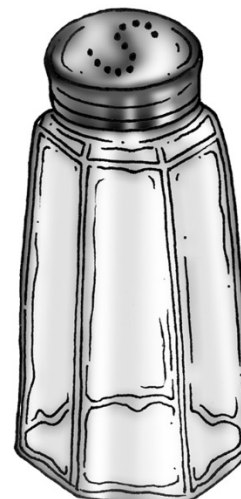
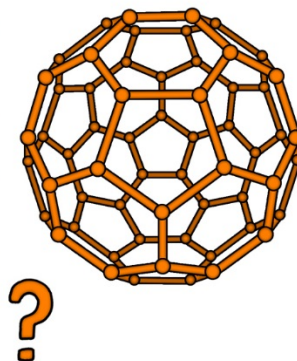
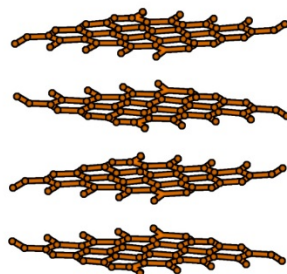
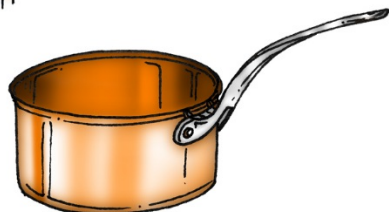
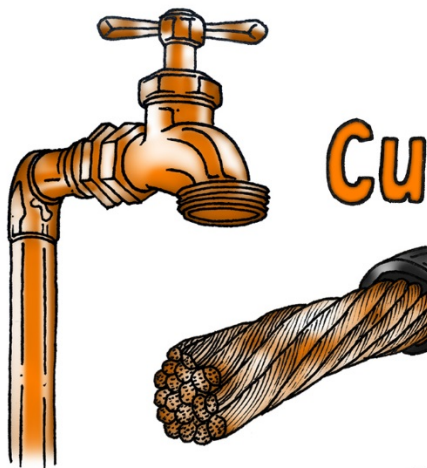
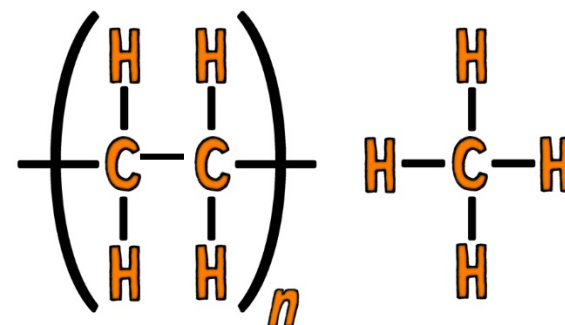


AQA GCSE

BONDING, STRUCTURE AND THE PROPERTIES OF MATTER

THINK IT!



Changes in State:

- Ammonia is a liquid between -77.7°C and -33.3°C . Use the kinetic theory to explain the three states of matter in this case.
- Using the particle theory, predict how temperature and pressure affect the density of a fixed mass of gas.
- *HT only - Explain the limitations of the particle theory.*

Ionic Bonding:

- Explain, using a diagram, how and why the atoms of Group 1 and Group 7 elements react with each other, in terms of their electronic structure.
- Explain, using their position in the periodic table, what the charges on metallic and non-metallic ions relates to.
- Explain how the ions are held together in solid magnesium oxide (MgO).

Ionic Compounds:

- Describe in terms of electrons what happens when magnesium reacts with fluorine to form the ionic compound magnesium fluoride (MgF_2).
- Explain why sodium chloride is NaCl , but sodium oxide is Na_2O .
- Explain why the ball and stick model is not a true representation of the structure of an ionic compound.

Nanoparticle (chemistry only):

- Sun cream uses nanoparticles. In terms of size, evaluate the advantages and disadvantages of using nanoparticles in this way.
- Some scientists believe there should be restrictions on the use of nanoparticles. Explain some of the possible risks associated with the use of nanoparticles.

AQA

Bonding, Structure and the Properties of matter

ThinkIT!

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Properties of Ionic compounds:

- NaCl has a very high melting point, but can be easily crushed. Use your knowledge of bonding to explain this.
- Explain why ionic compounds conduct electricity only when molten or dissolved in water.
- Suggest how electrolysis can be used to separate lead selenide (PbSe).

Metallic bonding:

- Ionic lattices are brittle. Compare and contrast metallic and ionic bonding to explain why metallic compounds are not brittle.
- Explain, in terms of structure and bonding why metals are good conductors of heat energy and electricity.
- Explain why alloying a metal can make the metal harder.

Structure and bonding of carbon:

- Explain the properties of diamond in terms of its structure and bonding.
- Explain how graphite can be used to reduce the friction between two substances.
- Diamond coating would make smartphones and tablets far stronger but would remove their touch-screen capability. Use your knowledge of bonding to explain why.

Covalent Bonding:

- Nitrogen gas is a diatomic molecule. Explain how the atoms are joined together.
- Explain why the melting point of hydrogen chloride is -115°C , whereas sodium chloride's melting point is 801°C .
- Sulphur hexafluoride SF_6 is an insulating gas. Suggest the type of bonding present and explain why it is gaseous at STP (Standard Temperature and Pressure).