

Review guide for test 1: Introduction to Chemistry.

Products and reactants: Given the formula for a chemical reaction, be able to identify which are substances are the products and which are the reactants?

Know the symbols for the following elements. Oxygen, sulfur, carbon, Chlorine, copper, sodium, Lithium, Gold, Iron, Nitrogen, Hydrogen and Helium.

Know the chemical formulas for the following compounds. : Carbon Dioxide, Iron Oxide, Oxygen gas, Sodium Hydroxide, Carbohydrates, the first five alkanes, Sodium Chloride, Sulfuric Acid, Carbonic Acid Hydrochloric Acid, Water. Hydroxyl groups.

Know the number of bonds that each of these elements can form: Carbon, hydrogen, Oxygen, Sodium

Balancing of equations. Given a simple chemical reaction, be able to 'balance' the equation such that the number of elements on the left side equals the number of elements on the right side.

Given a sample diagram of a compound (such as a sugar or hydrocarbon), determine the chemical formula.

Given the name of a compound with is either hydrocarbon or a carbohydrate, be able to determine which one it is.

Carbohydrates vs Hydrocarbons. What's the difference? How are they similar?

Know the current atmospheric concentration of gasses.

What was the Paleocene Eocene Thermal Maximum and why is that event relevant to today's global systems?

What do elements in the same column have in common?

What properties do metals have which allow them to conduct electricity?

Oceans on Earth (what fraction of Earth surface?)

CO2 emitters.. (proportion due to fossil fuels, agriculture cement)

What percent of the CO2 being emitted by humanity is being absorbed by oceans

What percent of Earth's excess heat due to global warming is being absorbed by the worlds oceans.

How does the temperature of the oceans affect their ability absorb gasses?

What makes an Acid an Acid? What makes a base, a base?

The Periodic Table of the elements. Given a sample element on the table, be able to determine how many protons is must have in the nucleus and the atomic weight.

Reactions:

Combustion of Methane, combustion of propane.

Sulfuric Acid into Sugar: What is the formula for sulfuric acid? What is the formula for sugar? What products are created when the sugar and acid are added together? Why is this called a 'dehydration' reaction?

Sodium Metal into Water: What is the equation that describes the reaction of metallic sodium dropped into water? What do the 'subscripts' represent in that reaction?

CO₂ into Water. What is the equation for the kind of acid that forms when Carbon Dioxide is dissolved into water?

Candle Lab: What is the chemical name for candle wax? What is the generic formula? What part of the process of combustion in a candle was disrupted by placing aluminum foil around the wick? What creates the soot that forms (and collects) when a beaker is placed over the lit candle? Where does the carbon come from? How are 'qualitative' observations different from 'quantitative' observations?

What metals are found in pure form? (not only in compounds)

How is Platinum like Gold and Silver? Why was it overlooked for so long? What does it mean to be a 'noble metal'? What other metals is Platinum often found with? What is an alloy? How is an alloy unlike a compound? What is Bronze? What properties does Bronze have that resulted in entire changes in human societies? What other property does Osmium have that makes it stand out among the Platinum metals?

What properties make Tungsten so valuable?

What does the term 'Earth' refer to, when it comes to metals? (as in, 'rare earth' metals). How does heating these 'Earth metals' with charcoal (carbon) change the chemistry? What value does the process bring?