Question #: 1

Which one is an extensive property?

A. Boiling point  
B. Density  
C. Mass  
D. Color

Question #: 2

Which two are chemical changes?

A. Carbon dioxide when bubbled into water produces carbonic acid (H₂CO₃).  
B. A piece of wood is cut into three pieces.  
C. Salt is added to a pot of boiling water.  
D. Hydrogen peroxide in the presence of iodide will bubble producing oxygen gas.

Question #: 3

Select the true equality.

A. 1 mg = 10³ μg  
B. 1 ng = 10⁻⁶ g  
C. 1 g = 10³ kg  
D. 10⁻¹² pg = 1 g
Question #: 4

Write $1.005 \times 10^{-3}$ in standard notation (i.e. decimal value). Report your answer with the same number of significant figures as the original value.

1. __________

____________________________________________________________________________

Question #: 5

A sample of carbon contains $6.022 \times 10^{23}$ atoms. If the sample is divided in a class of $1.55 \times 10^3$ students and each student receives an equal amount, how many carbon atoms does each student receive?

Number of atoms = __________

Report your answer with three significant figures. Do NOT include units in your answer. Report your answer in scientific notation using the format 2.22E2 or 2.22E-2.

1. __________

____________________________________________________________________________

Question #: 6

What is the density of a block of a metal alloy with a volume of $2.3 \text{ cm}^3$ and a mass of $19.3$ grams?

Report your answer with two significant figures. Do NOT include units in your answer. Do NOT use scientific notation.

density = __________ \text{ g/cm}^3

1. __________

____________________________________________________________________________
**Question #: 7**

The hottest temperature ever recorded on earth was 134.1 °F in in the Death Valley desert in July 10th, 1913. What was that temperature in degrees Celsius?

A. 56.7 °C  
B. 92.3 °C  
C. 49.8 °C  
D. 84.5 °C

**Question #: 8**

10.001 g has __1__ significant figures.  
0.0015 ms has __2__ significant figures.  
0.00200 L has __3__ significant figures.  
Report each answer as a **whole** number. Do **NOT** include units in your answer.

1. ___________  
2. ___________  
3. ___________

**Question #: 9**

You go to UHS for a health check-up and they measure your weight 3 times. How many significant figures does the number 3 have?

A. 1  
B. 2  
C. 3  
D. infinite
Question #: 10

Report your answer to the following calculation to the correct number of significant figures.  
0.42 m + 16.1 m = ___ m  
Do **NOT** include units in the answer. Only the correct answer with the correct number of significant figures will be accepted as correct.

1. _________

Question #: 11

What is the answer to the following calculation to the correct number of significant figures?  
\[
\frac{56.2 + 59.3}{101.2} =
\]

A. 1.1  
B. 1.14  
C. 1.141  
D. 1.1413

Question #: 12

What is the result of the following calculation with the correct number of significant figures?  
(24.6681×2.38)+332.58

A. 391  
B. 391.3  
C. 391.29  
D. 391.290
Question #: 13

Consider the results of three students who repeatedly weighed a lead block known to have a true mass of 10.00 g.

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</tr>
<tr>
<td>Average</td>
<td><strong>10.13 g</strong></td>
<td><strong>9.79 g</strong></td>
<td><strong>10.04 g</strong></td>
</tr>
</tbody>
</table>

Which student's data is considered precise but not accurate?

A. Student A  
B. Student B  
C. Student C  
D. All data is accurate and precise.

Question #: 14

How many centimeters are in 5.0 meters?

A. $5.0 \times 10^3$ cm  
B. 0.0050 cm  
C. $5.0 \times 10^2$ cm  
D. 50. cm

Question #: 15

Mountain Dew soda drinks contain 4.5 mg of caffeine per fluid ounce. If each can contains 12 fluid ounces, how many cans of Mountain Dew will need to be consumed to reach the lethal dose of 10.0 grams of caffeine?

A. 185 cans  
B. 1850 cans  
C. 75 cans  
D. 35 cans
Question #: 16

Convert 2.0 ft³ to cm³. Report your answer with two significant figures. Do NOT include units in your answer. Use the format 2.2E2 or 2.2E-2 for answers in scientific notation.

\[ 1 \text{ cm}^3 \]

1. __________

Question #: 17

Which statement of Dalton’s atomic theory is no longer valid with the discovery of isotopes?

A. Atoms can be broken down into smaller, indivisible particles.
B. All atoms of a given element have the same mass.
C. Atoms combine in simple, whole-number ratios to form compounds.
D. A chemical reaction only changes the way that atoms are bonded together.

Question #: 18

There are two reactants in a chemical equation, and one product. The mass of the product is 30 g. The mass of the first reactant is 17 g. What must the mass of the second reactant be, if the equation is to follow the law of conservation of mass?

