 \times 10^4 \text{ g}$
- 60 g
- 60.5 g

[Add Question Here](#)

Question 76 - Multiple Choice

0 points

[Modify](#) [Remove](#)**Question**

Suppose that you purchased a water bed with the dimensions $2.55 \text{ m} \times 2.53 \text{ dm} \times 213 \text{ cm}$. What mass of water does this bed contain?

Answer

- $1.37 \times 10^3 \text{ g}$
- $1.37 \times 10^4 \text{ g}$
- $1.37 \times 10^5 \text{ g}$

1.37 × 10⁸ g
✓ 1.37 × 10⁶g

[Add Question Here](#)

Question 77 - Multiple Choice

0 points

[Modify](#) [Remove](#)

Question

A freighter carrying a cargo of uranium hexafluoride sank in the English Channel in late August 1984. The cargo of uranium hexafluoride weighed 2.253×10^8 kg and was contained in 30 drums, each containing 1.47×10^6 L of UF₆. What is the density (g/mL) of uranium hexafluoride?

Answer

- 1.53 g/mL
- ✓ 5.11 g/mL
- 2.25 g/mL
- 0.196 g/mL
- 51.1 g/mL

[Add Question Here](#)

Question 78 - Multiple Choice

0 points

[Modify](#) [Remove](#)

Question

The boiling of water is a

Answer

- physical change because the water merely disappears
- ✓ physical change because the gaseous water is chemically the same as the liquid
- chemical change because heat is needed for the process to occur
- chemical change because a gas (steam) is given off
- chemical and physical damage

[Add Question Here](#)

Question 79 - Multiple Choice

0 points

[Modify](#) [Remove](#)

Question

The state of matter for an object that has a definite volume but not a definite shape is

Answer

- solid state
- ✓ liquid state
- gaseous state
- elemental state
- mixed state

[Add Question Here](#)

Question 80 - Multiple Choice

0 points

[Modify](#) [Remove](#)

Question

The state of matter for an object that has both definite volume and definite shape is

Answer

- ✓ solid state
- liquid state
- gaseous state
- elemental state
- mixed state

[Add Question Here](#)

Question 81 - Multiple Choice

0 points

[Modify](#) [Remove](#)

Question

_____ are substances with constant composition that can be broken down into elements by chemical processes.

Answer

- Solutions
- Mixtures
- ✓ Compounds
- Quarks
- Heterogeneous mixtures

[Add Question Here](#)

Question 82 - Multiple Choice

0 points

[Modify](#) [Remove](#)

Question

A method of separation that employs a system with two phases of matter, a mobile phase and a stationary phase, is called

Answer

- filtration
- ✓ chromatography
- distillation
- vaporization
- homogenization

[Add Question Here](#)

Question 83 - Multiple Choice

0 points

[Modify](#) [Remove](#)

Question

Which of the following statements is false?

Answer

- Solutions are always homogeneous mixtures.
- The terms "atom" and "element" can have different meanings.
- Elements can exist as atoms or molecules.
- ✓ Compounds can exist as atoms or molecules.
- At least two of the above statements (A-D) are false.

[Add Question Here](#)

Multiple Choice

0 points

[Modify](#) [Remove](#)

Question 84

Question

An example of a pure substance is

Answer

- elements
- compounds
- pure water
- carbon dioxide
- ✓ all of these

[Add Question Here](#)

Question 85

Multiple Choice

0 points

[Modify](#)

[Remove](#)

Question

A solution is also called a

Answer

- ✓ homogeneous mixture
- heterogeneous mixture
- pure mixture
- compound
- distilled mixture

[Add Question Here](#)

