

The image is a vertical cross-section of soil layers. At the top, there are brown, branching tree roots extending downwards. Below the roots is a layer of dark brown soil, followed by a thicker layer of light brown soil, and finally a bottom layer of yellow soil. Scattered throughout these layers are several grey, teardrop-shaped rocks of varying sizes. The title 'Soil Formation' is centered in the light brown layer.

Soil Formation

twinkl

Aim

- I can explain how soil is formed.

Success Criteria

- I can state that soil is composed of different things.
- I can describe the 4 processes of soil formation.

Soil

What is soil?

What is soil made from?



What Is Soil Made Of?

Soil is the uppermost layer of the Earth. It is a mixture of different things.

Air

Soil contains gases such as carbon dioxide, oxygen, nitrogen, methane and radon.

Water

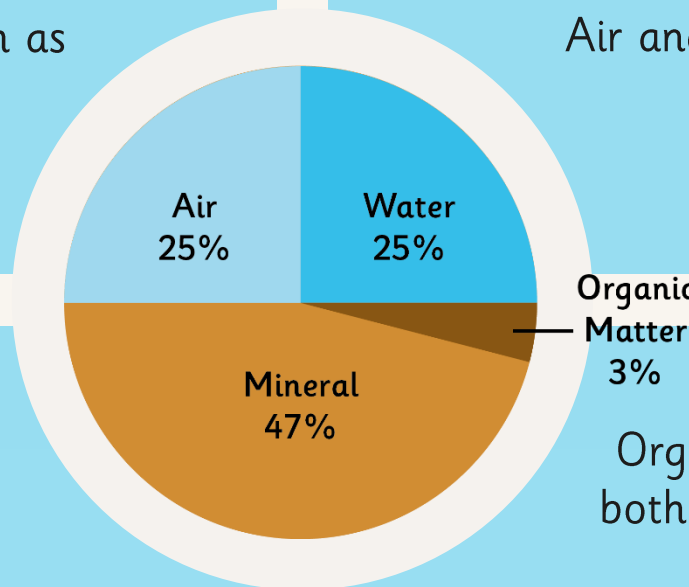
Air and water fill the gaps between particles of soil.

Mineral

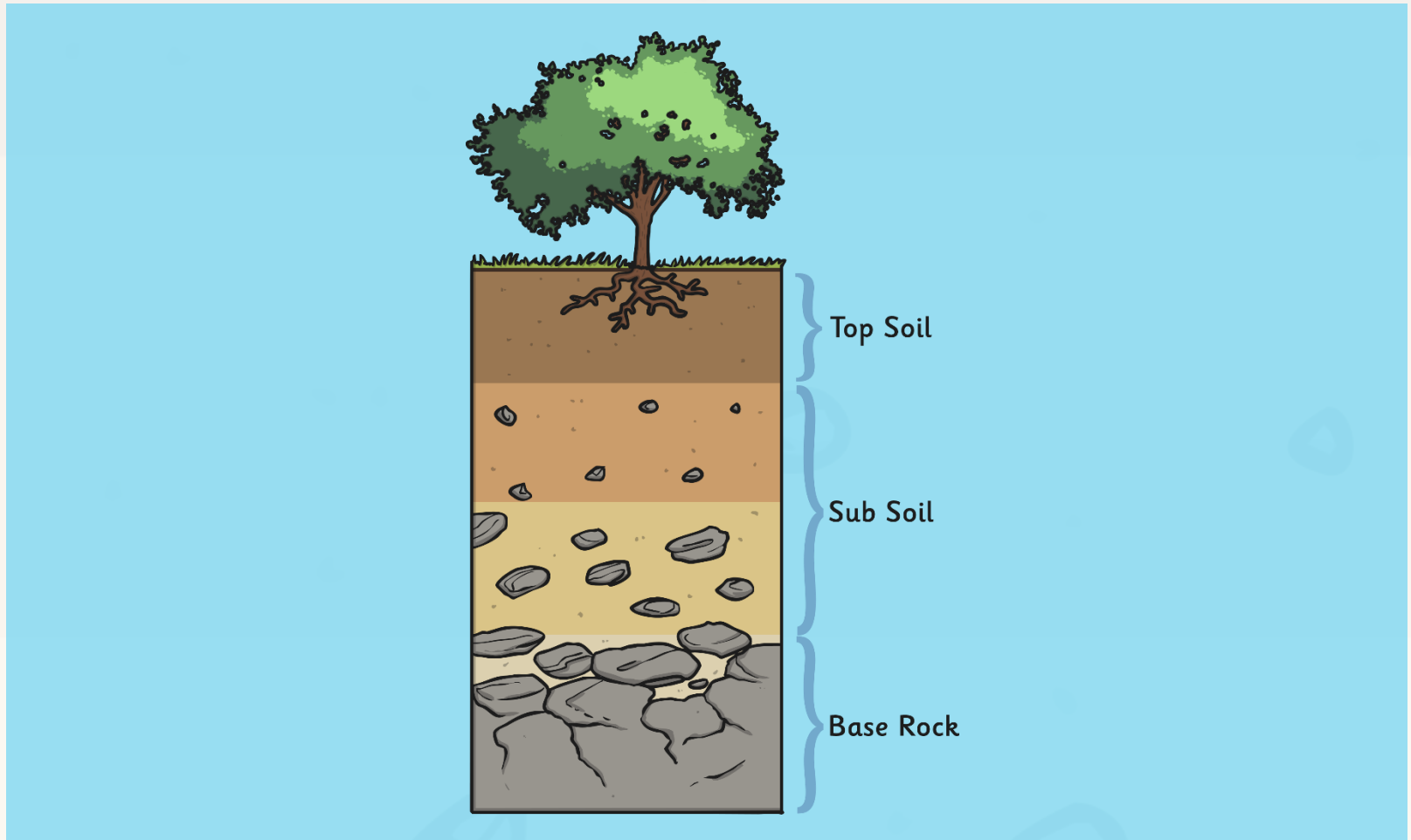
The minerals in soil come from finely broken down rock.

