Unit 2M.3 & 2M.4:

Natural and man-made materials and changing materials



- Natural and man-made materials.
- Shaping materials
- Heating materials

Science Skills

- Observing
- Classifying
- Predicting
- Experimenting

By the end of this unit you should:

- Classify materials according to natural and manmade properties and know that they are changed further before use.
- Know that flexible materials can be changed temporarily whereas not flexible materials can changed permanently.
- Know that heating materials can cause temporary or permanent change.





Natural and man-made materials

Activity 1:

You will need: A range of items from around the

classroom (ie. Pencils, scissors, fabric, erasers, scissors etc)

Steps: Sort the items into a Venn diagram.

Natural materials	Man-made materials

All objects around you are made from materials.

Materials can be classified into two groups:

- Natural Materials
- Man-made Materials



Natural materials can be found in around us. Man-made materials have been manufactured by machines or other processes.



Wool from sheep is a natural material



Plastic is a man-made material made from petrol

Materials either natural or man-made are changed before they are used by people.

Look at the picture; discuss what happened for the wool?





Look at the picture; discuss what happened for the petrol?







2.7.5

Shaping Materials

Activity:

You will need:

Modelling clay or play dough, foam balls

Steps:

- 1- Take a piece of modelling clay or play dough and a foam ball.
- 2- Shape the modelling clay into a ball.
- 3- Predict (P)
 What will happen to each ball if you squeeze it in your hand?



Write your prediction in the boxes below.



Foam Ball



- 4- Squeeze each ball.
- 5- Observe (O): What happened to each ball after you squeezed them? Write your observation in the boxes below.



Grade2, Unit 2M.3 &2M.4 Materials Explain (E): Was your observation the same as your prediction?

Can you think of any other objects that change
back after we squeeze them?
Foam ball and rubber band are marterials. (Flexible - not flexible)

Some flexible materials can be temporarily changed by pushing and pulling like bending, twisting and stretching whereas not flexible materials are changed permanently.





Stretching







Flexible material: Any material that you can bend, squeeze, twist or stretch easily

KANAA



Activity: Explore the properties of clay

You will need:

Play dough or modelling clay, tape measure or ruler, strips plastic bags.

Steps

1-Take a lump of clay or dough; roll it, squash it, stretch it, squeeze it. Now roll it into a ball.

- 2. Now, make a shape/ object that has;
- A bend (ie. tree)
- A twist (ie. a knot)

Squash it up again and roll into a ball.

3. Now roll the shape into a long sausage.

What is the longest sausage you can roll before it breaks?

Measure the longest piece?.....(cm)

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4. Roll another sausage. Was this one longer? Measure how long?.....(cm)

Could you change Play dough back again?.....

Any material change back again to its original state after the change.

The change is called temporary change

5. Cut thin strips of plastic carrier bags.

6. Stretch the strip as much as you can until it snaps.



Can the plastic bag be turned back into a strip again? (YES , NO).

Any material doesn't change back into its original state. The change is called permanent change



Activity:

You will need: Examples of materials made from wood, fabric, paper, metal, plastic, rubber and Clay.

(*Glass is too dangerous to use for this activity)

Steps:

Use the table to test each material for its flexibility and permanent change.

- 1. Place a tick in the box if the material changed
- 2. Shade the box if it changed permanently.



Shade if permanent change



Material	Bend	Twist	Squash	Stretch	Temporary/ permanent change
Plastic					
Fabric					
Paper					
Clay					
Metal					
Wood					
Rubber					



Heating materials

Look at the pictures; identify the state of matter in each picture.



Activity:

Look at the pictures; write the state of matter in each picture.



What would happen if you cool the melted butter?



Materials



What would happen if you cool the melted liquid?

Activity: Melting Things

You will need:

Ice cubes, plates



Steps:

1-Place an ice-cube on a plate and put it in a warm place. What is the state of ice cube?



