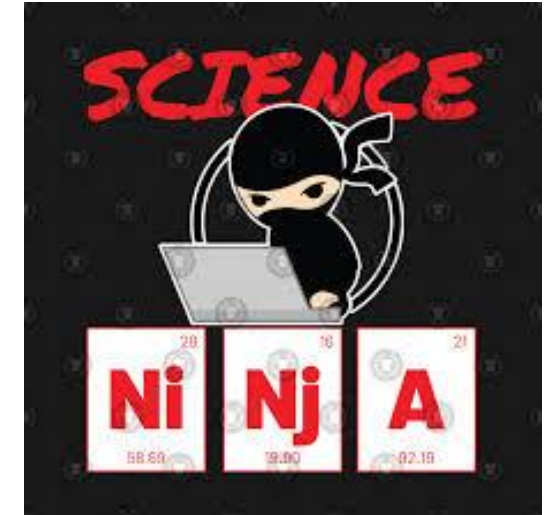




Knowledge Ninja



Atoms and Periodic table

1. How do you calculate the number of neutrons in an atom?
2. What is the charge and mass of a proton, electron and neutron?
3. Who discovered the neutron?
4. What are the correct names for groups 1, 7 and 0?
5. How did Mendeleev arrange his periodic table



Atoms and Periodic table - Answers

1. Mass number – atomic number
2. +1 and 1, -1 and 0, 0 and 1
3. James Chadwick
4. Alkali metals, Halogens, Noble Gases
5. By relative atomic mass number



Organic Chemistry

1. What is the definition of a hydrocarbon
2. What is the general formula for an alkane?
3. Describe how fractional distillation works
4. What happens when a molecule is cracked? What factors are needed for this to take place?
5. Write the word equation for the complete combustion of methane



Organic Chemistry - Answers

1. A molecule that only contains hydrogen and carbon atoms
2. C_nH_{2n+2}
3. Small molecules have a low boiling point and so move up the tower, larger molecules with high boiling points stay nearer the bottom of the tower.
4. A long chain molecule is broken down into two smaller molecules.
High temperature and a catalyst is needed
5. Methane + oxygen \rightarrow carbon dioxide + water



Atmosphere and Earth Resources

1. Name the 4 most common gases in the atmosphere
2. What caused the release of oxygen into the early atmosphere?
3. What is the main gas linked to global warming?
4. Name the pollutant which causes acid rain?
5. What is potable water?



Atmosphere and Earth Resources answers

1. Nitrogen, Oxygen, Argon and Carbon dioxide
2. Evolution of plants - photosynthesis
3. Carbon dioxide
4. Sulfur dioxide
5. Water that is safe to drink



Acids and Salts

1. What acid produces sulfate salts?
2. What two chemicals could be used to make sodium chloride
3. Name the acid needed to make the salt magnesium nitrate?
4. Place these metals in order from most to least reactive: sodium, aluminium, iron, copper
5. What happens in a metal displacement reaction?



Acids and Salts Answers

1. Sulfuric acid
2. Hydrochloric acid and either sodium (carbonate, hydroxide, oxide)
3. Nitric acid
4. Sodium, aluminium, iron and copper
5. A more reactive metal will kick out a less reactive metal



Substances and Separating Mixtures

1. Describe the difference between an element and a compound
2. State what is meant by a mixture
3. State how a mixture of food colourings can be separated.
4. State how a mixture of two liquids (miscible) can be separated
5. State how sand can be separated from a mixture of sand and water



Answers

1. an element is made of only one type of atom; a compound is made of two or more different types of atom chemically bonded.
2. mixtures are two or more substances which can be separated (physically)
3. Chromatography
4. Distillation
5. Filtration



Gas Tests and Electrolysis

1. State the test and result for oxygen
2. State the test and result for hydrogen
3. State the test and result for carbon dioxide
4. State the test and result for chlorine
5. State what is meant by electrolysis



Answers

1. glowing splint; relights
2. lighted splint; burns with pop
3. Bubble through limewater; turns cloudy (milky)
4. Damp (blue) litmus; bleaches (turns white)
5. Decomposition of a compound (ionic) using an electric current (dc)



Bonding

1. State what is meant by a covalent bond
2. State what is meant by an ionic bond
3. State what is meant by a metallic bond
4. Explain why is chlorine a gas at room temperature?
5. Explain why sodium chloride conducts electricity when it is dissolved in water



Answers

1. A shared pair of electrons
2. An electrostatic attraction between positive and negative ions
3. A lattice of positive metal ions in a sea of delocalised electrons
4. Weak forces between molecules (intermolecular); little energy needed to separate molecules
5. Ions are free to move



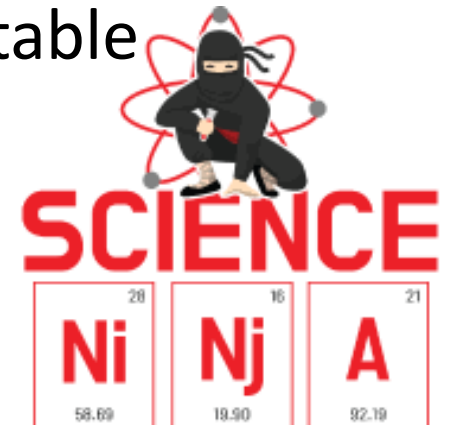
Rates and Energy Changes

1. Name three factors which affect the rate of a reaction
2. Name a piece of apparatus which can be used to find the volume of gas produced in a chemical reaction
3. State the name for reactions which take in heat energy from the surroundings
4. How can you measure the temperature rise in a reaction
5. Give an example of reaction which gives out energy to the surroundings



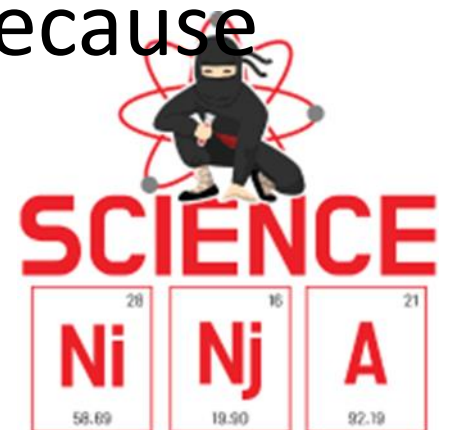
Answers

1. temperature; concentration/pressure; surface area; catalyst
2. Inverted burette and delivery tube; inverted measuring cylinder and delivery tube, gas syringe
3. endothermic
4. Measure the initial and final temperatures (to calculate the difference)
5. Combustion; neutralisation; respiration; rusting (any suitable reaction)



Key Words

1. How do you determine mean?
2. How do you calculate range?
3. What does resolution mean?
4. What is the variable called that you change in an experiment?
5. What is the variable called that you changes because you changed independent variable?



Key Words answers

1. Add up values, divide total by total number of values.
2. The maximum and minimum values of the independent or dependent variables; important in ensuring that any pattern is detected. For example a range of distances may be quoted as 'From 10 cm to 50 cm'
3. This is the smallest change in the quantity being measured (input) of a measuring instrument that gives a perceptible change in the reading.
4. Independent Variable.
5. Dependent Variable.