Organic Matter

Organic matter includes both living and decaying animals and plants.



Layers of Soil



Soil Formation

There are 4 main processes involved in soil formation:

Additions



Losses



Translocations



Transformations



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Soil Formation

Additions

Rainfall adds water.

Dust adds minerals.

Animal waste adds organic matter and nutrients.

Decaying plants and animals add organic matter.

Humans add fertiliser. Fertilisers contain minerals and nutrients. Natural fertilisers are made from animal waste and organic matter. Human-made fertilisers are made from chemicals.

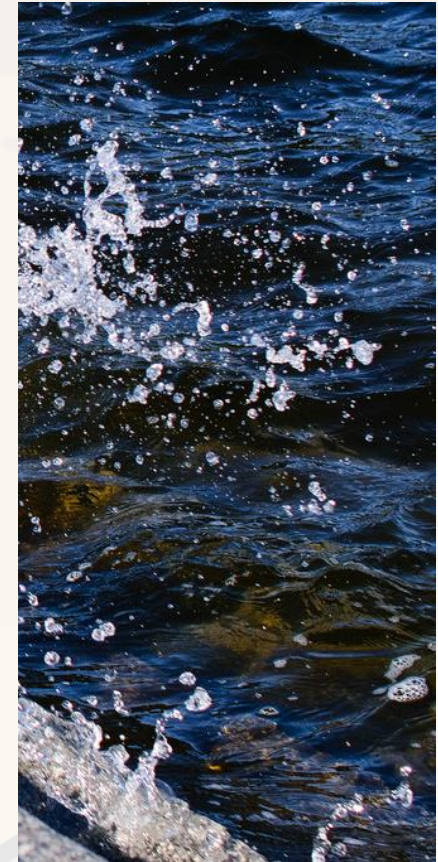


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Soil Formation Losses

Water evaporates (turns into gas when hot) into the air.

Soil particles can wash away in storms.

Organic matter can turn into the gas carbon dioxide.

Nutrients and Minerals are taken up by plants and can drain into groundwater.



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Soil Formation

Translocations

Translocations are movements within the soil.

Gravity pulls water down from top to bottom.

Evaporating water draws the minerals up from the bottom to the top.

Animals living in the soil move the soil around in every direction.

