**Quiz 1A**

# Directions: Answer each of the following questions. Be sure to use complete sentences where appropriate. For full credit be sure to show all of your work. Where appropriate answers should be boxed for clarity, written to the correct number of significant figures, and, include the proper units.

1. For each measured quantity, underline the zeros that are significant and draw and X through the zeros that are not (3 points).
   1. 0. 005050 m
   2. 57,000,000 mi
   3. 220,103 kg
2. 0. 005050 m
3. 57,000,000 mi
4. 220,103 kg
5. Complete the following table (6 points):

|  |  |  |
| --- | --- | --- |
| Elements | | |
| Name | Symbol | Metal, Metalloid, Nonmetal |
| Strontium | Sr | Metal |
| Magnesium | Mg | Metal |
| Fluorine | F | Nonmetal |
| Boron | B | Metalloid |

1. A student prepares several samples of the same gas and measures their mass and volume. The results are tabulated as follows. Formulate a tentative law from the measurements (3 points).

|  |  |  |
| --- | --- | --- |
| Mass of gas (in grams) | Volume of gas ( in Liters) | Ratio mass/volume (g/L) |
| 22.5 | 1.60 | 14.1 |
| 35.8 | 2.55 | 14.0 |
| 70.2 | 5.00 | 14.0 |
| 98.5 | 7.01 | 14.1 |

The ratio of the mass to volume is constant. As the mass of the gas increases, so does the volume of the gas.

1. Why is it necessary to include units when reporting scientific measurements (3 points)?

Without units, the results are unclear and it is hard to keep track of what each separate measurement entails.

1. Are the following statements true or false (5 points)?

|  |  |  |
| --- | --- | --- |
|  | When dispensing a reagent make sure to pour toward the label. | False |
|  | In lab this week you will be taking length measurements. | True |
|  | It is not necessary to wear safety glasses, if you wear prescription glasses. | False |
|  | Never leave a chemical reaction or flame unattended. | True |
|  | If you get a chemical on your hand rinse it for at least 15 minutes. | True |

**Quiz 1B**

# Directions: Answer each of the following questions. Be sure to use complete sentences where appropriate. For full credit be sure to show all of your work. Where appropriate answers should be boxed for clarity, written to the correct number of significant figures, and, include the proper units.

1. Are the following statements true or false (5 points)?

|  |  |  |
| --- | --- | --- |
|  | You only need to wear your goggles if you are working with chemicals or flames. | False |
|  | Eating and drinking are permitted near the balances in the lab. | False |
|  | To properly dispose of broken glass wrap it in a paper towel and put it into the trash can. | False |
|  | You will be taking a temperature measurement in lab this week. | True |
|  | If you get a chemical on your hand rinse it for at least 15 minutes. | True |

1. A student measures the volume of a gas sample at several different temperatures. The results are tabulated as follows. Formulate a tentative law from the measurements (3 points).

|  |  |  |
| --- | --- | --- |
| Temperature of gas (in Kelvin) | Volume of gas (in Liters) | Ratio temperature/volume (K/L) |
| 298 | 4.55 | 65.5 |
| 315 | 4.81 | 65.5 |
| 325 | 4.96 | 65.5 |
| 335 | 5.11 | 65.6 |

The ratio of the temperature to volume is constant. As the temperature of the gas increases, so does the volume of the gas.

1. For each measured quantity, underline the zeros that are significant and draw and X through the zeros that are not (3 points).
   1. 18,000,000 km
   2. 1,322,300,879 hr
   3. 0.0001240 cm
   4. 18,000,000 km
   5. 1,322,300,879 hr
   6. 0.0001240 cm
2. Complete the following table (6 points):

|  |  |  |
| --- | --- | --- |
| Elements | | |
| Name | Symbol | Metal, Metalloid, Nonmetal |
| Sodium | Na | Metal |
| Oxygen | O | Nonmetal |
| Argon | Ar | Nonmetal |
| Silicon | Si | Metalloid |

1. Explain why units are important in calculations (3 points).

Units act as a guide in the calculation and are able to show if the calculation is off track. The units must be followed in the calculation, so that the answer is correctly written and understood.