Pool Canvas

Add, modify, and remove questions. Select a question type from the Add Question drop-down list and click **Go** to add questions. Use Creation Settings to establish which default options, such as feedback and images, are available for question creation.

Add Calculated Formula GO | Creation Settings

Name Chapter 1 Keys to the Study of Chemistry
Description Question pool for Chapter 1 Keys to the Study of Chemistry
Instructions

Modify

Add Question Here

Question 1 **Multiple Choice** **0 points** Modify Remove

Question
Which one of the following is a "substance" in the sense of the word as used in your textbook?
Answer
air
tap water
sea water
✓ water
toothpaste

Add Question Here

Question 2 **Multiple Choice** **0 points** Modify Remove

Question
Select the best statement.
Answer
✓ Physical changes may be reversed by changing the temperature.
Physical changes alter the composition of the substances involved.
Physical properties are not valid characteristics for identifying a substance.
Physical properties are mostly extensive in nature.
Physical changes are usually accompanied by chemical changes.

Add Question Here

Question 3 **Multiple Choice** **0 points** Modify Remove

Question
Select the best statement.
Answer
Chemical changes provide the only valid basis for identification of a substance.
Chemical changes are easily reversed by altering the temperature of the system.
✓ Chemical changes always produce substances different from the starting materials.
Chemical changes are associated primarily with extensive properties.
Chemical changes are accompanied by changes in the total mass of the substances involved.

Add Question Here

Question 4 **Multiple Choice** **0 points** Modify Remove

Question
Which of the following is a chemical change?
Answer
boiling of water
melting wax
✓ broiling a steak on a grill
condensing water vapor into rainfall
carving a piece of wood

Add Question Here

Question 5 **Multiple Choice** **0 points** Modify Remove

Question
Water vapor is less dense than ice because
Answer
molecules in the gas phase are in constant motion.
molecules in the gas phase have more potential energy than in solids.
molecules in the gas phase have more kinetic energy than in solids.
gaseous molecules have less mass.
✓ molecules in the gas phase have more space between them than in solids.

Add Question Here

Question 6 **Multiple Choice** **0 points** Modify Remove

Question
During the swing of a frictionless pendulum, what energy form(s) remain constant?
Answer
kinetic energy only
potential energy only
both kinetic energy and potential energy
✓ kinetic plus potential energy
None of these forms remains constant.

Add Question Here

Question 7 **Multiple Choice** **0 points** Modify Remove

Question
Which of the following activities is not a part of good science?

Answer
- proposing a theory
- developing a hypothesis
- making quantitative observations
- designing experiments
- ✓ indulging in speculation

Add Question Here

Question 8 **Multiple Choice** **0 points** Modify Remove

Question
The distance between carbon atoms in ethylene is 134 picometers. Which of the following expresses that distance in meters?

Answer
- 1.34×10^{-13} m
- 1.34×10^{-12} m
- ✓ 1.34×10^{-10} m
- 1.34×10^{-7} m
- 1.34×10^{-6} m

Add Question Here

Question 9 **Multiple Choice** **0 points** Modify Remove

Question
The average distance from Earth to the Sun is 150 megameters. What is that distance in meters?

Answer
- ✓ 1.5×10^{8} m
- 1.5×10^{6} m
- 1.5×10^{5} m
- 1.5×10^{3} m
- 1.5×10^{-6} m

Add Question Here

Question 10 **Multiple Choice** **0 points** Modify Remove

Question
The mass of a sample is 550 milligrams. Which of the following expresses that mass in kilograms?

Answer
- 5.5×10^{8} kg
- 5.5×10^{5} kg
- ✓ 5.5×10^{-4} kg
- 5.5×10^{-6} kg
- 5.5×10^{-1} kg

Add Question Here

Question 11 **Multiple Choice** **0 points** Modify Remove

Question
A dose of medication was prescribed to be 35 microliters. Which of the following expresses that volume in centiliters?

Answer
- 3.5×10^{5} cL
- 3.5×10^{4} cL
- 3.5 cL
- 3.5×10^{-4} cL
- ✓ 3.5×10^{-3} cL

Add Question Here

Question 12 **Multiple Choice** **0 points** Modify Remove

Question
Which of the following represents the largest volume?

Answer
- 10,000 µL
- 1000 pL
- ✓ 100 mL
- 10 nL
- 10 cm^3

Add Question Here

Question 13 **Multiple Choice** **0 points** Modify Remove

Question
You prepare 1000. mL of tea and transfer it to a 1.00 quart pitcher for storage. Which of the following statements is true?