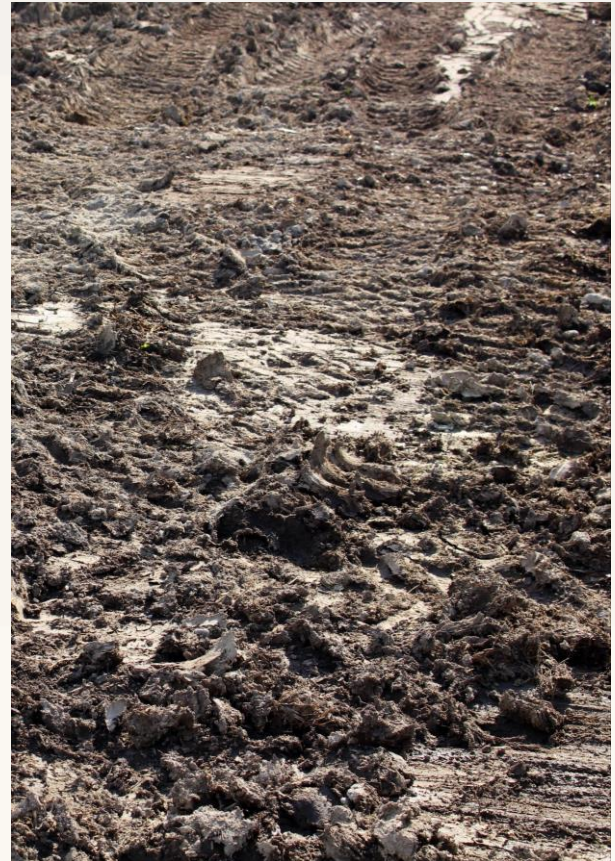


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Soil Formation Transformations

Transformations occur when something changes into something else.

Humus is what is left when dead leaves decompose.

Weathering causes hard rock to erode and turn into smaller and smaller pieces of rock.

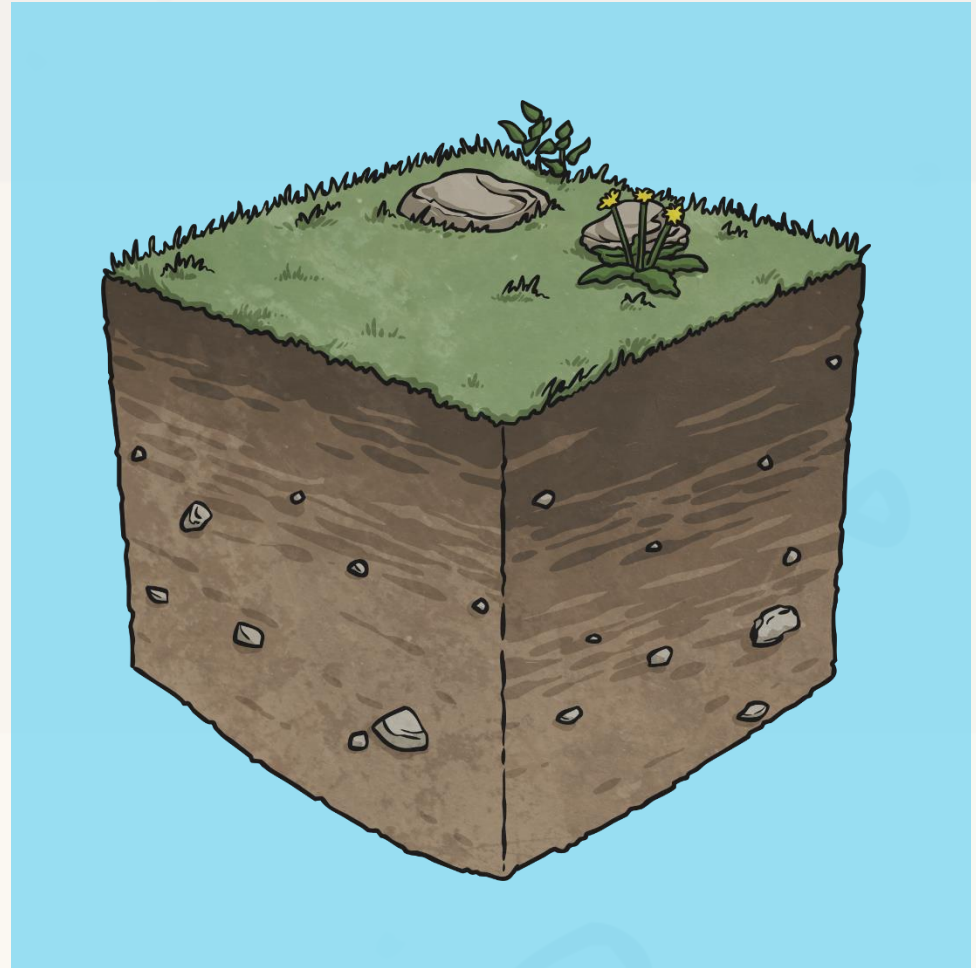
Oxygen **reacts** with the minerals such as iron which can make the soil look a reddish, 'rusty' colour.



