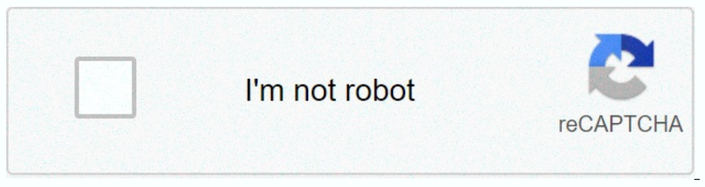

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The mole percent composition worksheet

Curated and Reviewed by Lesson Planet Answer Key Join access to all the materials involved In this mole and molecule activity instructions, students answer fourteen questions about moles, mass, and mole and solve eight problems for molecular formulas, empirical formulas and percentage composition. Save time and discover the curriculum for your classroom. Reviewed and evaluated by trusted, trusted teachers. Try This For Free At this point in the course, students are now able to use the periodic table, write chemical formulas, name the compound, and balance the chemical equation. The next important skill is understanding and using the mole. Moles are the measurement of the amount of atoms, particles or molecules in a substance. Molar measurements are often very large numbers, such as Avagadro's number 6.02 x1023. This means that students will also have to comfortably perform calculations using scientific notation. Scientific notation and purpose of the worksheet to display the mole: The number of particles in the mole of any substance, Avagadro's number, is so large that it is difficult for students to understand and visualize. This worksheet compares other measurements, such as the mass of the Earth, as students practice writing large measurements in scientific notation and perform simple calculations using these measurements. Essential concepts: moles, scientific notation, Avagadro number. Molar Mass View Worksheet Purpose: Molar mass, also known as mass formula, is the amount of mass of each substance containing exactly one mole (6,02x1023) particles. Before pupils can begin to learn how to use molar conversions, they must be able to accurately calculate the molar mass of each particular compound or element. This worksheet contains examples of how to do this and some problems with the practice that students can try for themselves. Essential concepts: moles, molar mass, formula mass. Percentage Purpose of the worksheet composition view: Percentage of composition of the compound is the percentage, by weight, of each individual element within the compound. This worksheet is a good use of molar mass, as students will calculate the mass of individual atoms of known compounds such as bicarna soda. Essential concepts: molar mass, percentage of composition. One-step molar conversions View Worksheet Purpose: Moles are an incredibly useful unit of measurement in chemistry, as they allow you to convert between mass measurements, atoms and volume. This worksheet is students using the Mole map to practice conversion between moles and grams, moles and gallons (gas), and moles and particles. Essential concepts: moles, molar conversions, conversion factor, formula mass, molar mass. Two Steps Molar Conversions View Worksheet Purpose: Moles are often an intermediate unit that is used to convert between two more frequent measurements, such as volume or This can be achieved in the same way as single conversions, with only an additional step. This worksheet will give students a guided practice in the conversion between particles and grams, grams and litres, and gallons and particles. Essential concepts: moles, molar conversions, conversion factor, formula mass, molar mass. Empirical representation of the formula Purpose of the worksheet: When a chemist examines an unknown substance, a chemical analysis can be done that determines the percentage of composition of each element that makes up the substance. This percentage composition can then be used to find the actual empirical formula, or the simplest possible ratio of compound elements. This worksheet insuers in orders students how to use the percentage of composition to calculate the empirical formula of an unknown compound. Essential concepts: moles, molar mass, mole ratio, percentage of composition, empirical formula. The purpose of the molecular view of the formula: many compounds do not, of course, exist as their simplest empirical formula. Glucose, for example, has an empirical formula ch2O. However, it actually exists as a multiple of this relationship, called a molecular formula. In their worksheet, students will calculate the molecular formula by comparing the molar mass of the empirical formula with that of the actual compound. Essential concepts: Empirical formula, molecular formula, molar mass. Moles and molecular formulas Study guide View Worksheet Purpose: When the unit instruction is complete, students can complete this study guide to help prepare them for a written test. The study guide is divided into two sections: vocabulary and short answer questions. Word words can be found scattered across different worksheets with instructions from this unit. The short answer questions are conceptual and are designed to see if students are able to use what they have learned in the