Italics – Higher Only

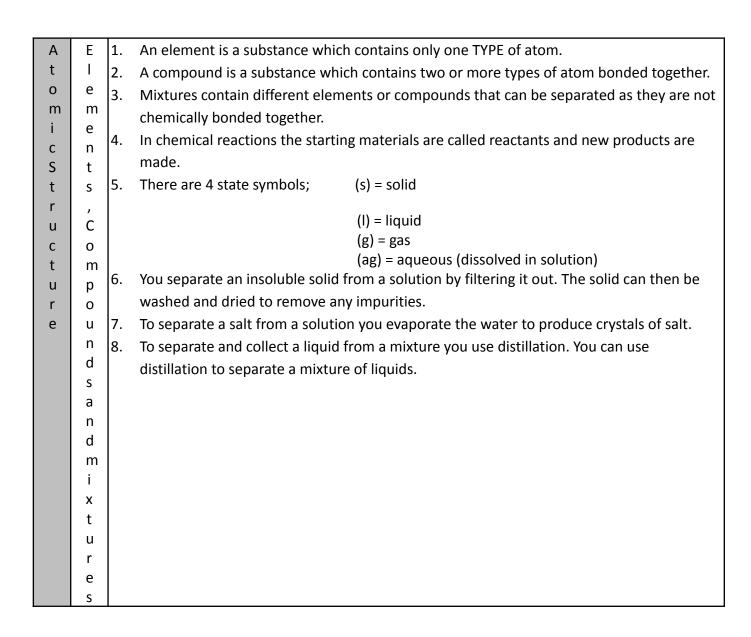
For Science you will complete a test in your Biology, Chemistry and Physics lesson. The facts you will be tested on are from your Year 9 learning. Please learn the facts for each subject as below.

For Biology Facts 1 to 68

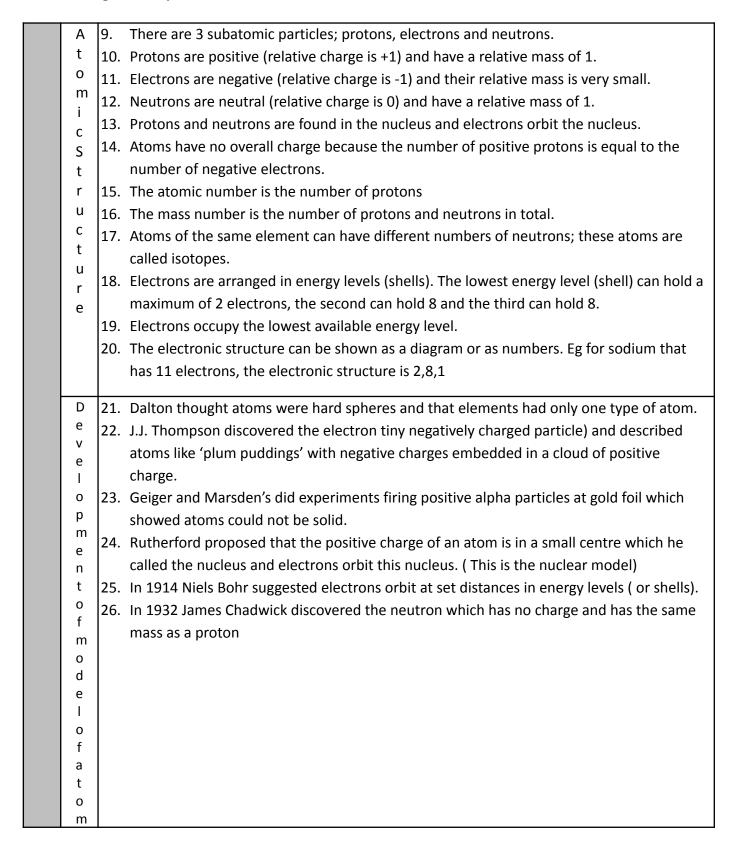
For Chemistry Facts 1 to 71

For Physics Facts 64-98

For this test, only shared content between Triple and Combined content is being tested. Please use only the fact sheets attached to this post and learn the facts above for these recall tests. This information is also in your Google Classroom.