Question 86

Multiple Choice

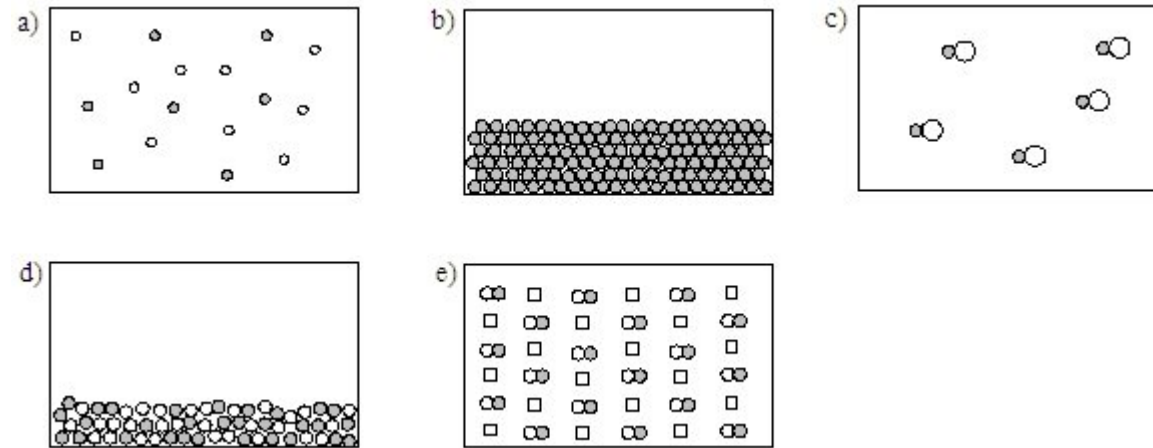
0 points

[Modify](#)

[Remove](#)

Question

Consider the following choices when answering questions 86-89.



Reference: Ref 1-3

Which best represents a homogeneous mixture of an element and a compound?

Answer

- option a
- option b
- option c
- option d
- ✓ option e

[Add Question Here](#)

Question 87

Multiple Choice

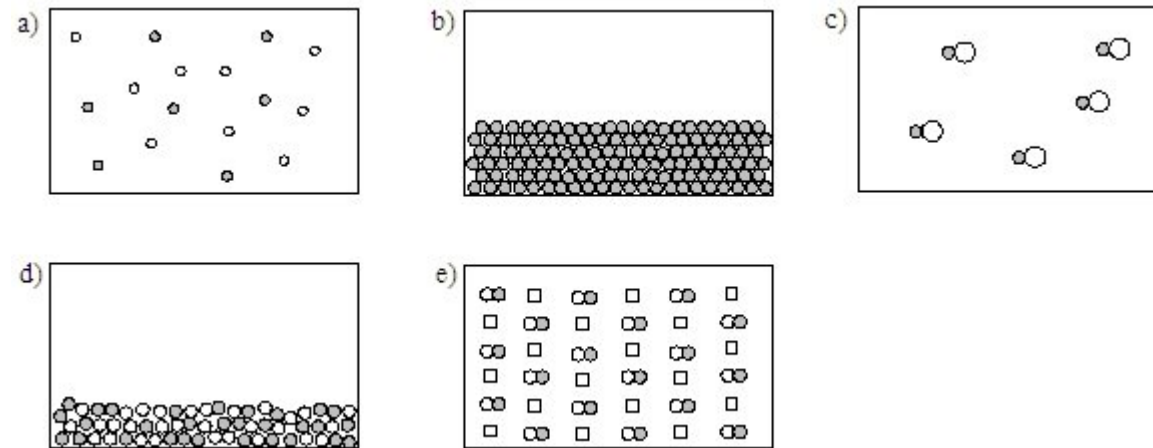
0 points

[Modify](#)

[Remove](#)

Question

Consider the following choices when answering questions 86-89.



Reference: Ref 1-3

Which best represents a gaseous compound?

Answer

- option a
- option b
- ✓ option c
- option d
- option e

[Add Question Here](#)