unit. Page 2 At this point of the course, students are now able to use the periodic table, write chemical formulas, the name of the compound and the balance of the chemical equation. The next important skill is understanding and using the mole. Moles are the measurement of the amount of atoms, particles or molecules in a substance. Molar measurements are often very large numbers, such as Avagadro's number 6.02 x1023. This means that students will also have to comfortably perform calculations using scientific notation. Purpose of the worksheet for the presentation of the Lecture Mole - Powerpoint: This is a short Powerpoint lecture that guides students through the use of scientific notation, Avagadro's number, use of mole as a measurement of quantity and some sample molar conversions, including empirical and molecular formulas. Essential concepts: moles, scientific notation, Avagadro number, empirical formula, molecular formula. Mole - Student Outline Notes worksheet This is an outline of notes with an empty style for complete when you complete your installed Powerpoint lecture. Each slide has a set of questions, fill in blanks or tables that students fill out based on the information provided. This is good help for students who struggle with the free use of notes. Essential concepts: moles, scientific notation, Avagadro number, empirical formula, molecular formula. Scientific notation and purpose of the worksheet to display the mole: The number of particles in the mole of any substance, Avagadro's number, is so large that it is difficult for students to understand and visualize. This worksheet compares other measurements, such as the mass of the Earth, as students practice writing large measurements in scientific notation and perform simple calculations using these measurements. Essential concepts: moles, scientific notation, Avagadro number. Molar Mass View Worksheet Purpose: Molar mass, also known as mass formula, is the amount of mass of each substance containing exactly one mole (6,02x1023) particles. Before pupils can begin to learn how to use molar conversions, they must be able to accurately calculate the molar mass of each particular compound or element. This worksheet contains examples of how to do this and some problems with the practice that students can try for themselves. Essential concepts: moles, molar mass, formula mass. Percentage Purpose of the worksheet composition view: Percentage of composition of the compound is the percentage, by weight, of each individual element within the compound. This worksheet is a good use of molar mass, as students will calculate the mass of individual atoms of known compounds such as bicarna soda. Essential concepts: molar mass, percentage of composition. One-step molar conversions View Worksheet Purpose: Moles are an incredibly useful unit of measurement in chemistry, as they allow you to convert between mass measurements, atoms and volume. This worksheet is students using the Mole map to practice conversion between moles and grams, moles and gallons (gas), and moles and particles. Essential concepts: moles, molar conversions, conversion factor, formula mass, molar mass. Two-step Molar Conversions View Worksheet Purpose: Moles are often an intermediate unit that is used to convert between two more commonly used measurements, such as volume or mass. This can be achieved in the same way as single conversions, with only an additional step. This worksheet will give students a guided practice in the conversion between particles and grams, grams and litres, and gallons and particles. Essential concepts: moles, molar conversions, conversion factor, formula mass, molar mass. Empirical representation of the formula Purpose of the worksheet: When a chemist examines an unknown substance, a chemical analysis can be done that determines the percentage of composition of each element that makes up the substance. This percentage of composition can then be find an actual empirical formula, or the simplest possible relationship of compound elements. This worksheet insuers in orders students how to use the percentage of composition to calculate the empirical formula of an unknown compound. Essential concepts: moles, molar mass, mole ratio, percentage of composition, empirical formula. The purpose of the molecular view of the formula: many compounds do not, of course, exist as their simplest empirical formula. Glucose, for example, has an empirical formula ch2O. However, it actually exists as a multiple of this relationship, called a molecular formula. In their worksheet, students will calculate the molecular formula by comparing the molar mass of the empirical formula with that of the actual compound. Essential concepts: Empirical formula, molecular formula, molar mass. Moles and molecular formulas Study guide View Worksheet Purpose: When the unit instruction is complete, students can complete this study guide to help