

- 1.) How many Significant Figures are in the following:
 - a. 0.000305
 - b. 10,001
 - c. 15,600
 - d. 135,600,000.0
- 2.) Calculate the following using Sig. Fig. Rules
 - a. $0.005 + 1.004$
 - b. $7000510 - 23006$
 - c. $3.014 * 4.56000$
 - d. $5.6010 / 0.00005$
- 3.) Put the following in scientific notation or standard notation respectively
 - a. 0.000007106
 - b. 1.78×10^6
 - c. 15670000000
 - d. 4.597×10^{-8}
- 4.) Convert the following
 - a. 1,000,500 m to km
 - b. 45000 dg to g
 - c. 5687 cm to mm
 - d. 2300000 GL to cm^3
- 5.) Solve using dimensional analysis
 - a. How many days are there in 235,543,897,124,546,087 seconds?
 - b. 5. 1.09 g/mL to lbs/gal
 - c. In Einstein's special theory of relativity mass and energy are equivalent. An expression of this equivalence can be made in terms of electron volts (eV) and kilograms with one eV being equal to 1.78×10^{-36} kg. Using this ratio, express the mass of the heaviest mammal on Earth, the blue whale, which has an average mass of 1.90×10^5 kg in mega electron volts.
 - d. Ms. Anderson has created a new unit of weight called the squeeple. One squeeple is equivalent to 11.45 lbs. If Ms. Anderson weighs 141 lbs how much does she weigh in millisqueegles?

- 6.) What is the density of a board whose dimensions are 5.54 cm x 10.6 cm x 199 cm and whose mass is 28.6 Kg?
- 7.) Nitrogen gas and oxygen are colorless and combine to form a colored gas nitrogen and oxygen are called the _____ of this reaction.
- 8.) I have a container that when empty has a mass of 935 kg when I fill the container to the top its mass is 19349 kg the density of the methanol I filled it with is 0.788 g/cm^3 what is the volume of my container?
- 9.) Under ordinary conditions of temperature and pressure particles in a gas behave how?

- 10.) I have a cup filled with water that's mass is 65 g; the mass of the cup alone is 13 g. What is the volume of water that I have in mL?
- 11.) The **density** of aluminum is 2.70 g/mL. If the **mass** of a piece of aluminum is 244 grams, what is the **volume** of the aluminum?

- 12.) How many forms of matter are there? What are they?
- 13.) The quantity of matter is called what?
- 14.) One mL is equivalent to?
- 15.) What is the definition of matter?
- 16.) What is the most common state of matter in the universe?
- 17.) How does the behavior and location of particles differ between the different phases of matter?
- 18.) Who explained the behavior of positively charged particles being deflected from a metal foil?
- 19.) How does mass differ from weight?
- 20.) Does Ms.Anderson have the same mass on the moon as she does on Earth?
- 21.) List the letters of the first four sublevels and the number of electrons that can fill each.
- 22.) What element's ground state configuration is $[\text{Ar}]4s^13d^5$?
- 23.) What does amu mean?
- 24.) What is the SI unit for mass?
- 25.) Who created the first periodic table?
- 26.) Periodic law states:
- 27.) What is the atomic number of the second element in period three?
- 28.) What group is K in on the periodic table? (the name its given not its number)
- 29.) Where are the transition metals on the periodic table?
- 30.) 4f is called what?
- 31.) If something can be hammered into sheets it has what quality?
- 32.) What is the SI unit for weight (careful on this one its not the first thing that comes to mind most likely)?
- 33.) What are the four signs of a chemical change?
- 34.) What of the following are signs of chemical change?
 - a. Water boiling
 - b. A car rusting
 - c. A house's paint fading in the sun
 - d. A tree being cut down to be used for fire wood
 - e. Taking a glass of milk and making it chocolate milk with nesquick
 - f. Ms.Anderson dying her hair
 - g. The Statue of Liberty turning green

- 35.) Identify the following as either a heterogeneous or homogenous mixture.

- a. The air around you
 - b. Water that comes out of the faucet
 - c. Chocolate chip cookies
 - d. Iced tea
 - e. Salad
 - f. Milk
 - g. A bottle of diet coke
 - h. A dilute solution of NaOH
- 36.) What is the difference between a pure substance and a mixture?
 - 37.) What can trends in the properties of elements in a group or period be explained by?
 - 38.) Going down a group in the periodic table electron shielding tends to_____.
 - 39.) What was Dalton's Atomic Theory? What part of it was were proven wrong?
 - 40.) A formula that shows the simplest whole number ratio of the atoms in a compound is called what?
 - 41.) What is the empirical formula for a compound that is 43.6% phosphorus and 56.4% oxygen?
 - 42.) A compound contains 259.2 g of F and 40.8 g of C. what I the empirical formula?
 - 43.) A compound contains 27.3 g of C and 72.7 g of O what is the empirical formula for this compound?
 - 44.) If the molecular formula is $C_6H_8O_6$ what is its empirical formula?
 - 45.) What is Ms. Anderson's gold ring made of?
 - a. 100% gold
 - b. An alloy of gold and other metals
 - c. 100% fake gold (teachers don't make much come on!)
 - d. A homogenous mixture of gold and other metals
 - 46.) The difference between H_2O_2 and H_2O can be explained by:
 - a. The law of definite proportions
 - b. The law of multiple proportions
 - c. The law of conservation of mass
 - d. The fact that you would want to drink one and not the other
 - 47.) Why was John Dalton important?
 - 48.) Who was the first person to study atomic theory?
 - 49.) What did the gold foil experiment prove?
 - 50.) What did the cathode ray tube experiment help us discover?
Who preformed the cathode ray tube experiment?
 - 51.) Who was Mosley and what contribution did he make to scientific discovery?
 - 52.) What does Coulombs law state?
 - 53.) Why are protons and neutrons held together so tightly in the nucleus?

