

Some common materials, their properties and uses

Wood



Rigid, strong, hard

Can be used for doors, floors, tables, fences

Plastic



Strong, shiny, bendy

Can be used for bottles, pens, rulers, toys, phones, cups, packaging

Glass



Transparent, smooth, stiff, waterproof

Can be used for windows, mirrors, glasses, windscreens

Rock



Hard, strong, dull

Can be used for garden walls, old buildings

Rubber



Flexible, stretchy, strong

Can be used for tyres, elastic bands, balloons, soles on shoes

Brick



Rigid, strong, dull, rough

Can be used for houses, walls

Paper and cardboard

What does *material* mean?

All objects have a name like 'a door'.
Material is the 'stuff' an object is made from

Changing the shape of materials

Squashing



Crushing something so that it becomes flat, soft or out of shape

Bending



Changing a straight object so that it is curved

Twisting



Changing the shape of an object by turning it

Stretching



Made longer or wider without tearing or breaking

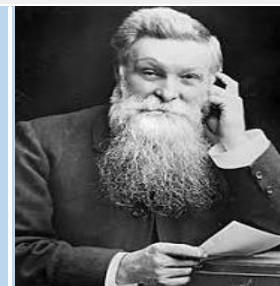
Key Vocab

Properties	Ways to describe something
Material	The 'stuff' an object is made out of
Opaque	You can't see through it
Rubber	A tough material that can be shaped
Transparent	You can see through it
Fabric	Cloth produced by weaving or knitting
Flexible	Easily bent without breaking
Absorbent	Able to soak up liquid or moisture
Waterproof	Not letting water through; not absorbent
Translucent	You can partially see through something but not clearly
Magnetic	Magnetic materials are rocks or pieces of metal that can pull certain types of metal toward itself

CHALLENGE – RESEARCH

John Boyd Dunlop

John Boyd Dunlop was a Scottish inventor. He is best known for his work in developing the first pneumatic (inflatable) tyre, a device still used today.



Dunlop found that solid wood, rubber or iron wheels made cycling difficult on the bumpy and rough roads. He experimented by using an inflatable rubber tyre on his son's tricycle.

Charles Macintosh

Charles Mackintosh was born in 1766 in Scotland.

He started experimenting with ways to use chemicals to make new materials.



During one of his experiments, he found that rubber would dissolve into a liquid in naphtha, a product derived from coal tar that he was investigating.

The dissolved liquid rubber was waterproof.

Charles realised it could be used to make waterproof fabric for clothes.

He painted the dissolved rubber onto a piece of woollen cloth and placed another piece of woollen cloth on top, so the rubber was sandwiched in the middle.

Charles had invented waterproof fabric!

He started to use this fabric to make waterproof coats that he called Mackintoshes.

Some objects can be made from various materials

Spoons

A spoon can be made from plastic, metal or wood



Shoes

A shoe can be made from leather, fabric or rubber



Gloves

A gloves can be made from leather, wool or rubber



Cups

A cup can be made from plastic, paper or glass



John McAdam

John Loudon McAdam was born in Scotland in 1756.

John McAdam became interested in road building and experimented with using different materials.

Roads at the time were often muddy and dangerous. Others were cobbled and very bumpy to travel over.



John McAdam thought it would be easier if the roads were covered in small stones and invented tarmac. It took his company 30 years to cover all roads across the UK.

Macadamisation was a success and this method of building roads was used all over the world.

Macadamisation

Large stones were placed at the bottom and small stones and gravel were crushed on the top to create the surface and structure. The roads were also curved, so that rainwater ran off the surface, instead of creating big puddles in the middle of the road.