prepare them for a written test. The study guide is divided into two sections: vocabulary and short answer questions. Word words can be found scattered across different worksheets with instructions from this unit. The short answer questions are conceptual and are designed to see if students are able to use what they have learned in the unit. Page 3 This chapter covers the formation and designation of covalent compounds. This includes drawing Lewis dot structures, predicting molecular geometry through THEPR theory, and rules for naming covalent compounds. Covalent Bonding Powerpoint Lecture View Powerpoint Purpose: This is a short Powerpoint lecture that describes the difference between covalent and other types of chemical bonds, including electronegativ differences. The rules of the covalent nomenclature are also covered. Essential concepts: Covalent bonding, covalent compounds, electronegatnost, VSEPR, Lewis dot structures. Chemical Bonding Notes Outline View Worksheet Purpose: This is an outline of empty-style notes that students complete when you complete the attached Powerpoint lecture. Each slide has a set of questions, fill in blanks or tables that students fill out based on the information provided. This is good help for students who struggle with the free use of notes. Essential concepts: Covalent bonding, covalent compounds, electronegatnost, VSEPR, Lewis dot structures. Chemthink – Covalent Bonding and Nomenclature View Worksheet Purpose: This Chemthink module covers the formation of covalent bonds and how covalent compounds are called using prefixes. Essential concepts: covalent binding, electronegatnost, covalent nomenclature. Chemthink – Molecular View Shapes Worksheet Purpose: This Chemthink module helps students learn how to build Lewis dot structures for covalent compounds and predict their molecular forms with VSEPR theory. concepts: Covalent bonding, Lewis dot structures, molecular geometry, VSEPR. Electronegativity Difference in Covalent Compounds View Worksheet Purpose: This worksheet instruct students in use of electronegativity difference to identify ionic, nonpolar covalent, and polar covalent compounds. Essential concepts: Electronegativnost, non-polar covalent bond, polar covalent bond, ion bond. Lewis Dot Structures Worksheet View Worksheet Purpose: Creating Lewis Dot Structures is a useful first step in predicting the molecular shape made by covalent compounds. In this worksheet, students will be guided in the manufacture of Lewis Dot structures for both individual atoms and molecules. Essential concepts: Covalent compounds, molecular geometry, Lewis Dot structure VSEPR Theory and Molecular Geometry View Worksheet Purpose: This worksheet directs students through the application of VSEPR theory to predict the 3-dimensional shape made by the covalently related molecule. This worksheet covers only simpler and more frequent molecular forms, including linear, curved, trigonal planer, trigonal pyrimid and tetrahedral. Essential concepts: molecular geometry, VSEPR, linear, puzzled, trigonal planning, trigonal pyrimidal and tetrahedral. VSEPR Theory with molecular model Sets View Worksheet Purpose: Valence Shell Electron Pair Repulsion, or VSEPR Theory, is a way to determine what geometric shape the covalent compound will do based on the number of bonds and unpaid electrons that surround the central atom compound. This is a chart that I have students to fill out as they use a chemistry model kit to build a variety of covalent compounds. Essential concepts: VSEPR, molecular geometry, linear, trigonal planning, shut down, tetrahral, trigonal pyramid, Lewis dot structure. Covalent junctions Nomenclature Worksheet View Worksheet Purpose: This worksheet requires students to use prefixes (mono-, di-, etc.) to designate covalent compounds. Essential concepts: Covalent compounds, covalent nomenclature Covalent binder and molecular geometry Study guide View Worksheet Purpose: Once the unit instruction is complete, students can complete this study guide to help prepare for a written test. The study guide is divided into two sections: vocabulary and short answer questions. Word words can be found scattered across different worksheets with instructions from this unit. The short answer questions are conceptual and are designed to see if students are able to use what they have learned in the unit. Page 4 After the introduction of the basic structure of atoms and the use of the periodic table, this is a timely time for the introduction of basic nuclear chemistry. Nuclear fission, fusion and decay primarily include changes in the composition of the atom's core so that students can what they know about protons, neutrons and Mass. Powerpoint Nuclear Chemistry View Powerpoint Purpose: This Powerpoint lecture gives a brief history of the discovery and use of radioactivity, including becquerel's discovery and Rutherford's attempt at gold foil. Students will