Question 88

Multiple Choice

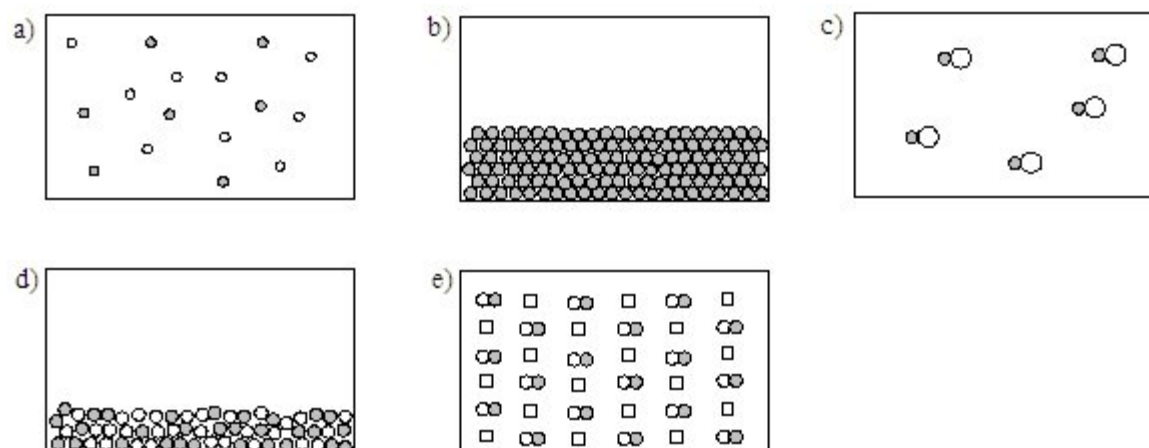
0 points

[Modify](#)

[Remove](#)

Question

Consider the following choices when answering questions 86-89.



Reference: Ref 1-3

Which best represents a solid element?

Answer

- option a
- option b
- option c
- option d
- option e

[Add Question Here](#)

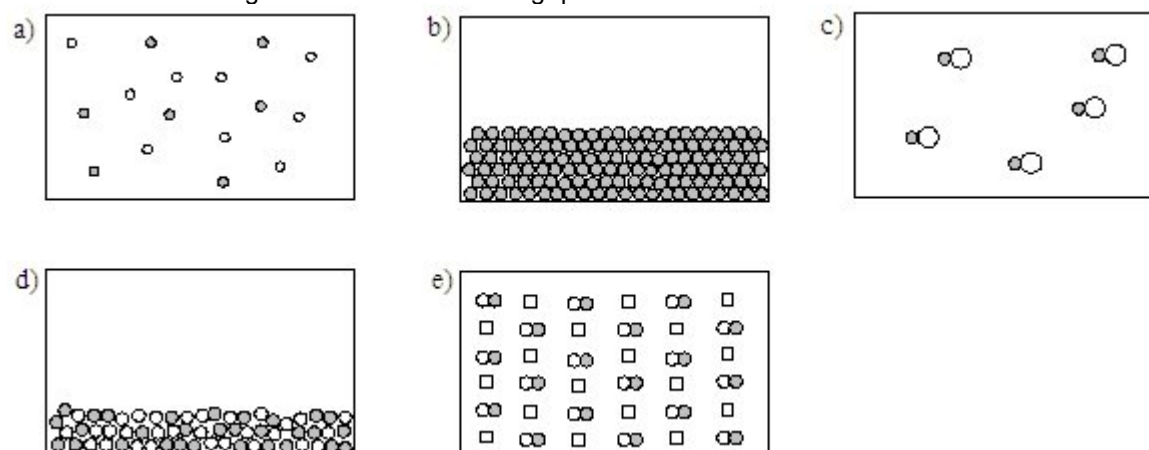
[Modify](#) [Remove](#)

Question 89 **Multiple Choice**

0 points

Question

Consider the following choices when answering questions 86-89.



Reference: Ref 1-3

Which best represents a heterogeneous mixture of two elements?

Answer

- option a
- option b
- option c
- option d
- option e

[Add Question Here](#)

[Modify](#) [Remove](#)

Question 90 **True/False**

0 points

Question

All physical changes are accompanied by chemical changes.

Answer

- True
- False

[Add Question Here](#)

[Modify](#) [Remove](#)

Question 91 **True/False**

0 points

Question

Color changes always indicate a chemical change.

Answer

- True
- False

[Add Question Here](#)

[Modify](#) [Remove](#)

Question 92 **Essay**

0 points

Question

What are the components of the scientific method?

Answer

- 1) Making observations (collecting data)
 - 2) Suggesting a possible explanation (formulating a hypothesis)
 - 3) Doing experiments to test the possible explanation (testing the hypothesis)
- Depending on the data from the experiments, the hypothesis may be modified and retested.
See Sec. 1.2 of Zumdahl, *Chemistry*.

