

Going for Gold

Activity Sheet



1. Colour Changing Pennies

What will I need?

20-30 brownish pennies
water

250ml white vinegar
1 shallow plastic or glass bowl

1 teaspoon salt
paper towels

What should I do?

Mix the salt and vinegar together in the bowl.

Hold a penny in the liquid for 20 seconds - the penny should become cleaner.

Place all of the pennies in the liquid. They should all be clean after about 5 minutes.

Don't throw the liquid away – you will need it for the next experiment!

Rinse the pennies in water and dry them with a paper towel.

Why does this happen?

The brownish layer that you generally see on the surface of pennies is not just dirt.

Don't just take our word for it - try washing one with soap and water and you will see that it doesn't come off! The copper in the penny reacts, or joins up, with oxygen from the air to make a layer of a brown chemical called

copper oxide. When a similar thing happens to iron you can see it as rust. The

acid in the vinegar dissolves the copper oxide to leave you with a bright shiny penny!



2. Colour Changing Paperclip

What will I need?

1 metal (not plastic) paperclip

The liquid that you used in the 1st experiment

What should I do?

Place the paperclip in the liquid so that it is fully submerged.

Check the paperclip after 10 minutes. You might see some bubbles coming from it.

Look again 1 hour later. You should see a dark brown layer on the paperclip.

Why does this happen?

The liquid contains some copper from the pennies that it cleaned. These tiny bits of copper are far too small to see. When the paperclip is placed into the liquid some iron from the paperclip swaps places with copper in the liquid. This leaves a layer of copper on the paperclip. Your paperclip might not be completely covered, but it will have enough copper on it to see!

