# Name: ANSWERS

Year 9 Science Revision 2019

1. Complete the following table about sub-atomic particles (parts of an atom):

|  |  |  |  |
| --- | --- | --- | --- |
| Name of particle | Location of particle in an atom | Electric charge of particle | Relative size of particle.  (Ie largest or smallest) |
| Proton | **The nucleus of the atom** | **+1** | **Equal largest (10,000 times larger than the electron)** |
| **Neutron** | The nucleus of the atom | **No charge** | Equal largest |
| **Electron** | **Around the outside of the nucleus** | **-1** | The smallest particle in an atom |

1. What is the difference between an element and a compound?

**Element has only one type of atom in it, but a compound has more than one type of atom**

1. What is the difference between an ion and an atom?

**An ion is an atom, or group of atoms with a charge. An atom has no charge.**

1. When magnesium is burned, the magnesium combines with oxygen to form a white substance called Magnesium Oxide
   1. List the reactants of the chemical reaction described above:

**Magnesium, oxygen**

* 1. List the products of the chemical reaction described above:

**Magnesium Oxide**

* 1. Write the word equation for the reaction described above: (Use an arrow to separate reactants and products)

**Magnesium + oxygen → Magnesium Oxide**

1. How can you prevent a metal from rusting?

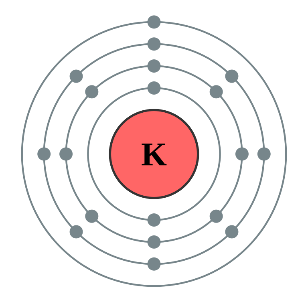
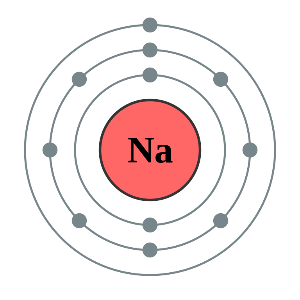
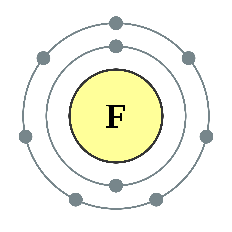
**Rusting is the reaction between a metal and oxygen, so keeping oxygen from getting to the metal could be done by painting the metal, or covering it in a grease or oil layer.**

1. Complete the following table which relates to the number of electrons that can fit into an electron shell of an atom:

|  |  |
| --- | --- |
| Shell position from nucleus | Number of electrons that can fit in the shell |
| 1st shell | **2** |
| 2nd shell | **8** |
| 3rd shell | **8** |

1. Draw the arrangement of electrons around the following atoms:

Fluorine (9 electrons) Sodium (11 electrons) Potassium (19 electrons)



1. The word equation for igniting hydrogen gas in air (oxygen) is:

Hydrogen + Oxygen 🡺 Water

List the product/s: **Water**

List the Reactant/s: **Hydrogen, Oxygen**

1. List the signs that a chemical reaction has taken place.

**Colour change Precipitate (solid) forms Gas is given off (bubbling)**

**Temperature change Change in odour or taste**

1. State the law of conservation of mass.

**In any chemical reaction mass (matter) cannot be created or destroyed and must be conserved**

1. What is the difference between endothermic and exothermic chemical reactions?

**Exothermic reactions release heat and therefore make their surrounding hotter. Exothermic reactions have heat (or energy) as a product (on the right hand side) in the chemical equation . Endothermic reactions absorb energy from their surroundings and therefore make their surroundings colder. Endothermic reactions have heat (or energy) as a reactant (left hand side) in the chemical equation.**

1. Use the periodic table and your knowledge from class to complete the following table:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Element** | **Symbol** | **Atomic Number** | **Atomic Mass** | **Number of Protons** | **Number of Neutrons** |
| Magnesium | Mg | 12 | 24 | 12 | 12 |
| **Oxygen** | O | **8** | **16** | 8 | 8 |
| **Sulphur** | **S** | 16 | 32 | **16** | **16** |
| **Aluminium** | **Al** | **13** | 27 | **13** | 14 |
| **Helium** | **He** | **2** | 4 | 2 | **2** |

1. Read the following passage describing a chemical reaction that you did in class:

**Potassium Iodide** and **Lead Nitrate** are both clear liquids. When they are added together the liquid instantly turned bright yellow. This is due to a substance called **Lead Iodide** being formed along with another substance called **Potassium Nitrate**.