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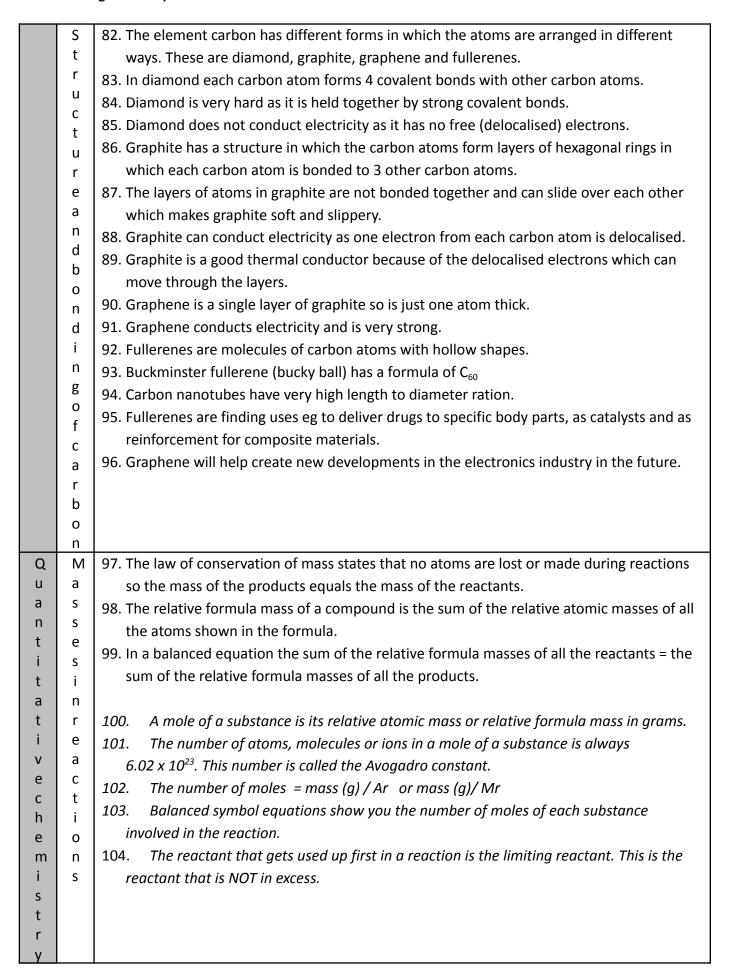


| Т | D | 27. Before the discovery of protons, electrons and neutrons, scientists ordered the elements |
|---|--------|---|
| h | e | by their atomic weight. |
| е | V | 28. Mendeleev placed elements in more appropriate places, grouping elements with similar |
| Р | e | |
| е | 1 | properties so patterns could be seen. This meant he sometimes left gaps or changed the |
| r | 0 n | order of atomic weight. |
| i | p m | 29. Elements with properties Mendeleev predicted were discovered and filled the gaps. |
| 0 | e | 30. The elements on the modern periodic table are arranged in order of increasing atomic |
| d | n | number. |
| i | t | 31. Elements are arranged in columns called groups (going down) on the periodic table. |
| C | 0 | 32. The number of electrons in the outermost shell of an atom is the same as its group on |
| Т | f | the periodic table. |
| a | p e | |
| b | r | |
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| | G | 33. Elements in the same group have similar properties. |
| | r | 34. Group 0 are called the noble gases. They are unreactive because of their very stable electron |
| | 0 | arrangement (full out shell) |
| | u | 35. The boiling point of the noble gases increases with increasing relative atomic mass (as |
| | р 0 | you go down the group). |
| | U | 36. Boiling point and condensing point are the same temperature. |
| | | |
| | | |
| | G | 37. Group 1 are the alkali metals. |
| | r o | 38. All group 1 atoms have 1 electron in their outer energy level. |
| | u | 39. Group 1 metals are very reactive. |
| | р | 40. When they react they lose their outer electron to form a full outer energy level and |
| | 1 | become stable. |
| | | 41. Group 1 metals are stored in oil to stop the oxidising. |
| | | 42. They have low densities and float in water. |
| | | 43. Group 1 metals react vigorously with water producing an alkaline solution of the metal |
| | | hydroxide plus hydrogen gas. |
| | | 44. Group 1 metals react with halogen to produce metal halides which are white soluble |
| | | solids. |
| | | 45. The reactivity of group 1 increases as you go down the group. |
| | | +3. The reactivity of group I increases as you go down the group. |