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Soil Formation

All four processes are taking place at the same time all the time!



Compost

Compost is organic matter that has been decomposed so that it can be recycled as natural fertiliser.

Many people choose to have a compost bin at home as they see it as more environmentally friendly to recycle waste food rather than throw it away.

It also means they can create their own fertiliser for soil in their garden or for plants, rather than buying it. You will now have a go at creating your own mini compost bin complete with worms!



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Optional Task

- Please read through the next slides on how to create your own compost and follow the given steps.
- Please note that this is an optional task which in doubt will help you understand more about how soils are formed.
- Otherwise, please write down in your green book, the four processes of soil formation.

Creating Compost

Health and Safety

Make sure you handle all waste materials with **plastic gloves** as all food waste contains **bacteria** that could make you feel ill.

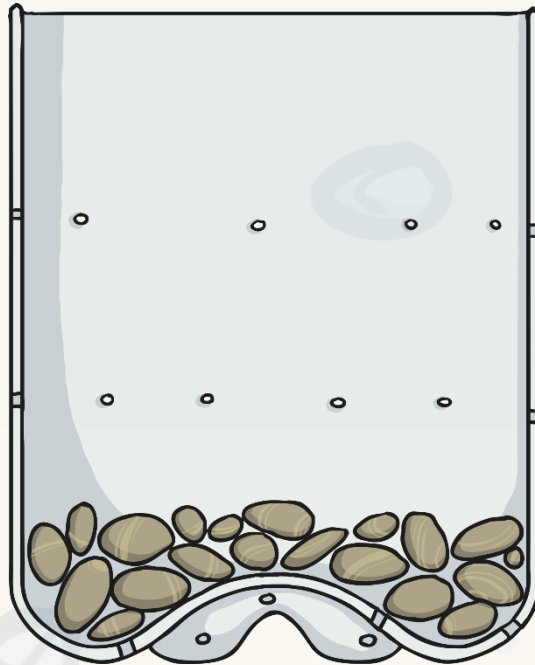
Just because **worms** don't cry or scream when they are in **pain** does not mean they don't feel it. Handle them gently and carefully.

A **health and safety monitor** in each group will check that everyone is following the rules properly.

Creating Compost

Step 1

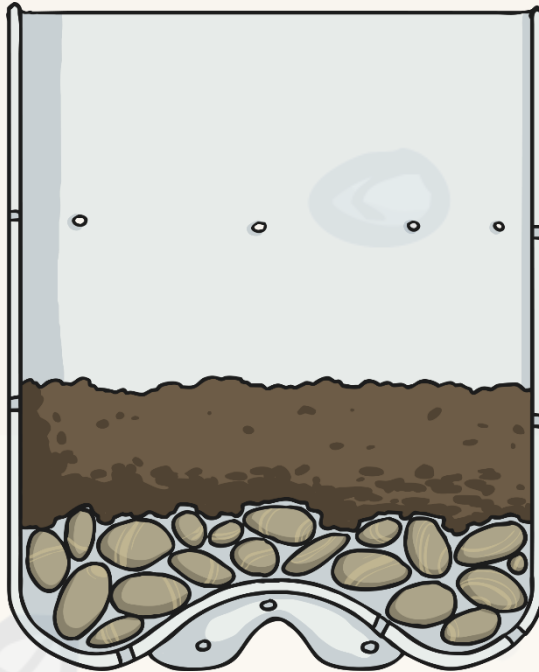
Place small stones as the first layer.



