

1 Tick the box to show if the property described applies to metals and/or non-metals.

	Metal	Non-metal
a Most are good conductors of electricity.	<input type="checkbox"/>	<input type="checkbox"/>
b Most are flexible solids.	<input type="checkbox"/>	<input type="checkbox"/>
c Most are shiny when polished.	<input type="checkbox"/>	<input type="checkbox"/>
d Tend to be brittle solids that break rather than bend.	<input type="checkbox"/>	<input type="checkbox"/>
e Mostly poor conductors of heat.	<input type="checkbox"/>	<input type="checkbox"/>
f All but one are solids at room temperature.	<input type="checkbox"/>	<input type="checkbox"/>
g Some are gases.	<input type="checkbox"/>	<input type="checkbox"/>

2 Complete the word that describes the property of the material being used, and which is important for the use shown.



Aluminium is used for cooking pots as it is a good:

c _____ of _____



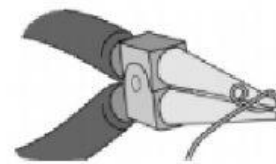
Iron is used for bridges as it is:

s _____



Silver is used for mirrors as it is:

s _____



Silver is bent to make jewellery as it is:

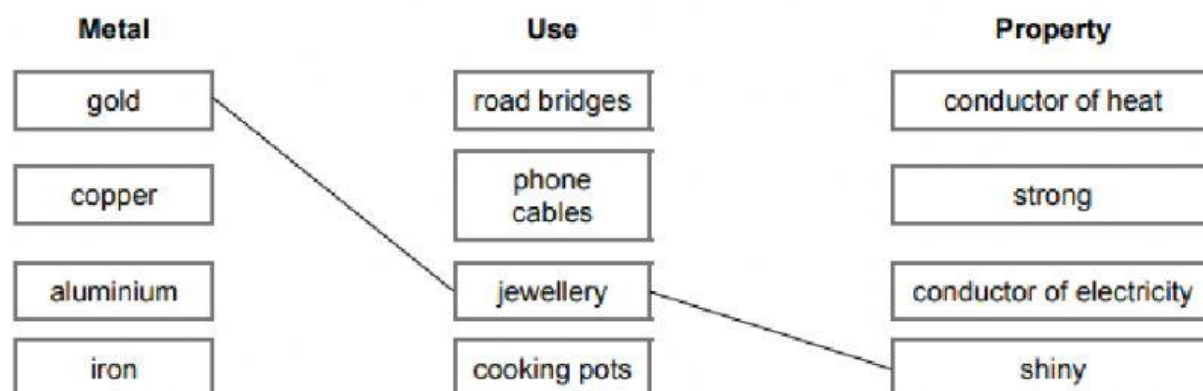
f _____

1 Here are some descriptions of different elements at room temperature.

Tick the box to show whether you think the descriptions fits that of a metal or a non-metal.

	Metal	Non-metal
a Silvery solid that is a good conductor of heat.	<input type="checkbox"/>	<input type="checkbox"/>
b Colourless gas.	<input type="checkbox"/>	<input type="checkbox"/>
c Hard, strong but flexible solid.	<input type="checkbox"/>	<input type="checkbox"/>
d Dark coloured liquid that does not conduct electricity.	<input type="checkbox"/>	<input type="checkbox"/>
e Crumbly yellow solid.	<input type="checkbox"/>	<input type="checkbox"/>
f Solid that is flexible and conducts electricity.	<input type="checkbox"/>	<input type="checkbox"/>
g Solid that conducts electricity.	<input type="checkbox"/>	<input type="checkbox"/>
h Green gas.	<input type="checkbox"/>	<input type="checkbox"/>
i Black dull solid.	<input type="checkbox"/>	<input type="checkbox"/>
j Shiny solid that does not conduct electricity or heat well.	<input type="checkbox"/>	<input type="checkbox"/>
k Shiny liquid that conducts electricity.	<input type="checkbox"/>	<input type="checkbox"/>

2 Draw a line to link up the 'use' with the 'metal' and the 'property' that is important. One link has been done for you.



- 1 Complete the following list of properties of metals and non-metals.
(Some first letters have been included.)

Metals are:

_____ melting point solids.
 F _____ – bend without breaking.
 S _____ when polished.
 Good conductors of h_____
 _____ conductors of electricity.

Non-metals are:

_____ melting point solids, liquids and gases.
 _____ (when solid). They don't bend easily and snap.
 D _____ looking solids.
 _____ conductors of heat.
 Poor conductors of e_____.

- 6 Here are some common substances, including some that you might find at a recycling centre.
Fit each substance into the correct box in the table.

copper	oxygen	aluminium	bronze	silicon oxide
	water	brass	nitrogen	

	Made of metal elements	Made of non-metal elements
Made of one element only		
Made of more than one element		

Aim

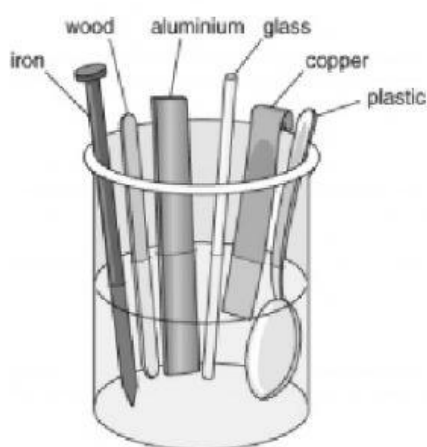
To investigate the properties of metals compared to substances that are not metals.
Properties tested are conduction of heat, conduction of electricity and density (heaviness).

Method – Test 1: Testing conductivity of heat

Apparatus

- beaker
- hot water tap
- stop clock
- rods of iron, copper, plastic, wood, glass and aluminium

⚠ Care with hot water – only use water from the hot tap.



- Fill a beaker with hot water.
- Put all the objects into the hot water and start the stop clock.
- Feel the ends of each of the objects.
- When you can start to feel the heat coming through, write down the time. Use the table below.
- If you still can't feel the heat after 5 minutes, stop the stop clock and write 'more than 5 minutes' in the table.
- Put the materials in order, from the best conductor to the worst.

Recording your results

Material	Time to feel the heat (min:sec)	Order (1 = first, 6 = last)
iron		
plastic		
glass		
wood		
copper		
aluminium		

Considering your results/conclusions

1 Three of the materials are metals and three are not. From the results of my experiments:

a _____ b _____ c _____ are metals.

These three materials:

d _____ e _____ f _____ are not metals.

2 Are the metals good or bad conductors of heat? _____

3 Are the metals good or bad conductors of electricity? _____

4 Are the metals usually heavy or light? _____