Answer
- The pitcher will be filled to 100% of its capacity with no tea spilled.
- The pitcher will be filled to about 95% of its capacity.
- The pitcher will be filled to about 50% of its capacity.
- ✓ The pitcher will be completely filled and a small amount of tea will overflow.
- The pitcher will be completely filled and most of the tea will overflow.

Add Question Here

Question 14 **Multiple Choice** **0 points** Modify Remove

Question
In an average year the American chemical industry produces more than 9.5 million metric tons of sodium carbonate. Over half of this is used in the manufacture of glass while another third is used in the production of detergents and other chemicals. How many pounds of sodium carbonate are produced annually?

Answer

✓ 2.1×10^{10} lb
4.3×10^{9} lb
1.1×10^{7} lb
2.2×10^{6} lb
2.1×10^{4} lb

Add Question Here

Question 15 **Multiple Choice** **0 points** Modify Remove

Question
A large pizza has a diameter of 15 inches. Express this diameter in centimeters.

Answer

✓ 38 cm
24 cm
18 cm
9.3 cm
5.9 cm

Add Question Here

Question 16 **Multiple Choice** **0 points** Modify Remove

Question
The average distance between the Earth and the Moon is 240,000 miles. Express this distance in kilometers.

Answer

6.1×10^{5} km
5.3×10^{5} km
✓ $3.9 \times l0^{5}$ km
1.5×10^{5} km
9.4×10^{4} km

Add Question Here

Question 17 **Multiple Choice** **0 points** Modify Remove

Question
The area of a 15-inch pizza is 176.7 in^2. Express this area in square centimeters.

Answer

✓ 1140. cm^2
448.8 cm^2
96.8 cm^2
69.57 cm^2
27.39 cm^2

Add Question Here

Question 18 **Multiple Choice** **0 points** Modify Remove

Question
The speed needed to escape the pull of Earth's gravity is 11.3 km/s. What is this speed in mi/h?

Answer

65,500 mi/h
✓ 25,300 mi/h
18,200 mi/h
1,090 mi/h
5.02×10^{-3} mi/h

Add Question Here

Question 19 **Multiple Choice** **0 points** Modify Remove

Question
The density of mercury, the only metal to exist as a liquid at room temperature, is 13.6 g/cm^3. What is that density in pounds per cubic inch?

Answer

849 lb/in^3
491 lb/in^3
376 lb/in^3
✓ 0.491 lb/in^3
1.83×10^{-3} lb/in^3

Add Question Here

Question 20 **Multiple Choice** **0 points** Modify Remove

Question
Given that 1 inch = 2.54 cm, 1 cm^3 is equal to

Answer

16.4 in^3
6.45 in^3
0.394 in^3
0.155 in^3
✓ 0.0610 in^3

Add Question Here

Question 21 **Multiple Choice** **0 points** Modify Remove

Question

At a pressure of one billionth (10^{-9}) of atmospheric pressure, there are about 2.7×10^{10} molecules in one cubic centimeter of a gas. How many molecules is this per cubic meter?

Answer

✓ 2.7×10^{16}

2.7×10^{14}

2.7×10^{12}

2.7×10^{8}

2.7×10^{4}

Add Question Here

Question 22 **Multiple Choice** **0 points** Modify Remove

Question

If the price of gold at the morning fixing in London was $5310 per lb, what would a kilogram of gold have cost in £ (pounds)? (Assume an exchange rate of $1.00 = £0.545)

Answer

£1310

£3510

✓ £6370

£10400

£17100

Add Question Here

Question 23 **Multiple Choice** **0 points** Modify Remove

Question

Which of the following is not an S.I. base unit?

Answer

meter

ampere

second

✓ gram

kelvin

Add Question Here

Question 24 **Multiple Choice** **0 points** Modify Remove

Question

The S.I. base unit of mass is

Answer

mg

g

✓ kg

metric ton

lb

Add Question Here

Question 25 **Multiple Choice** **0 points** Modify Remove

Question

The S.I. prefix mega- (M) means

Answer

10^{-6}

10^{-3}

10^{3}

✓ 10^{6}

10^{9}

Add Question Here

Question 26 **Multiple Choice** **0 points** Modify Remove

Question

The S.I. unit of speed (velocity) is

Answer

km/h

km/s

m/h

✓ m/s

none of these choices is correct

Add Question Here

Question 27 **Multiple Choice** **0 points** Modify Remove

Question

Which of the following is an extensive property of oxygen?

Answer

boiling point

temperature

average kinetic energy of molecules

density

✓ mass

Add Question Here

Question 28 **Multiple Choice** **0 points** Modify Remove

Question
A flask has a mass of 78.23 g when empty and 593.63 g when filled with water. When the same flask is filled with concentrated sulfuric acid, H_2SO_4, its mass is 1026.57 g. What is the density of concentrated sulfuric acid? (Assume water has a density of 1.00 g/cm^3 at the temperature of the measurement.)

