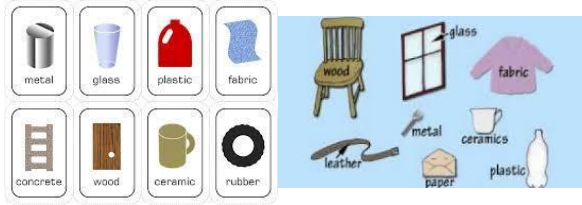


Solid materials



All of the above are solid materials and they all have different textures and properties.

1

Raw & manufactured materials

Raw materials, such as sand and clay, are natural materials that can be used as they are to make other solid materials.



Clay being shaped into a vase to hold water.

Raw materials can be changed into other materials that we call manufactured materials.



Glass



paper



Sand



water



wood



coal



oil

2

Manufactured objects from natural, raw materials

Sand comes from rocks that have been weathered and is used to make a liquid that can be shaped into different glass objects.

Other objects made from glass by people:



All of these have been made from sand by people who are creative and able to make things from the raw material

3

Manufactured objects from natural, raw materials

Wet clay is soft and malleable (can be shaped without breaking) and can make many ceramic objects, much harder than clay and yet they are brittle and can be broken if dropped.

Ceramic objects:



Coal & oil are the raw materials for plastics from which many objects are manufactured:



Both coal & oil were formed from trees, plants, shells and other subjects millions of years ago when much heat and pressure were applied to these objects.

4

Manufactured objects from natural, raw materials

Wool and animal skins can make up jerseys & jackets.



Many items are made from wood and fiber:



Solid wood products

Wood fiber products



5

Manufactured objects from natural, raw materials

Crude oil is a brown liquid found below the Earth's surface.

It is brought to the surface by wells and oil rigs at sea.



Different plastics are made from oil and coal and are used to make many products.



Nylon and polyester are made from crude oil & are made into fibers that make yarn & fabrics.

Plastics are very durable and take a long time to degrade or rot. This causes litter problems, pollution & lands up in the sea, killing fish etc.

6

Manufactured objects from natural, raw materials

Using an X, indicate what materials the following objects are made from:

Objects	Sand	Clay	Oil or Coal	Wood
1. Plastic spoon				
2. Chair				
3. Glass vase				
4. Nylon nightdress				
5. Ceramic tile				
6. Plastic ball				

Find out from what and how paper is made.

7

Properties of materials

Depending upon what objects are made from, they behave in a certain way, and we call these the properties of the material.

If you want to make an object to carry water, it needs to be light (easy to carry) and yet strong enough to carry water & also be waterproof.



Plastic or glass are suitable – but not a paper bag!

Plastic or glass have the correct, suitable properties but not a paper bag – since it is not strong enough and it is not waterproof. The properties are thus different.

9

Properties of materials

The table below contains some different objects. Indicate each objects properties with a tick ✓

Object	Hard	Soft	Strong	Weak	Stiff	Flexible	Light	Heavy	Waterproof	Absorbent
1. Feather										
2. Wood spoon										
3. Plastic spoon										
4. Plastic bag										
5. Paper bag										
6. Clay brick										
7. Glass marble										
8. Newspaper										
9. Nylon sock										

Add 2 more of your own choice and indicate their properties as well.

11

Manufactured objects from natural, raw materials

Summary

- Sand is used to make glass
- Clay is used to make ceramics
- Coal & oil are used to make plastics, paint & fabrics
- Wood and fiber are used to make paper, cardboard & chairs
- Animal wool and hides are used to make fabrics and leather.



8

Properties of materials

Here are some of the different properties that both raw and manufactured materials can have:

These properties may include being: **Hard** or **Soft**, **Stiff** or **Flexible**, **Strong** or **Weak**, **Light** or **Heavy**, **Waterproof** or **Absorbent** etc.

These properties will determine what the materials can be used for and thus what you can use the finished product for.



Name the properties of this plastic teaspoon.

10