

- 1 Copper is a metal that can easily be shaped. It is a good conductor of heat and electricity. Its properties as a conductor of heat and electricity make it ideal for making electrical circuits and for utensils like saucepans.

The diagram below is a representation of the particles in copper metal.



- 1 (a) (i) Explain why copper can be easily shaped.

Atoms/particles/metal ions are in layers [1 mark]

Layers can slide over each other [1 mark]

The particles in metals are usually referred to as ions because they lose electrons from their outer shell. You can often say 'atoms' in an answer but be aware that 'ions' is perhaps a better word to use.

(2 marks)

- 1 (a) (ii) Pure metals such as copper are often soft. Mixing two metals together can make an alloy. An alloy is often harder than a pure metal.

Explain why alloys are often harder than pure metals. You may use a diagram if you wish.

The layers are distorted or there are different sized atoms in the structure. [1 mark]

It is more difficult for the layers/atoms/ions to slide over each other. [1 mark]

(2 marks)

- 1 (b) Explain why copper is a good conductor of electricity.

There are free/delocalised electrons [1 mark]

In the outer shell of the atoms [1 mark]

Which are free to move through the structure [1 mark]

(3 marks)

The point about electrons being able to move through the structure of the conductor is often underlined in mark schemes, so important to mention in if you have a question like this.

(Total 7 marks)