

## PS3 - Chemistry KS1 - 5 - 7



### What is the main task of this puzzle?

Spot the difference between the two robots.

The items that the robots are wearing and holding are different. Starting from the top left and working clockwise...

Sandcastle / pencil  
ice lolly / kettle  
boat / fish bowl and fish  
anchor / hot water bottle  
beach ball / key

The left robot has on sunglasses while the right robot is wearing a scarf.

### What are the other topics or tasks in the puzzle?

The left robot is on holiday and is holding and wearing items associated with being outside. The right robot has items you might find inside and when it is cold.

- How many different materials can you see in the picture? What items are made of the same material?
  - Beach ball / hot water bottle  
These are likely to be made out of plastic or synthetic rubber. Both plastic and synthetic rubber are mainly manufactured from oil. (It is possible that a hot water bottle could be made out of natural rubber - which comes from some trees. In this case the two are not made of the same material)
  - Anchor / key / kettle  
The anchor and key are both made out of metal. The anchor in the puzzle would most likely have been made from iron, but today anchors would be made from steel or even concrete, materials that are less corroded by seawater. An old key might be made from iron too, but today most keys are made from steel. The kettle would be made from steel. Although steel is primarily made of iron, additives and the way it is manufactured means it is less likely to rust.
  - Pencil / toy boat  
The main part of the pencil is wood and the boat has a wooden hull.
  - Steam from the kettle / water in the goldfish bowl / ice lolly  
All three are made mainly of water, but in three different phases – gas, liquid and solid.
  - Sandcastle / glass fish bowl  
Sand and glass are pretty much the same material - silica or silicon dioxide. Sand is found naturally and glass is manufactured. Silicon dioxide is a kind of rock, sand is this rock ground down finely. Glass is made from very pure silicon dioxide, heated up until it melts. Other materials are added to the glass when it is manufactured to make it more heat resistant or to give it a colour.
- What are the sunglasses made of? The sunglasses could be made of many different materials, glass, plastic or metal.
- Can you find an animal in the picture that might have helped make the woollen scarf? The sheep formed out of clouds of steam.
- What is happening to the ice lolly as the steam from the kettle reaches it?  
The heat from the steam is making the ice lolly melt.

- Without counting can you guess the number of screws and the number of bolts found around the edge of the puzzle? What are the nuts or bolts likely to be made of?
- There are 10 screws and 4 bolts. They are most likely to be made from metal.



## **Where does it fit in the curriculum?**

### **England**

1C Sorting and Using Materials.

2D Grouping and Changing Materials.

### **Wales**

Sort materials into groups, separating them on the basis of simple properties that can be seen or felt. Recognise and name common types of material, find out about the uses made of a variety of common materials.

To describe the way some everyday materials, e.g. water, chocolate, bread, clay, change when they are heated or cooled.

### **Scotland**

Recognise and name some common materials from living and non-living sources.

Give examples of uses of some materials based on simple properties.

## **Further information and links.**

The British Glass website - how glass is made and different types of glass: <http://www.britglass.org.uk/AboutGlass/AboutGlassHome.html>

About plastic and plastic recycling: [http://www.recyclenow.com/facts/materials\\_fact\\_files/plastics/](http://www.recyclenow.com/facts/materials_fact_files/plastics/)

How steel is made: <http://www.uksteel.org.uk/stmake.htm>