| G | 46. Group 7 elements are known as the halogens. |
|---|--|
| r | 47. Group 7 elements all react in a similar way as they all have 7 electrons in their outer |
| 0 | shell. |
| u | Group 7 elements are non- metals and consist of molecules made of pairs of atoms eg |
| | Br ₂ |
| / | 49. The melting point and boiling point of group 7 increase as you go down the group. |
| | 50. In group 7 the reactivity decreases as you go down the group. |
| | 51. The halogens form ions with a charge of 1- by gaining an electron when reacting with |
| | metals to form ionic compounds. |
| | 52. A more reactive halogen will displace a less reactive halogen from a compound. |
| | |
| | 53. The halogens form covalent molecules by sharing electrons with other non- metals. |
| М | 54. Metals are found in the centre of the periodic table and to the left and bottom of the |
| е | periodic table. |
| t | 55. Metals react to form positive ions. |
| a | 56. The atoms in metals are closely packed together in regular layers |
| 1 | 57. The electrons in the outer shells of metals are delocalised and are free to move |
| S | throughout the metallic lattice. This creates strong metallic bonding. |
| | 58. Most metals have high melting and boiling points. |
| | 59. Metals can be bent and shaped as the layers of atoms can slide over each other. |
| | 60. Alloys are mixtures of a metal with other elements. |
| | 61. Alloys are harder than pure metals as the layers are distorted and cannot slide. |
| | 62. Metals are good conductors of electricity because the delocalised electrons move |
| | |
| | through the structure. |
| | 63. Metals are good conductors of heat as the delocalised electrons can transfer the thermal |
| | energy. |
| | r o u p 7 |

| В | 1 | 64. Ionic bonding occurs between metals and non- metals. |
|----------|--------|---|
| 0 | 0 | 65. Metal atoms lose electrons to form positive ions. |
| n | n | 66. Non- metal atoms tend to gain electrons to form negative ions. |
| d : | l i | 67. Ionic compounds are held together by strong electrostatic forces of attraction between |
| l l | C B | oppositely charged ions. |
| η σ | | 68. Ionic compounds form giant lattices. |
| g | n | 69. Ionic compounds have high melting and boiling points. |
| n | d | 70. Ionic compounds do not conduct electricity when solid as the ions are not free to move. |
| d | i | 71. When melted or dissolved, ionic compounds conduct electricity as the ions are free to |
| Р | n | move. |
| r | g | |
| 0 | С | 72. Covalent bonds are formed when non-metal atoms share pairs of electrons. |
| p | 0 | 73. Covalent bonds are strong. |
| e | V | 74. Many covalent compounds consist of small, simple molecules e.g., oxygen, chlorine and |
| l t | l a | water. |
| i | l ' | 75. They are usually gases or liquids with low melting and boiling points. |
| е | l n | 76. Small covalent molecules have weak intermolecular forces between the molecules. |
| S | l " | 77. When these substances are heated it is the intermolecular forces that break not the |
| 0 | В | covalent bonds. |
| f | 0 | 78. Simple covalent molecules do not conduct electricity because the molecules do not have |
| M | n | an overall charge. |
| a + | d | 79. Polymers are very large molecules held together by strong covalent bonds. |
| l t | i | 80. Some covalently bonded substances have giant structures eg silicon dioxide , diamond |
| e | n a | and graphite. |
| r | g | 81. Giant covalent structures have very high melting and boiling points. |
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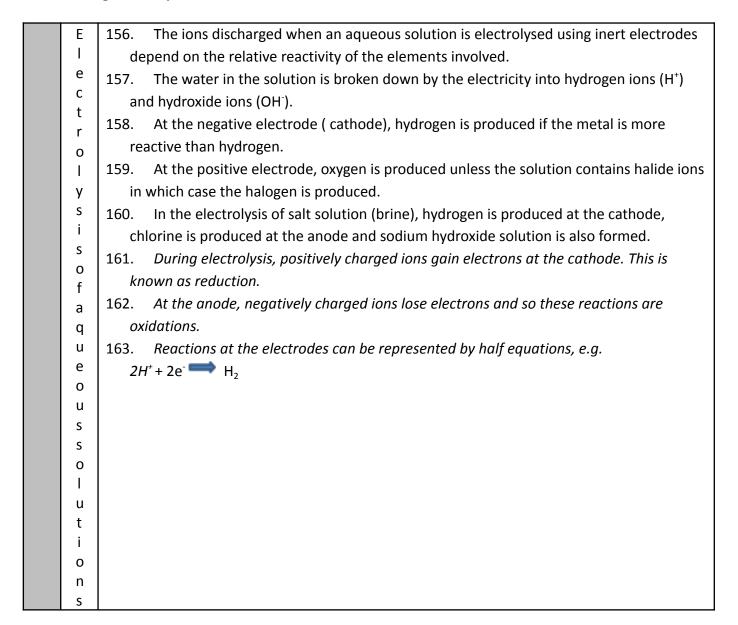