A. 47g
B. 23g
C. 13g
D. 17g
Question #: 19

Which two mixtures are heterogeneous?

A. Small amount of sugar added to water and stirred.
B. Salt and pepper put together in a jar and shaken.
C. Granite (a type of rock with multicolor spots).
D. Clean mountain air.

Question #: 20

Which two statements are true concerning the structure of the atom as interpreted by Rutherford?

A. The volume of the atom is mostly empty space.
B. Thomson's plum pudding model is correct.
C. The nucleus contains nearly all of the mass of the atom.
D. The nucleus of the atom is negatively charged.
E. Neutrons are the source of the positive charge of the nucleus.

Question #: 21

Provide either the missing symbol or the missing element name for each.

<table>
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<tr>
<th>Element Name</th>
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<td>oxygen</td>
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</tr>
<tr>
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<td>2</td>
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</table>

1. __________
2. __________
3. __________

____________________________________________________________________________
**Question #**: 22

Which statement about subatomic particles is **true**?

A. A neutral atom contains the same number of protons and electrons.
B. Protons have about the same mass as electrons.
C. Electrons make up most of the mass of an atom.
D. Protons and neutrons have opposite charges, but they are equal in magnitude.

**Question #**: 23

What is the atomic number for silver?

A. 47
B. 33
C. 85
D. 79

**Question #**: 24

Antimony exists as two naturally occurring isotopes, $^{121}\text{Sb}$ (57.21%, 120.9038 amu) and $^{123}\text{Sb}$. What is the isotopic mass of $^{123}\text{Sb}$?

A. 121.7600 amu
B. 122.9047 amu
C. 122.4003 amu
D. 123.1013 amu
Question #: 25
How many protons, neutrons, and electrons are present in a neutral atom of the isotope of iron given?

\[ ^{56}_{26}Fe \]

A. 26 protons, 56 neutrons, and 26 electrons  
B. 26 protons, 30 neutrons, and 26 electrons  
C. 26 protons, 30 neutrons, and 30 electrons  
D. 56 protons, 30 neutrons, and 56 electrons

__________________________________________

Question #: 26
How many protons and electrons are in an atom of sulfur that has a \( -2 \) charge?  
Report each answer as a **whole** number. Do **NOT** include units in your answer.  
Number of protons = 1  
Number of electrons = 2

1. __________  
2. __________

__________________________________________

Question #: 27
Use the following information to determine the charge of the ion. Include a sign (+ or –) **and** a number in your answer.  
\[ p^+ = 13 \]  
\[ n^o = 14 \]  
\[ e^- = 10 \]  

1. __________
Question #: 28

Which one represents a possible molecular formula for the empirical formula of C₃H₅ClO?

A. C₆H₁₀ClO₂  
B. C₅H₁₀Cl₂O₂  
C. C₆H₁₀Cl₂O₂  
D. C₆H₁₂Cl₂O₂

Question #: 29

Consider a sample of each element under standard conditions. Which one does not exist as a diatomic molecule?

A. oxygen  
B. chlorine  
C. hydrogen  
D. carbon

Question #: 30

Rubidium is a [metal, nonmetal, metalloid] in the [alkali metal, alkaline earth metal, halogen, noble gas] group.

1. ________  
2. ________
Question #: 1

Which one is an extensive property?

A. Boiling point  
B. Density  
✓C. Mass  
D. Color

Question #: 2

Which two are chemical changes?

✓A. Carbon dioxide when bubbled into water produces carbonic acid (H₂CO₃).  
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✓D. Hydrogen peroxide in the presence of iodide will bubble producing oxygen gas.

**Question #: 3**

Select the **true** equality.

✓ A. \( 1 \text{ mg} = 10^3 \mu \text{g} \)
B. \( 1 \text{ ng} = 10^{-6} \text{ g} \)
C. \( 1 \text{ g} = 10^3 \text{ kg} \)
D. \( 10^{-12} \text{ pg} = 1 \text{ g} \)

**Question #: 4**

Write \( 1.005 \times 10^{-3} \) in standard notation (i.e. decimal value). Report your answer with the same number of significant figures as the original value.

\[
1.005 \times 10^{-3} = \text{[your answer]}
\]

1. 0.001005

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Number of atoms = \[ \text{[your answer]} \]

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1. 3.89e20

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1. 5 | five  
2. 2 | two  
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1. lead
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2. 18

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1. \(+3|3+|\)

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C. \(C_6H_{10}Cl_2O_2\)
D. \(C_6H_{12}Cl_2O_2\)

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Consider a sample of each element under standard conditions. Which one does not exist as a diatomic molecule?
Rubidium is a 1 [metal, nonmetal, metalloid] in the 2 [alkali metal, alkaline earth metal, halogen, noble gas] group.

1. metal
2. alkali metal