My ice-cube on the plate



2-Predict (P) what will happen to the ice after 10 minutes. Write your prediction.

My prediction

3- Check the ice-cube after 10 minutes. Record your observation in the box below.

My ice-cube after 10 minutes

4- Compare your results with your predictions.

My Prediction	Results

Materials

Activity: Melting Chocolate

*Teacher demonstration

You will need: chocolate, bowl, water saucepan, stove, spoon, chocolate moulds

Steps:

1- Break the chocolate into a bowl. Pour some water into a saucepan and place the bowl to simmer in the water. Heat the

water until it simmers. What is the state of chocolate?

2- When the chocolate has melted, spoon it into the chocolate moulds and place in the fridge to set.

What is the state of chocolate?

3- After the chocolate has set
press them out to eat.
What do you think will happen if the chocolate is
heated up again?.....











Grade2, Unit 2M.3 &2M.4 Materials • Some materials turn into a liquid when they are ------. They start as a solid material but if they are warmed they start to melt and can turn into a -----.

Some materials turn into a liquid when they are ------. They start as a solid material but if they are warmed they start to melt and can turn into a -----.

Question 1

Which of these things melt if you place it in warm place? Circle the objects that melt.





Activity:

You will need: *Teacher Demonstration

Water, heater, plates, kettle, large spoon.

Steps:

- Place water into a kettle and press boil. Observe the steam leaving the kettle's spout.
- 2- Now hold a ladle horizontally, with the cup of the ladle placed directly in the path of the steam, and place a bowl beneath. Predict (P) what will happen to the steam.





Write your observation.

3- Can you describe what is happening?



Activity: The Dough Test

*Teacher demonstration

You will need:

Flour, yeast, water, hot oven, fridge and a warm sunny place.

Steps:

- 1- Teacher to make the bread dough.
- 2- Divide the dough into 3 parts.
 - 1. Place one part in a refrigerator.
 - 2. Place one part in a hot oven.
 - 3. Place one part in a warm place.
- 3- Record your observation after 10 minutes.

Refrigerator	Hot oven	Warm place

- 4- Which place did the bread rise best?.....
- 5 Place the dough in the oven to cook.





The yeast in the bread helps it to rise when it is left a warm place. The temperature is important for helping the bread to rise properly.

Activity :

You will need:

Bread, bread knife and toaster.

Steps:



1. Cut some slices of bread. Leave some fresh and place some in the toaster to cook.

2. Use the attribute list organiser below to compare the fresh slice of bread to the toasted slice. Eg. Dry, soft, crunchy, yummy etc

Bread	Smell	Texture	Appearance	Taste
Fresh				
Toasted				



Activity:

Look at foods before cooking and after cooking, compare between them.



Question:

Can these food after cooking change back to the original state?-----



List some other foods that change after they have been heated?.....

Heating the food causes it to change permanently. It can't be changed back to original state after it has been cooked.

Key Terms:

- Bend, twist, flexible, stretch, snap, squeeze, squash, heat, warm, cool, melt.
- Permanent change, temporary change.
- Solid, liquid, water, ice, steam, bubble

Key Ideas:

- Flexible materials can bend, twist and stretch.
- Sometimes the change is temporary change, sometimes the change is permanent.
- Some solids such as ice can turn into liquids when they are warmed.
- Steam from boiling water in a kettle when collected turns back to water.



Project: • Take some photos of objects that change when we stretch, squeeze, bend or heat them. • Make a booklet of the photos that can be changed either temporarily or permanently. Key questions Q1: Some children try to stretch the following objects: elastic band cling film tennis ball clay play dough hair ties Circle the objects that will go back to their normal shape when the children let go. What will happen to the others?.....



Key questions

Q2: Colour GREEN the things that can be changed back after heating. Colour RED the things that cannot be changed back after heating.





butter



chocolate

Q3: Amal knows that chocolate changes when it gets warm. Tick one box to show how it changes.

From a solid to a liquid From a liquid to a solid It boils



