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| ***Density***  You have a 23.6 g piece of gallium with a volume of 4.0 cm3. Calculate the density of gallium. | ***Density***  You have a 3.6 g piece of nickel. What is the volume of your piece? (use Table S to find density) | ***Density***  You have 12.4 ml of bromine. What is the mass of your sample? (use Table S to find density) |
| ***Percent Error***  A student calculated the density of iron to be 7.204. What is the student’s percent error? (use Table S to find density) | ***Temperature***  A student heats water to a temperature of 69.8 oC. How many degrees Kelvin is this? | ***Temperature***  A sample of gas is heated to 401K. How many degrees Celsius is this? |
| ***% Composition by Mass***  A penny has a total mass of 3.1g. Zinc makes up 2.9 g of the penny. What is the % by mass of zinc in the penny? | ***% Composition by Mass***  C3H6 has a total mass of 42 g. What is the % composition by mass of carbon in the compound? | ***Parts Per Million***  What is the concentration, in parts per million, of dissolved oxygen in a pond if a sample has 3.5 g of O2 in every 147.1 g of pond water? |
| ***Combined Gas Law***  A sample of gas has a volume of 12L at 273K and 187.5 kPa. What will be the new volume when the pressure is changed to 300kPa and the temp. is changed to 375K. | ***Combined Gas Law***  A sample of gas at 101.3 kPa has a volume of 4.5L and a temp. of 86.2 oC. If the pressure is increased to 116 kPa and the volume is decreased to 3.5L, what will the new temp. be? | ***Combined Gas Law***  A sample of gas has a volume of 6L and a pressure of 1.5atm. If the pressure is increased to 2.0 atm, what will the new volume be? |
| ***Weighted Atomic Mass***  Boron has 2 natural isotopes: 10B (10.013 amu) has 19.9% abundance, and 11B (11.009 amu) has 80.1% abundance. Calculate the weighted atomic mass of Boron. | ***Empirical Formula***  What is the empirical formula of a compound that is 40% sulfur and 60% oxygen by weight? (hint: use a 100g sample to calculate) | ***Empirical Formula***  A hydrocarbon has a gram formula mass of 86 g/mol. What is the molecular formula of this compound? And, what is the empirical formula? |
| ***Titration***  A 25 mL solution of 0.5 M NaOH is titrated until neutralized into a 50 mL sample of HCl. What is the concentration of the HCl? | ***Radioactive Decay***  A sample of 14C has a half life of 5730 years. How many half lives have elapsed after 14,000 years? | ***Radioactive Decay***  The half life of 233U is 1.62 x 105 years. How much time has elapsed after 2.5 half lives? |
| ***Heat***  How much heat is required to melt a 45.8 g sample of ice? | ***Heat***  If 42,000 J is required to vaporize a sample of water, what was the mass of the water? | ***Heat***  How much heat is required to raise the temperature of 5.9 g of water from 50 oC to 80 oC? |
| ***Heat***  If 9500 joules are added to 50g of liquid water at 20 oC, what will be the new temperature of the water? | ***Heat***  How much heat will be liberated (given off) if 60g of water is cooled from 80 oC to 65 oC? | ***Heat***  If a piece of hot metal is put into a 100g sample of liquid water at 25 oC, and the temperature of the water rises until it reaches 32 oC, how much heat energy did the metal lose? |
| ***Metric Conversion***  A piece of glass tubing is 4.6m long. How many mm is this?  Express your answer in proper scientific notation: | ***Metric Conversion***  A liquid has a volume of 35.4 mL. How many liters is this? | ***Metric Conversion***  A gardener buys a 2.50 kg bag of fertilizer. How many grams is this? |
| ***Metric Conversion***  The pressure of a gas is recorded as 55,601 Pascals. How many kPa is this? | ***Metric Conversion***  A chemist has 0.75 mg of mercury. How many grams is this?  Express your answer in proper scientific notation: | ***Metric Conversion***  If the density of liquid water is 1 g/cm3, and 1ml = 1cm3, what is the mass of 200ml of water? |
| ***Pressure Conversion***  A pressure of 154.7 kPa is equal to how many atmospheres? | ***Pressure Conversion***  A pressure of 3.6 atm is equal to how many kPa? | ***Molar Mass/Gram Formula Mass***  Calculate the gram formula mass of H2SO4. |
| ***Molar Mass/Gram Formula Mass***  How many grams are in one mole of Ca(NO3)2? | ***Gram🡪 Mole Conversions***  If you have 372.6 grams of C2H8N, how many moles is this? | ***Gram🡪 Mole Conversions***  How many moles is a 43.9 gram sample of Al2(SO4)3? |
| ***Mole🡪 Gram Conversions***  A chemist wants to measure out exactly 5 moles of Magnesium. How many grams is this? | ***Mole🡪 Gram Conversions***  If I want exactly 1.567 moles of Fe2O3, how many grams would I measure out on a balance? | ***Mole🡪 Mole Ratios***  How many moles of oxygen react with 2.4 moles of iron in this reaction?  4Fe (s) + 3O2 (g) 🡪 2Fe2O3 (s) |
| ***Mole🡪 Mole Ratios***  In this reaction, what is the ratio of moles of oxygen used to moles of CO2 produced?  2CO (g) + O2 (g) 🡪 2CO2 (g) | ***Mole🡪 Mole Ratios***  How many moles of aluminum are needed to react completely with 1.2 mole of FeO?  2Al(s) + 3FeO (s) 🡪 3Fe(s) + Al2O3(s) | ***Mole🡪 Mole Ratios***  How many *grams* of hydrogen are needed to react with 3.2 moles of P4?  P4 (g) + 6H2 (g) 🡪 4PH3 (g) |
| ***Molarity***  What is the molarity of a solution that has 14.5 moles of NaCl dissolved into water to make 500ml of solution? | ***Molarity***  How many moles of KCl will we need to make 2L of a 3.0M solution?  How many grams of KCl is this? | ***Molarity***  What is the volume of a 4.0M solution of HCl made with 35.8 g of HCl? |