1. List the **products** of the reaction: **Lead Iodide and Potassium Nitrate**
2. List the **reactants** of the reaction: **Potassium Iodide and Lead Nitrate**
3. Write a word equation (using an arrow to separate the reactants and the products) for the chemical reaction:

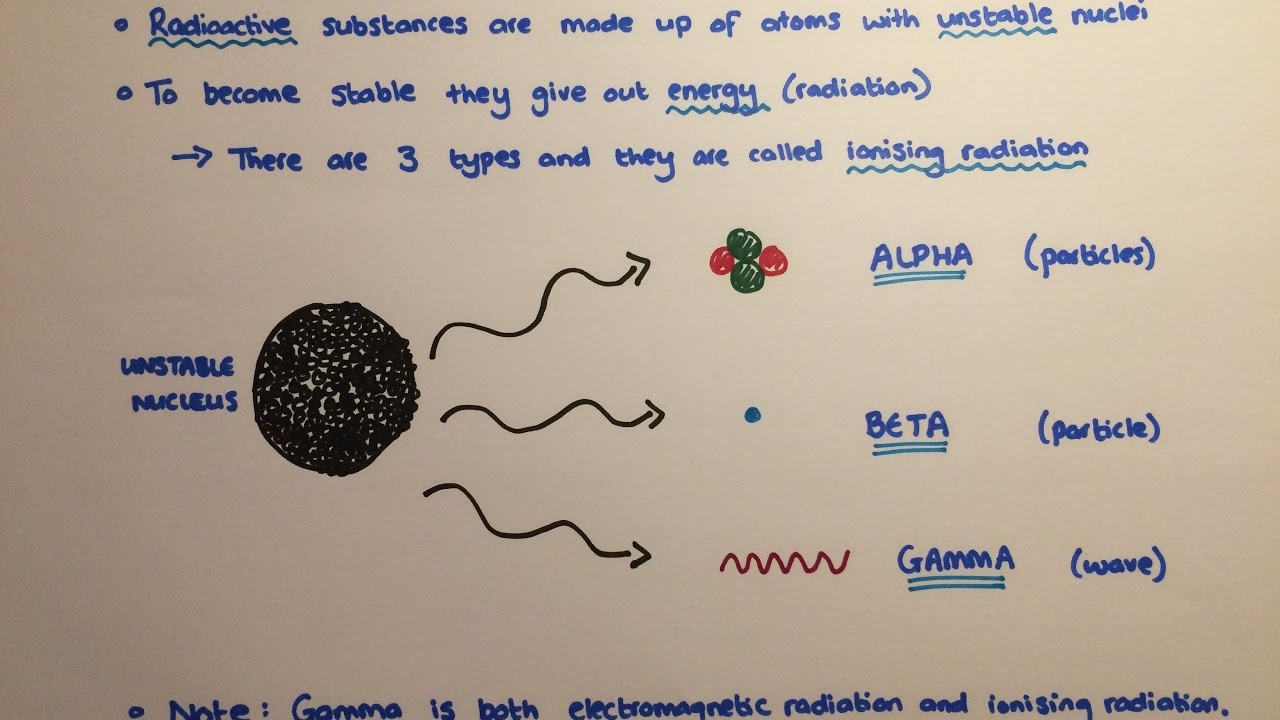
**Potassium Iodide + Lead Nitrate → Potassium Iodide + Lead Nitrate**

1. Fill in the missing name and chemical diagram for the following chemical reaction:

Copper + Hydrogen Sulphate 🡺 Copper Sulphate + **Hydrogen gas**

1. Your friend made excellent revision notes on Radiation, but you notice they have left out what the Alpha, Beta particles are comprised of. Add the following terms to the diagram;

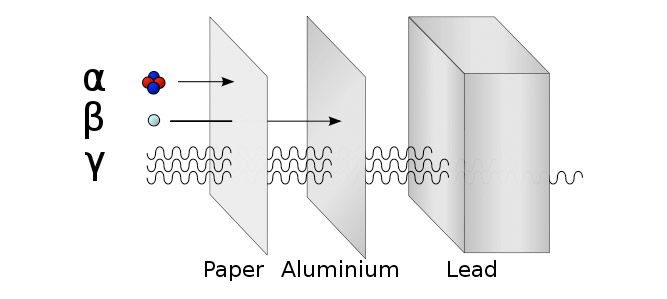
* 2 protons and 2 neutrons



**2 protons and 2 neutrons**

**electron**

* Electron



1. Using the information from the notes above. **Explain** the following diagram in the space provided below.

**The diagram explains how the three types of radiation can penetrate matter. Alpha particles are the largest radioactive particle and are stopped by a single sheet of paper. Beta particles are much small and can penetrate further but are stopped by most metals. Gamma radiation is not a particle and penetrates the most. Gamma radiation is stopped by several centimetres of lead metal.**

1. Explain the difference between combustion and Oxidation.

**While both of these involve a reaction with oxygen they differ in many way.**

* **Oxidation involves a metal reacting with oxygen, while combustion involves a non-metal reacting with oxygen.**
* **Oxidation is quite slow, but most combustion reactions are very quick (burning).**
* **Oxidation reactions release energy very slowly, but combustion reactions are very exothermic and release a lot of energy as heat, very quickly.**