then learn about nuclear fusion and fission in the context of the sun, fision nuclear reactors and nuclear weapons. Essential concepts: nuclear energy, protons, neutrons, radioactive decay, radioactive falls, fission, fusion, nuclear energy, nuclear meltdown, half-life. Nuclear Chemistry Student Notes Outline View Worksheet Purpose: This is a filled notes outline to monitor nuclear power powerpoint. These are useful to use if you have students who struggle with effective writing notes and either don't write anything at all or try to write them all (and don't listen to actual lectures). Essential concepts: nuclear energy, protons, neutrons, radioactive decay, radioactive falls, fission, fusion, nuclear energy, nuclear meltdown, half-life. The Universe - Secrets of the Sun View Worksheet Purpose: This is a worksheet to accompany the Secrets of the Sun episode of the Universe documentary series. This episode covers the conditions that led to the birth of the sun, the nuclear fusion within it, which fuels it, the sun's speckles, the sun torches and the predicted final death of the sun. Essential concepts: Nuclear fusion, radiation, convection, sun spot, solar flares. Mythbusters - Radiation and Cockroaches Worksheet View Worksheet Purpose: This episode of Mythbusters tries to answer the question of whether cockroaches really could survive a nuclear catastrophe or war. Cockroaches, flour and fruit flies are all exposed to different levels of radiation and their survival, which is monitored over a period of 30 days. Essential concepts: radioactive decay, radioactive drop, acute, chronic, alpha particles, beta particles, gamma rays. Alpha and Beta Decay Worksheet View Worksheet Purpose: This is a worksheet of radioactive decay problems. Students will use the periodic table to predict alpha and beta decaying products of various radioactive elements. Essential concepts: radioactive decay, alpha particles, beta particles. Nuclear Waste Half-Life Lab View Worksheet Purpose: One of the biggest challenges facing nuclear energy is the problem of how to deal with waste. Spent fuel has been piling up in a dry storage facility in the world's nuclear facilities for decades, and the scientific community has not set out a long-term disposal plan. In this lab, students will use color water to simulate the decay of Strontium-90, while doing some calculations to see how long the radioactive isotope takes to become harmless. Essential concepts: nuclear waste, radioactive half-life. Nuclear Energy Study Guide View Worksheet Purpose: Once the unit instruction is complete, students can complete guide to help prepare for a written test. The study guide is divided into two sections: vocabulary and short answer questions. Word words can be found scattered across different worksheets with instructions from this unit. The

short answer questions are conceptual and are designed to see if students are able to use what they have learned in the unit. Page 5 This unit covers all aspects of the ion compound. First, students learn about ion bonding and what makes a compound ion, including electronegatival differences. Then the students learn how to name binary ion compounds, ion compounds with transition metal, polyatomic ion compounds and acids. Ionic Bonding and Nomenclature Powerpoint Lecture View Powerpoint Purpose: This Powerpoint goes through some problems with the practice of dealing with the calculation of electronegatity differences, dissociation of ionic compounds in water and the naming of all types of ionic compounds: binary, polyatomic, one with transient metal cation and acids. Essential concepts: ions, ionic compounds, ion bonding, electronegativity, dissociation, cations, anions, binary ion nomenclature, transient metals, binary acids, ternaric acids, polyatomic compounds. Ionic Bonding and Nomenclature Notes Orline View Worksheet Purpose: This is a fillable note of orline that accompany the ionic bonding and nomenclature Powerpoint. These are useful to use if you have students who struggle with effective writing notes and either don't write anything at all or try to write them all (and don't listen to actual lectures). Essential concepts: Periodic table, metals, non-metallurgy, metaloids, periods, families, groups, alkaline metals, alkaline earth metals, transitional metals, halogens, precious gases, lanthanides, actinoids. Electronegatnost and Dissociacia Equations View Worksheet Purpose: This is a worksheet that first shows students how to calculate electronegativity difference and use that as a way to identify ionic compounds. Second, students will write and balance the equations of ionic dissociation. Essential concepts: ion bonding, ion compounds, cations, anions, electronegatist difference, dissociation. Valence Electrons and Ionic Compounds View Worksheet This worksheet uses Bohr models to show how cations and anions are formed, review the ion notation, and then