Creating Compost

Step 2

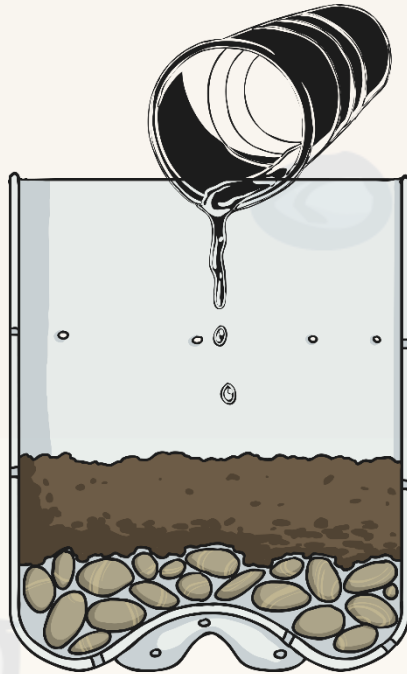
Add a layer of compost.



Creating Compost

Step 3

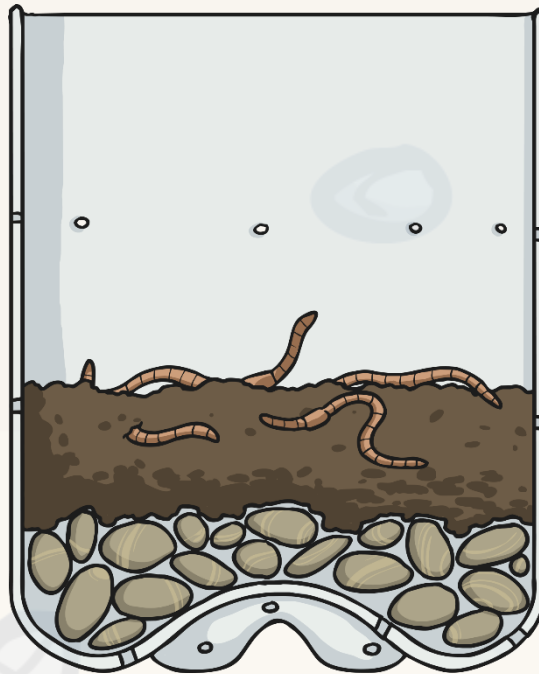
Add a small amount of water so that the compost is moist but not completely wet.



Creating Compost

Step 4

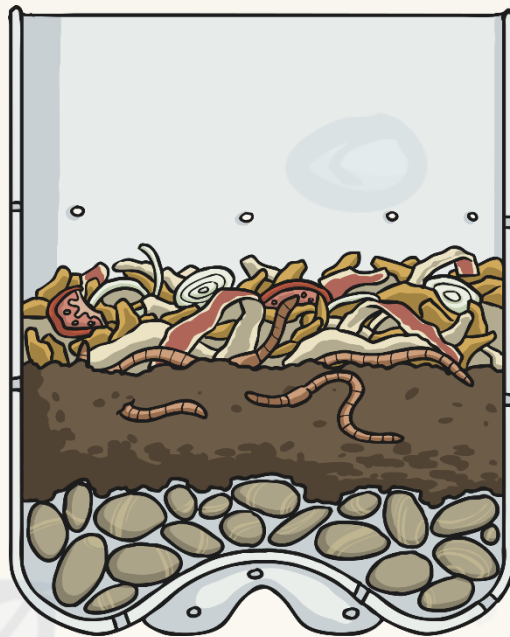
Wear plastic gloves to handle the worms. Ensure that worms are handled gently. Place a few worms gently onto the compost.



Creating Compost

Step 5

Wear plastic gloves while adding waste food. Place a handful of scraps on top of the worms. Leave it placed gently on the worms; it will fall further by itself so there is no need to push it down.