- 54.) Draw the structure of an atom and label the parts.
- 55.) If two atoms have differing number of protons they are:
- The same atom
 - Isotopes of each other
 - Different atoms
 - Brothers
- 56.) What is the atomic number of Beryllium?
- 57.) What law dictates that orbital's of a particular sublevel must be filled with one electron before doubling up?
- 58.) What law states that electrons in one particular orbital must have equal and opposite spin?
- 59.) What is the principle quantum number?
- 60.) Why do electrons in outer energy levels feel less pull from the nucleus even though as you go down a group the number of protons also grow?
- 61.) The number of particles in a mole is called:
- Avocado's number
 - Abercrombie's number
 - Avogadro's number
 - Mass number
- 62.) Which way does electronegativity trend and why?
- 63.) What are characteristics of alkali metals? What group number are they?
- 64.) What is meant by the term valence electrons?
- 65.) How many moles are there in 345.987g of gold?
- 66.) How many particles are there in .9010 mol of chlorine?
- 67.) What is meant by Hunds rule?
- 68.) True or False noble gases are inert.
- 69.) What are the five types of reactions?
- 70.) How can I automatically determine if something is a combustion reaction?
- 71.) Write the following formula: Calcium Sulfide
- 72.) What is the charge on oxide?
- 73.) What word describes a metal?
- bendy
 - Malleable
 - Bright
 - Hard

- 74.) $\underline{\hspace{1cm}} \text{NaNO}_3 + \underline{\hspace{1cm}} \text{PbO} \rightarrow$
- 75.) $\underline{\hspace{1cm}} \text{AgI} + \underline{\hspace{1cm}} \text{Fe}_2(\text{CO}_3)_3 \rightarrow$
- 76.) Combustion of $\text{C}_2\text{H}_4\text{O}_2$
- 77.) $\underline{\hspace{1cm}} \text{ZnSO}_4 + \underline{\hspace{1cm}} \text{Li}_2\text{CO}_3 \rightarrow$
- 78.) $\underline{\hspace{1cm}} \text{V}_2\text{O}_5 + \underline{\hspace{1cm}} \text{CaS} \rightarrow$
- 79.) $\underline{\hspace{1cm}} \text{Mn}(\text{NO}_2)_2 + \underline{\hspace{1cm}} \text{BeCl}_2 \rightarrow$

- 80.) $__ \text{AgBr} + __ \text{GaPO}_4 \rightarrow$
- 81.) $__ \text{H}_2\text{SO}_4 + __ \text{B}(\text{OH})_3 \rightarrow __ \text{B}_2(\text{SO}_4)_3 + __ \text{H}_2\text{O}$
- 82.) $__ \text{S}_8 + __ \text{O}_2 \rightarrow$
- 83.) $__ \text{Fe} + __ \text{AgNO}_3 \rightarrow$
- 84.) When dissolved beryllium chloride reacts with dissolved silver nitrate in water, aqueous beryllium nitrate and silver chloride powder are made.
- 85.) Isopropanol ($\text{C}_3\text{H}_8\text{O}$) burns.
- 86.) When dissolved sodium hydroxide reacts with sulfuric acid (H_2SO_4), aqueous sodium sulfate, water, and heat are formed.
- 87.) When fluorine gas is put into contact with calcium metal at high temperatures what is created?
- 88.) When sodium metal reacts with iron (II) chloride what is created?
- 89.) $__ \text{NaBr} + __ \text{H}_3\text{PO}_4 \rightarrow$
- 90.) $__ \text{Ca}(\text{OH})_2 + __ \text{Al}_2(\text{SO}_4)_3 \rightarrow$
- 91.) $__ \text{Mg} + __ \text{Fe}_2\text{O}_3 \rightarrow$
- 92.) $__ \text{C}_2\text{H}_4 + __ \text{O}_2 \rightarrow$
- 93.) $__ \text{PbSO}_4 \rightarrow __ \text{PbSO}_3 + __ \text{O}_2$
- 94.) $__ \text{NH}_3 + __ \text{I}_2 \rightarrow __ \text{N}_2\text{I}_6 + __ \text{H}_2$
- 95.) $__ \text{H}_2\text{O} + __ \text{SO}_3 \rightarrow __ \text{H}_2\text{SO}_4$
- 96.) $__ \text{H}_2\text{SO}_4 + __ \text{NH}_4\text{OH} \rightarrow __ \text{H}_2\text{O} + __ (\text{NH}_4)_2\text{SO}_4$
- 97.) $__ \text{Ag}_2\text{SO}_4 + __ \text{NaNO}_3 \rightarrow$
- 98.) $__ \text{NaI} + __ \text{CaSO}_4 \rightarrow$
- 99.) $__ \text{HNO}_3 + __ \text{Ca}(\text{OH})_2 \rightarrow$
- 100.) $__ \text{CaCO}_3 \rightarrow$
- 101.) $__ \text{AlCl}_3 + __ (\text{NH}_4)\text{PO}_4 \rightarrow$
- 102.) $__ \text{Pb} + __ \text{Fe}(\text{NO}_3)_3 \rightarrow$
- 103.) $__ \text{C}_3\text{H}_6 + __ \text{O}_2 \rightarrow$
- 104.) $__ \text{Na} + __ \text{CaSO}_4 \rightarrow$