students start writing formulas for ionic compounds based on their oxidation numbers. Essential notions: Ion, ion notation, anions, cations, bohr model, oxidation number, ionic compounds. Chemthink - Ionic Bonds and Ionic Notation View Worksheet Purpose: These worksheets accompany chemthink modules to ionic bonds and ionic notations. The ion binding module examines how the cations and anions form and why they attract. The ion notation module covers how oxidation numbers determine the signature of the ion compound formula Concepts: Ion, ion notation, anions, cations, Bohrov model, oxidation number, ionic compounds. Mythbusters - Bathtub Electrocution Worksheet View Worksheet Purpose: This episode of Mythbusters tests the myth that dropping an electrified appliance in the bathtub can kill you. This is unlikely in today's appliances due to fault disruptors in earth circuits (GCFI) that are loaded on to hairdryers and other bathing appliances, but it is certainly possible without them. Students will learn that clean water in itself is not necessarily a great guide to electricity, but when ion compounds (such as salts found in sweat and urine) diverge in water, they become highly conductive. Essential concepts: ions, dissociation, conductivity, ionic compounds. Mythbusters - Urinating on the third rail view Worksheet Purpose: This episode of Mythbusters tests the myth that urinating on an electrician's railway will kill a person. This episode covers many of the same soil as a tub of electric shock one, because urine contains a lot of ionic compounds that make it very conductive. However, urine streams diverge before they hit an electrified orbit, making electricity unlikely. Essential concepts: ions, ionic compounds, dissociation, conductivity. Nomenclature of simple (binary) ionic compounds View Worksheet Purpose: This is the first step for chemistry students learning how to name chemical compounds. This worksheet first covers the importance of valence electrons and oxidation numbers for the production of ion compound, then how they are called. Essential concepts: ion, ion bonding, ion compounds, ion nomenclature, oxidation number, valence electrons. Transition Metal Ionic Compounds View Worksheet Purpose: This is a follow-up to the ionic nomenclature worksheet that introduces transition metals. Students will learn how to assign Roman numerals to transition metals to indicate their charge, and how to use anionic charges to determine the oxidation number of transition metals. Essential concepts: ion, ion bonding, ionic compounds, ion nomenclature, oxidation number, transition metals. Nomenclature of polyatotic ions See the worksheet When students are familiar with the steps in naming simple (or monatetic) compounds, they are introduced into polyatotic ions. Students will need to copy the polyatomic ion reference list with their periodic table so that they can complete this worksheet. Essential concepts: ions, ion binders, ion couplings, polyatomy ions, ion nomenclature. Nomenclature of acids See worksheet The last and most difficult step in learning ion compounds are acids. Students often have a lot of problems with the memory of the rules for binary and ternary acids. This worksheet goes over the -ous in-ic rules for ternaric acids, as well as the hydro-rule for binary acids. Students will have to copy polyatographic ions list with their periodic table so you can complete this worksheet. Essential concepts: acid nomenclature, binary acids, ternaric acids. pH Calculations of strong acids Show worksheet Although chemistry students often use pH as a measurement of acidity or alkalinity, they do not have a firm grasp of what the numbers actually mean. In this worksheet, students will make some simple calculations of hydrogen ion concentration using strong acid pH. Essential concepts: Acid, Base, pH, Mythbusters - Breaking Bad Bathtub View Worksheet Purpose: This episode of Mythbusters tests a familiar scene from the TV show Breaking Bad, where Walter and Jesse try to get rid of the body by dissolving in a bathtub containing hydrofluoric acid. Water initially instructs Jesse to get a plastic bin (which won't react with acid), but Jesse can't find it and goes with a ceramic tub dissolved by acid. Essential concepts: Acids Ionic Bonding and Ionic Junction Nomenclature Study Guide View Worksheet Purpose: Once the unit instruction is complete, students can complete this study guide to help prepare them for a written test. The study guide is divided into two sections: vocabulary and short answer questions. Word words can be found scattered across different worksheets with instructions from this unit. The short answer questions are conceptual and are designed to see if students are able to use what they have learned in the unit. Page 6 After completion of the preliminary units on atomic structure, the naming of elements and compounds, bonds and moles, the students are