Creating Compost

Step 6

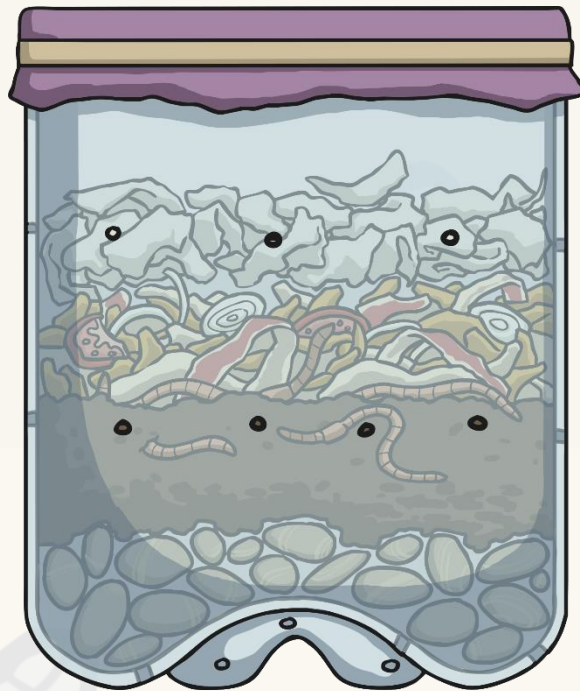
Wet the shredded paper and add it as the topmost layer of your mini compost bin.



Creating Compost

Step 7

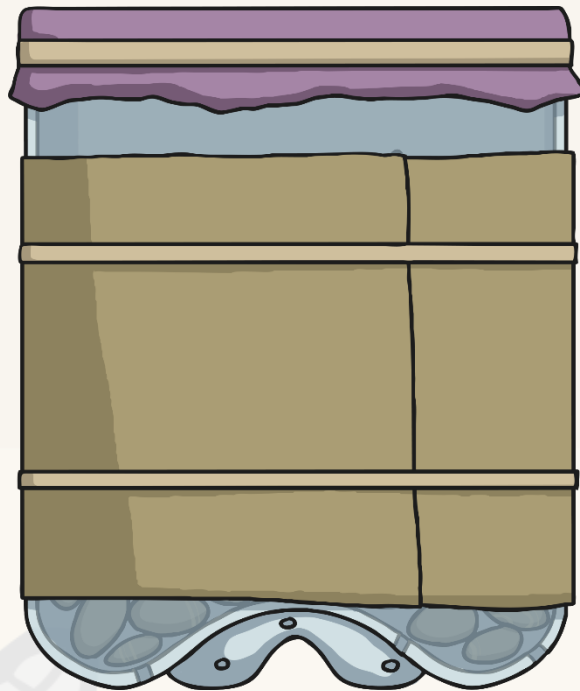
Add a thin piece of fabric over the top of the plastic bottle and secure it with an elastic band.



Creating Compost

Step 8

Attach long rectangular pieces of card around the bottle so that it makes it dark for the worms. They live in the dark and do not like bright lights.



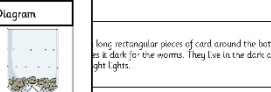




Creating Compost

Now you will be creating your own mini compost bin!

Make sure to follow each step on your **Creating a Mini Compost Bin Instruction Sheet** carefully.

Creating a Mini Compost Bin




Follow each step of the instructions carefully to create your mini compost bin.


Step	Instruction	Diagram
Step 1	Place 3 small stones as the first layer.	
Step 2	Add a layer of compost.	
Step 3	Add a small amount of water so that the compost is moist but not completely wet.	
Step 4	Health and Safety: Wear plastic gloves to handle the worms. Ensure that worms are handled gently. Place a few worms gently onto the compost.	
Step 5	Health and Safety: Wear plastic gloves while adding waste food. Place a handful of scraps on top of the worms. Layer a plastic bag on the worms. It will fall further by itself so there is no need to push it down.	

Use shredded paper and add as the topmost layer of your mini compost bin.

Put a piece of fabric over the top of the plastic bottle and fix with an elastic band.

Place rectangular pieces of card around the bottle so that it is dark for the worms. They live in the dark and do not like light.



Science Year 3 | 31/03/2015 | 154 | Page 4

Caring for Worms

How will you care for the worms?

- Keep the mini compost bins in a quiet place.
- Keep the mini compost bins away from the sunlight and keep the cardboard pieces in place.
- Do not place anything on top of the compost bins so that enough air gets through.
- Every other day, check that the top layers of compost are damp. The worms need moist skin to breathe.
- Add only small amounts of food once the first scraps have been eaten.
- After a few weeks, return the worms to a compost bin or heap as they may not survive in the soil straight away.