| | С | 105. The concentration of a solution can be measured in mass per volume. Grams per dm ³ | | | | |
|--------|--------|--|--|--|--|--|
| | 0 | (g/dm³) | | | | |
| | n | 106. $1 \text{ dm}^3 = 1000 \text{cm}^3$ | | | | |
| | С | 107. The mass of solute in a solution = concentration x volume in dm ³ | | | | |
| | e n | 108. The concentration of a solution can be increased by increasing the mass of solute or | | | | |
| | t t | decreasing the volume of the solvent. | | | | |
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| | n | | | | | |
| R | R | 109. Metals react with oxygen to produce metal oxides. These reactions are called | | | | |
| e | e | oxidation reactions. | | | | |
| a | a | 110. When metals react they lose electrons to form positive ions | | | | |
| c t | c t | 111. The reactivity series places metals in order of reactivity. From the most to the least | | | | |
| i | i | reactive it is; potassium, sodium, lithium, calcium, magnesium, aluminium, (carbon) zinc, | | | | |
| v | 0 | iron, tin, lead, (hydrogen), copper, silver, gold. | | | | |
| i | n | 112. A more reactive metal can displace a less reactive metal from a compound. | | | | |
| t | 0 | 113. Metals more reactive than hydrogen will react with acid and produce hydrogen gas. | | | | |
| У | f | Hydrogen gas 'pops' with a lighted spill. | | | | |
| 0 | m | 114. Metals less reactive than carbon can be extracted from their ores by reduction with | | | | |
| f | e | carbon. | | | | |
| m e | t a | 115. Reduction involves the loss of oxygen. | | | | |
| t | l | 116. Reduction is the gain of electron. | | | | |
| a | S | 117. Oxidation is the loss of electrons. | | | | |
| - 1 | | - | | | | |
| S | | | | | | |
| R | М | 118. Acids react with some metals to produce salts plus hydrogen. | | | | |
| е | а | 119. Sulphuric acid produces salts called sulphates. | | | | |
| а | k | 120. Hydrochloric acid produces salts called chlorides. | | | | |
| C | i | 121. Nitric acid produces salts called nitrates. | | | | |
| t i | n σ | 122. Alkalis are soluble metal hydroxides (eg sodium hydroxide) | | | | |
| 0 | g S | 123. Bases are insoluble metal hydroxides and metal oxides. | | | | |
| n | a | 124. Acids are neutralised by alkalis and bases to produce a salt plus water. | | | | |
| S | -1 | 125. Acids are neutralised by metal carbonates to produce a salt, water and carbon | | | | |
| 0 | t | dioxide. | | | | |
| f | S | 126. When reacting an insoluble base with an acid to make a soluble salt, excess solid is | | | | |
| a | | used then filtered off after the reaction. | | | | |
| C : | | 127. Salt solutions can be crystallised to produce solid salts. | | | | |
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| | р | 128. | Acids produce hydrogen ions (H⁺) in aqueous solutions. |
|--|----------|------|--|
| | Н | 129. | Aqueous solutions of alkalis contain hydroxide ions (OH ⁻). |
| | S | 130. | The pH scale. From 0-14, is a measure of the acidity or alkalinity of a solution. |
| | С | 131. | pH can be measured using universal indicator or a pH probe. |
| | a I | 132. | A solution of pH 7 is neutral. |
| | ' e | 133. | Acids have a pH less than 7. |
| | | 134. | Alkalis have a pH greater than 7. |
| | | 135. | In reactions between acids and alkalis, the hydrogen ions and the hydroxide ions |
| | | ne | eutralise each other. |
| | | 136. | $H^{+}_{(aq)} + OH^{-}_{(aq)} \longrightarrow H_2O_{(l)}$ |
| | | | (04) (04) = (1) |
| | S | 137. | A strong acid is completely ionised in aqueous solutions. |
| | t | 138. | Hydrochloric, nitric and sulphuric acids are strong acids. |
| | r | 139. | Weak acids only partially ionise in aqueous solutions. Ethanoic, citric and carbonic |
| | 0 | ac | ids are weak acids. |
| | n g | 140. | The stronger the acid the lower the pH. |