now ready to start looking at how atoms and molecules can be rearranged during chemical reactions. The focus of this chapter is mainly on the basic mechanics of writing and forecasting the results of chemical reactions. Starting with relatively simple reactions of synthesis and degradation, we are driven through a single replacement, double displacement and combustion. Students will need to copy the periodic table and the polyatomic ion reference list to complete these worksheets. Chemical reactions Powerpoint lecture view Worksheet Purpose: This Powerpoint lecture takes students through each of the different types of reactions: synthesis, degradation, combustion, one-time replacement and reactions of double eviction. Equation problems are a problem for each. Essential concepts: Chemical reaction, product, reacant, signature, coefficient, synthesis, degradation, combustion, one-off replacement and reactions of double evasiveness. Chemical Reactions Description Outline View Worksheet Purpose: This is an outline of notes in an empty style that students complete when you complete the attached Powerpoint lecture. Each slide has a set of questions, fill in blanks or tables that on the basis of the information provided. This is good help for students who struggle with the free use of notes. Essential concepts: Chemical reaction, product, reacant, signature, coefficient, synthesis, degradation, combustion, one-off replacement and reactions of double evasiveness. Writing and Balancing Synthesical Reactions See the Worksheet Purpose: Anticipating products and offsetting chemical reactions is the main skill that students must leave this chapter. I start to learn this with a synthesized reaction, as they are one of the simplest and simplest forms of chemical reactions. This worksheet provides some examples of how to predict products of synthesized reactions using oxidation status, as well as showing students how to balance. Essential concepts: Chemical reactions, synthesized reactions, equations for balancing, product forecasts, oxidation states. Writing and Balancing Degradation Reactions View Worksheet Purpose: This worksheet is a good monitoring of the worksheet reactions synthesis, since all the same rules and ideas apply, simply in reverse. I keep the problems in this task simple by focusing on simple binary ion compounds or by pre-ordering product names to students. Essential concepts: Chemical reactions, degradation reactions, balancing equations, product forecasts, oxidation states. Writing and leveling One alternate reaction View Worksheet Purpose: Single-alternate reactions include reactions of a soothing element (usually metal) with a compound, resulting in switching kings. For the first time, students will learn to use a series of activities as part of this worksheet, as they recognize when reactions will occur and will not occur. Students will need to copy the chart of activity series in order to complete this task Essential concepts: Chemical reactions, uniform substitution reactions, equation balancing, product forecast, oxidation state. Writing and balancing Reactions with a dual dimension View worksheet Purpose: Reactions of double displacement include switchingcation ofcations between two compounds. Anticipating and balancing these reactions is not too challenging for students at this stage, but they must now consider whether each product will remain as part of the cash solution or will form a fallout. This allocation includes a simplified solubility table. Essential concepts: Chemical reactions, double dissolution reactions, balancing equations, product forecasts, oxidation states, precipitation, solubility, aqueous solution. Writing and balancing the reaction of combustion Look worksheet Purpose: Combustion reactions are the last type of chemical reaction that are captured, and for many students, one of the hardest to balance. Products are always the same - carbon dioxide and water vapour, but to offset these equations often become two-digits. Essential concepts: Chemical reactions, combustion reactions, equations for balancing, product forecasting. Mythbusters - Alkali Metal Mayhem Worksheet View Worksheet Purpose: In this episode of Mythbusters, they deciphered a Braniac video (seen on Youtube) showing an explosion caused by dropping cesium into a tub of water that is strong enough to actually leak a tub. During the experiment, Mitbusters illustrate two types of chemical reactions. Firstly, the release of alkaline metal in water has the result of a single-replacement reaction that releases hydrogen gas. The hydrogen gas then reacts with oxygen in a synthesise reaction, forming water and releasing a lot of energy in the form of heat and light. It's also a good video that introduces the idea of a periodic law -- alkaline metals will react more violently with water as you move forward across the group. Essential concepts: Chemical