Answer

- 1.992 g/cm^3
- ✓ 1.840 g/cm^3
- 1.729 g/cm^3
- 1.598 g/cm^3
- 0.543 g/cm^3

Add Question Here

Question 29 **Multiple Choice** **0 points** Modify Remove

Question
Talc is a mineral that has low conductivity for heat and electricity and that is not attacked by acid. It is used as talcum powder and face powder. A sample of talc weighs 35.97 g in air and 13.65 g in mineral oil (d = 1.75 g/cm^3). What is the density of talc?

Answer

- 4.61 g/cm^3
- ✓ 2.82 g/cm^3
- 2.63 g/cm^3
- 2.44 g/cm^3
- 1.61 g/cm^3

Add Question Here

Question 30 **Multiple Choice** **0 points** Modify Remove

Question
Acetone, which is used as a solvent and as a reactant in the manufacture of Plexiglas®, boils at 56.1°C. What is the boiling point in degrees Fahrenheit?

Answer

- 159°F
- ✓ 133°F
- 101°F
- 69.0°F
- 43.4°F

Add Question Here

Question 31 **Multiple Choice** **0 points** Modify Remove

Question
Isopropyl alcohol, commonly known as rubbing alcohol, boils at 82.4°C. What is the boiling point in kelvins?

Answer

- 387.6 K
- ✓ 355.6 K
- 323.6 K
- 190.8 K
- -190.8 K

Add Question Here

Question 32 **Multiple Choice** **0 points** Modify Remove

Question
Acetic acid boils at 244.2°F. What is its boiling point in degrees Celsius?

Answer

- 382.0°C
- 167.7°C
- 153.4°C
- ✓ 117.9°C
- 103.7°C

Add Question Here

Question 33 **Multiple Choice** **0 points** Modify Remove

Question
Select the answer that expresses the result of this calculation with the correct number of significant figures.

$$\frac{13.602 \times 1.90 \times 3.06}{4.2 \times 1.4097} =$$

Answer

- 13.3568
- 13.357
- 13.36
- 13.4
- ✓ 13

Add Question Here

Question 34 **Multiple Choice** **0 points** Modify Remove

Question
Select the answer that expresses the result of this calculation with the correct number of significant figures and with correct units.

$$16.18\,cm \times 9.6114\,g \div 1.4783\,cm^2 =$$

Answer

105.2 g/cm^3
105.2 g/cm^2
✓ 105.2 g/cm
72.13 g/cm^2
72.13 g/cm

Add Question Here

Question 35 **Multiple Choice** **0 points** Modify Remove

Question
Which measurement is expressed to 4 significant figures?

Answer

0.00423 kg
24.049 cm
1300 K
82,306 m
✓ 62.40 g

Add Question Here

Question 36 **Multiple Choice** **0 points** Modify Remove

Question
Express 96,342 m using 2 significant figures.

Answer

9.60 × 10^4 m
✓ 9.6 × 10^4 m
9.60 × 10^{-4} m
96,000. m

Add Question Here

Question 37 **Multiple Choice** **0 points** Modify Remove

Question
Select the answer with the correct number of decimal places for the following sum:
$13.914\ cm + 243.1\ cm + 12.00460\ cm =$

Answer

269.01860 cm
269.0186 cm
269.019 cm
269.02 cm
✓ 269.0 cm

Add Question Here

Question 38 **Multiple Choice** **0 points** Modify Remove

Question
The appropriate number of significant figures in the result of 15.234 × 15.208 is

Answer

2
3
4
✓ 5
6

Add Question Here

Question 39 **Multiple Choice** **0 points** Modify Remove

Question
The appropriate number of significant figures in the result of 15.234 - 15.208 is

Answer

1
✓ 2
3
4
5

Add Question Here

Question 40 **Multiple Choice** **0 points** Modify Remove

Question
The result of (3.8621 × 1.5630) - 5.98 is properly written as

Answer

✓ 0.06
0.056
0.0565
0.05646
0.056462

Add Question Here

Question 41 **Multiple Choice** **0 points** Modify Remove

Question
As chief chemist at Superior Analytical Products (SAP) you must design an experiment to determine the density of an unknown liquid to three (3) significant figures. The density is of the order of 1 g/cm^3. You have approximately 7 mL of the liquid and only graduated cylinders and balances are available for your use. Which of the following combinations of equipment will allow you to meet but not exceed your goal?