[Add Question Here](#)

[Modify](#) [Remove](#)

Question 93 **Essay**

0 points

Question

Garfield (weighing 24 lbs) took a flight to the moon on the space shuttle. As usual, he stuffed himself with lasagna during the entire flight and napped when he wasn't eating. Much to his delight when he got to the moon he found he weighed only 6 lbs. He immediately proclaimed a quick weight loss diet. Explain the fallacy in his reasoning. Assume gravity on the moon to be about one-sixth that of Earth.

Answer

Garfield (the cartoon cat) may have a different weight on the moon, but he has the same mass. He has apparently forgotten that weight is the response of mass to gravity, and since the moon has a smaller gravitational field his weight there is less.
See Sec. 1.3 of Zumdahl, *Chemistry*.

[Add Question Here](#)

Question 94

Essay

0 points

[Modify](#)

[Remove](#)

Question

Contrast the terms precision and accuracy.

Answer Precision refers to the agreement among several measurements of the same quantity.

Accuracy refers to the agreement of a measurement with the true value.

Measurements may often be precise without being accurate.

See Sec. 1.4 of Zumdahl, *Chemistry*.

[Add Question Here](#)

Question 95

Essay

0 points

[Modify](#)

[Remove](#)

Question

What data would you need to estimate the money you would spend on gas to drive your car from Los Angeles to Chicago? Provide a sample calculation.

Answer Data would include: average price per gallon of gasoline, average MPG of the car, mileage of trip.

$$S = \text{miles} \times \frac{\text{gal}}{\text{miles}} \times \frac{\$}{\text{gal}}$$

[Add Question Here](#)

Question 96

Essay

0 points

[Modify](#)

[Remove](#)

Question

On a new temperature scale ($^{\circ}Y$), water boils at $155.0^{\circ}Y$ and freezes at $0.00^{\circ}Y$. Calculate the normal human body temperature using this temperature scale. On the Fahrenheit scale, normal human body temperature is $98.6^{\circ}F$, and water boils at $212.0^{\circ}F$ and freezes at $32.0^{\circ}F$.

Answer $57.3^{\circ}Y$

The formula derived from the data is $Y = (155/180)(F - 32)$.

[Add Question Here](#)

Question 97

Essay

0 points

[Modify](#)

[Remove](#)

Question

Explain how Archimedes might have used the concept of density to determine whether the king's crown was pure gold. (density of gold = 19.32 g/cm^3)

Answer If the density of gold was known to Archimedes, he could weigh the crown to determine its mass and then submerge the crown in water to measure the volume by displacement. By comparing the density of the crown calculated from this data to the known density of gold, he could find out if the crown was made of gold.

Archimedes' Principle is slightly different, and not specifically addressed in this text.

See Sec. 1.8 of Zumdahl, *Chemistry*.

[Add Question Here](#)

Question 98

Essay

0 points

[Modify](#)

[Remove](#)

Question

Explain the main differences between a compound and a mixture.

Answer A mixture may be separated into pure substances by physical means, while a compound requires chemical means to separate it into elements.

A compound has constant composition (always the same ratio of elements), while a mixture may have varying composition.

See Sec. 1.9 of Zumdahl, *Chemistry*.

[Add Question Here](#)

Question 99

Essay

0 points

[Modify](#)

[Remove](#)

Question

Give three physical methods used by chemists to separate mixtures and identify the type of mixture best suited for each process.

Answer Three common methods are distillation, filtration, and chromatography.

Distillation is useful for mixtures of volatile liquids (or mixtures of gases that can be condensed).

Filtration is useful to separate a mixture of a solid and a liquid.

Chromatography may be used for mixtures of volatile substances (gas chromatography) or soluble substances (paper chromatography).

See Sec. 1.9 of Zumdahl, *Chemistry*.

[Add Question Here](#)

Question 100

Essay

0 points

[Modify](#)

[Remove](#)

Question

Name three methods for the separation of mixtures.

Answer Three common methods are distillation, filtration, and chromatography.

See Sec. 1.9 of Zumdahl, *Chemistry*.

[Add Question Here](#)