reactions, single-replacement reactions, synthesising reactions, alkaline metals, periodic law. Mythbusters – Cell Phone Destruction Worksheet View Worksheet Purpose: This segment of Mythbusters focuses on combustion. Specifically, is the use of a mobile phone enough to trigger the combustion of petrol, resulting in a fire or explosion at a gas station? The answer is no, because there is a level of activation energy needed to mimic combustion, which is simply not present in the electromagnetic emissions of a mobile phone. Mythbusters learn that the most common cause of fires at a gas station is the static discharge of electricity from people who exit their car. Essential concepts: Chemical reactions, combustion, activation energy. Writing and balancing chemical reaction Study guide Study guide View Worksheet Purpose: When the unit instruction is complete, students can complete this study guide to help prepare for a written test. The study guide is divided into two sections: vocabulary and short answer questions. Word words can be found scattered across different worksheets with instructions from this unit. The short answer questions are conceptual and are designed to see if students are able to use what they have learned in the unit. Page 7 Heat is a good unit to cover towards the end of the course as it touches on many different ideas from the rest of the year. In this unit, students will better understand what exactly heat is, how we measure it, and some specific water properties that include heat. PBS Interactive - Heat Transfer View Worksheet This interactive website from PBS compares three different ways of heat transfer - radiation, conductivity and convection. Common then shows daily examples of heat transfer and students try to sort each one. Essential concepts: Energy, heat, kinetic energy, conductivity, convection, radiation. View worksheet intent: Enthalpy (ΔH) is a measurement of the total amount of energy in the system. For chemical reactions, enthalpy can change. During an endothermic reaction, energy is absorbed into the system and enthalpi is increased. During exothermic reaction energy is released by the system and enthalpi is decreasing. In this worksheet, students will calculate the total enthlasia of some sample chemical reactions. Essential concepts: heat, energy, enthalpi, stoyiometry, chemical equations, exothermic, endothermic. Purpose of the energy view activation worksheet: An important aspect of all chemical reactions is their activation energy -- the amount of energy needed to actually trigger a reaction. In this worksheet, students will look at enthalpy graphs and measure the activation energy of the reaction. They will also see the effect of the catalyzer on the activation energy. Essential concepts: energy, heat, enthalpy, activation energy, potential energy, exothermic, endothermic. Mythbusters – Cooling Six-Pack View Worksheet Purpose: This is the perfect segment of Mythbusters to show for this unit. They are experimenting on several different methods of cooling six-pack of beer from room temperature to just over freezing to see which is the fastest and most economical. Students will use concepts of heat, heat transfer, and even a little work with exothermic and endothermic reactions. Essential concepts: heat, energy, enthalpy, chemical reactions, combustion, exothermic, endothermic, conductivity, convection, radiation. Mythbusters - Exploding Port-a-Potty View Worksheet Purpose: This segment of Mythbusters takes on a pretty traply myth -- the idea that the decomposition of human waste in a port-a-potty could generate enough combusible gas (e.g. methane) to cause a potential explosion. While the myth is corroded, there are many opportunities to talk about enthalpy and activation energy within the combustion reaction. Essential concepts: heat, energy, enthalpy, exotherm reaction, combustion, activation energy, potential energy. NOVA: Absolute Zero - Conquest of Cold Worksheet View Worksheet Purpose: This is the first of a two-part NOVA documentary special covering theability of humans to generate cold. I'm showing this episode because it's an excellent assessment of some of the larger experiments and inventions that have allowed us to control the heat and cold, including the thermometer and the refrigerator. Essential concepts: Heat, energy, conductivity, calorimetry, thermometers, temperature, Laws of thermodynamics. Specific purpose of heat view worksheet: Specific heat is a physical property. It measures how much energy (in Joules) requires to raise one gram of matter by one degree Celsius. In this worksheet, students will use a specific heat equation ($Q = mc\Delta T$) for various problems. Essential concepts: Heat, energy, Joules. The specific purpose of the worksheet to show heat and phase changes: this is to follow up on a specific heat worksheet. In this problem, students will only work with water. They will calculate the