Answer

Graduated cylinder with ±0.1 mL uncertainty; balance with ±0.1 g uncertainty
Graduated cylinder with ±0.01 mL uncertainty; balance with ±0.1 g uncertainty
✓ Graduated cylinder with ±0.01 mL uncertainty; balance with ±0.01 g uncertainty
Graduated cylinder with ±0.001 mL uncertainty; balance with ±0.001 g uncertainty
Graduated cylinder with ±0.1 mL uncertainty; balance with ±0.001 g uncertainty

Add Question Here

Question 42 **Multiple Choice** **0 points** Modify Remove

Question

Bud N. Chemist must determine the density of a mineral sample. His four trials yield densities of 4.77 g/cm^3, 4.67 g/cm^3, 4.69 g/cm^3, and 4.81 g/cm^3. Independent studies found the correct density to be 4.75 g/cm^3. Which of the following statements represents the best analysis of the data?

Answer

✓ Bud's results have much greater accuracy than precision.
Bud's results have much greater precision than accuracy.
Bud's results have high accuracy and high precision.
Bud's results have low accuracy and low precision.
Bud's equipment is faulty.

Add Question Here

Question 43 **Multiple Choice** **0 points** Modify Remove

Question

As part of an experiment to determine the density of a new plastic developed in her laboratory, Sara Ann Dippity measures the volume of a solid sample. Her four trials yield volumes of 12.37 cm^3, 12.41 cm^3, 12.39 cm^3, and 12.38 cm^3. Measurements of other scientists in the lab give an average volume of 12.49 cm^3. Which of the following statements represents the best analysis of the data?

Answer

Sara's results have low precision and high accuracy.
Sara's results have high precision and high accuracy.
✓ Sara's results have greater precision than accuracy.
Sara's results have greater accuracy than precision.
Sara has been using a faulty instrument to measure the volume.

Add Question Here

Question 44 **Multiple Choice** **0 points** Modify Remove

Question

Which of the following correctly expresses 52,030.2 m in scientific notation?

Answer

✓ 5.20302 × 10^4 m
5.20302 × 10^5 m
5.203 × 10^4 m
5.20 × 10^4 m
5.2 × 10^4 m

Add Question Here

Question 45 **Multiple Choice** **0 points** Modify Remove

Question

Which of the following correctly expresses 0.000007913 g in scientific notation?

Answer

7.913 × 10^6 g
7.913 × 10^5 g
7.913 × 10^{-5} g
✓ 7.913 × 10^{-6} g
7.913 × 10^{-9} g

Add Question Here

Question 46 **Essay** **0 points** Modify Remove

Question

An evacuated 276 mL glass bulb weighs 129.6375 g. Filled with an unknown gas, the bulb weighs 130.0318 g. Calculate the gas density in g/L, and express it with an appropriate number of significant figures.

Answer 1.43 g/L

Add Question Here

Question 47 **True/False** **0 points** Modify Remove

Question

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

Answer

True
✓ False

Add Question Here

Question 48 **True/False** **0 points** Modify Remove

Question

An important aim in much chemical work is to use macroscopic measurements in order to gain an understanding of the microscopic world.

Answer

✓ True
False

Add Question Here

Question 49 **True/False** **0 points** Modify Remove

Question
The potential energy of a car moving on a level road does not depend on its speed.

Answer

✓ True
False

Add Question Here

Question 50 **True/False** **0 points** Modify Remove

Question
When a wooden match burns in air, chemical potential energy is converted to kinetic energy.

Answer

✓ True
False

Add Question Here

Question 51 **True/False** **0 points** Modify Remove

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

Answer

True
✓ False

Add Question Here

Question 52 **True/False** **0 points** Modify Remove

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

Answer

✓ True
False

Add Question Here

Question 53 **True/False** **0 points** Modify Remove

Question
The numerical value of any temperature expressed in Celsius is always different from the numerical value of the same temperature in Fahrenheit.

Answer

True
✓ False

Add Question Here

Question 54 **True/False** **0 points** Modify Remove

Question
The numerical value of any temperature expressed in Celsius is always different from the numerical value of the same temperature in kelvin.

Answer

✓ True
False

Add Question Here

Question 55 **True/False** **0 points** Modify Remove

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

Answer

✓ True
False

Add Question Here

Question 56 **True/False** **0 points** Modify Remove

Question
The number 6.0448, rounded to 2 decimal places, becomes 6.05.

Answer

True
✓ False

Add Question Here

Question 57 **True/False** **0 points** Modify Remove

Question
The weight of a coin measured as 1.96235 g on one balance is definitely more accurate than a weight measurement of 1.95 g on another balance.

Answer

True
✓ False

Add Question Here

OK