| | a a | 141. | As the pH decreases by one unit, the hydrogen ion concentration increases by a factor |
| | | of | 10. |
| | d | 142. | pH 1 = hydrogen ion concentration of 0.1 mol/dm ³ , pH 2 = 0.01 mol/dm ³ and so on |
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| E . | Ε. | 143. | Electrolysis breaks down a substance using electricity. | |
| ı | ı | 144. | Metals can be extracted from molten compounds using electrolysis. | |
| е | е | 145. | The ions in ionic compounds are free to move when they are melted or dissolved. | |
| C | C | They can then conduct electricity. | | |
| t | t | 146. | Liquids and solutions that conduct electricity are called electrolytes. | |
| r | r o | 147. | When electricity is passed through an electrolyte, positive ions move to the negative | |
| Ĭ | electrode and negative ions move to the positive electrode. | | | |
| у | у | 148. | The positive electrode is called the anode. | |
| S | S | 149. | The negative electrode is called the cathode. | |
| i | i | 150. | Ions are discharged at the electrodes to produce elements. | |
| S | S | 151. | Metal ions are attracted to the cathode and metal is produced. | |
| | o f | 152. | When extracting metals from their compounds, inert (unreactive) electrodes are | |
| | l ' l m | used. | | |
| | e | 153. | Electrolysis uses large amounts of energy to melt the compounds and to produce the | |
| | t | ele | ectrical current used. | |
| | а | 154. | In the production of aluminium, aluminium oxide is mixed with cryolite to lower the | |
| | I | m m | elting point. | |
| | С | 155. | The oxygen produced at the anode when aluminium oxide is electrolysed reacts with | |
| | o m | th | e anode to form carbon dioxide. This electrode needs replacing. | |
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| Е | E | 164. Energy is conserved in chemical reactions. | | | |
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| n | x | 165. An exothermic reaction is one that transfers energy to the surroundings so the | | | |
| е | 0 | temperature of the surroundings increases. | | | |
| r | l t | 166. Exothermic reactions include combustion, many oxidation reactions and | | | |
| g | h e | neutralisation. | | | |
| С | r | 167. Everyday uses of exothermic reactions include self -heating cans and hand warmers. | | | |
| h | l 'm | 168. An endothermic reaction is one that takes energy in from the surroundings so the | | | |
| a | i | temperature of the surroundings decreases. | | | |
| n | С | 169. An everyday use of an endothermic reaction is a sports injury pack. | | | |
| g | a | 170. The activation energy is the energy needed for a reaction to occur. | | | |
| е | n | 171. On a reaction profile, the activation energy is shown as the distance from the energy | | | |
| S | d | of the reactants to the top of the curved line showing the energy. | | | |
| l l | E | 172. On a reaction profile, if the reactants have more energy than the products then | | | |
| n | n d | energy has been released and the reaction is exothermic. | | | |
| l r l e | 0 | 173. On a reaction profile, if the products have more energy than the reactants then | | | |
| a | l t | energy has been taken in and the reaction is endothermic. | | | |
| С | h | | | | |
| t | e | 174. To break bonds energy is needed. | | | |
| i | r | 175. Energy is released as bonds are made. | | | |
| 0 | m | 176. In an exothermic reaction, the energy released from forming new bonds is greater | | | |
| n | l i | than the energy needed to break existing bonds. | | | |
| S | C | 177. In an endothermic reaction, the energy needed to break existing bonds is greater | | | |
| | r a | than the energy released from forming new bonds. | | | |
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