total heat needed to raise temperatures and change water from one phase to another. Essential concepts: Specific heat, heat fusion, evaporation heat, phase change. Thermal and enthalpy study guide View Worksheet Purpose: Once the unit instruction is complete, students can complete this study guide to help prepare them for a written test. The study guide is divided into two sections: vocabulary and short answer questions. Word words can be found scattered across different worksheets with instructions from this unit. The short answer questions are conceptual and are designed to see if students are able to use what they have learned in the unit. Page 8 Of Stoichiometry is the practice of forecasting the amount of a product or reactionary in a chemical equation based on a known quantity of one of the other products or reactioners. The ability to do these calculations is the culmination of all the basic skills they learned in the first semester. Pre-Stoichiometry Review Package View Worksheet Purpose: This is a worksheet that reviews some of the important concepts they need from previous chapters in order to be successful with stoyhymmetry. Each section has a sample problem, followed by a series of questions for the practice. Included is the ion nomenclature, covalent nomenclature, acid nomenclature, reaction types and molar conversions. Essential concepts: ion nomenclature, covalent nomenclature, acid nomenclature, synthesis, decommissioning, one-off replacement, dual dimension, combustion, molar conversions. Stoichiometry - Moles to Moles View Worksheet Purpose: This is the first of four stoichiometry worksheets. In this worksheet, students will begin to learn the concepts of stoyyimetry by performing simple mol-to-mole conversions. They will get mole product or reactionary, and then use molar (coefficient) ratios to convert. Essential concepts: Stoichiometry, molar ratios. Stoichiometry: Moles to Grams View Worksheet Purpose: This is the second of four stoichiometry worksheets. In this worksheet, students will have an additional step of converting grams of the reactionan or product into moles before performing stoihiometric conversions. Essential concepts: stoyyimetry, moles, molar ratios, mole conversions, molar mass. Stoichiometry Grams to Grams View Worksheet Purpose: This is the third of four stoichiometry worksheets. In this worksheet, students will add another step to their stoyhoimetry -- they will have to convert from grams to mole reactionary or product, from moles to moles of another substance into an equation, and then back into grams. Essential concepts: moles, moth conversions, conversion factor, mass, molar mass. Mixed stoiimetry Problems See the Worksheet Purpose: This is the last of a series of four stoiyotry worksheets. It mixes several different types of problems -- mole into moles, mole in grams, grams in grams and even some conversions with particles and volume. Essential concepts: Moles, molar conversions, conversion factor, formula mass, molar mass, Avagadro number, molar volume.. Percent Yield View Worksheet Purpose: Using stoichoimetry, we can predict the amount of product that will be produced in a chemical reaction, based on the amount of each reactive product we use to begin. This estimated quantity of product based on stoyhymmetry is called theoretical yield. When the experiment is conducted, the actual return is the measured amount of product you physically have at the end. In this worksheet, students calculate how much of the expected product was actually done by reaction. That's the percentage of return. Essential concepts: actual return, percentage return, theoretical return. Limitation of reagents View worksheet Purpose: In all so far problems with stoihyometrics, students have obtained the volume, mass or quantity of one specific substance and requested that they resolve it on this basis. This worksheet gives them two measurements. They need to determine which of these two is the restraint reagent -- one that will be used first in the reaction to determine the amount of product manufactured. Essential concepts: stoyyimetry, reagent limitation. Mythbusters – Antacid Jail Break Worksheet View Worksheet Purpose: This episode of Mythbusters tests the idea that an inmate could have thickened enough antacid tablets with years of closure to create an acid/base reaction that would release enough carbon dioxide to smash the cell and allow him to escape. Essential concepts: stoyyimetry, limiting reagents, acids, bases. Mythbusters - The Bourne Magazine View Worksheet Purpose: This episode of Mythbusters tests a scene from the Bourne Identity where Jason Bourne turns on gas main in places a magazine in toaster, creating a delayed explosion. This episode specifically talks about the stoihyomytry of combustion reactions, and the need to have the right mix of oxygen and fuel. Essential concepts: stoyhyometry, combustion. Combustion.