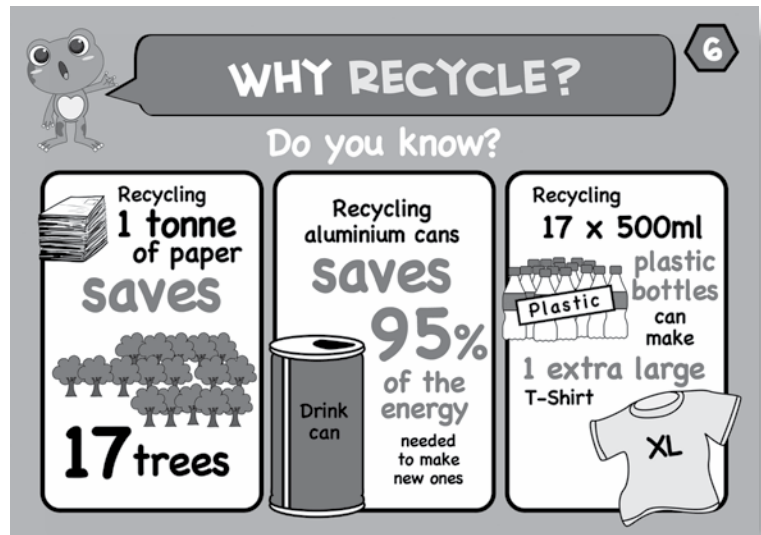


RECYCLE WASTE

LESSON PLAN 6: WHY RECYCLE?

Pictocard to use : 6



1. LESSON OBJECTIVES

This lesson serves to educate the children on :

- What the third R in 3R means; and
- How they can recycle at home.

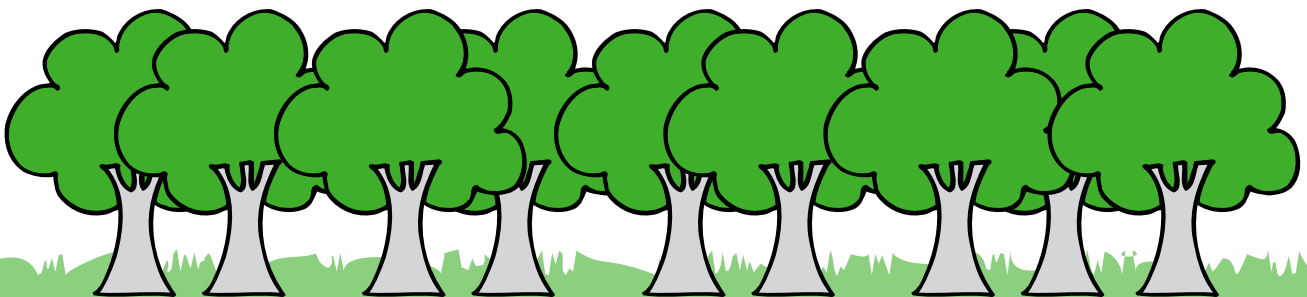
2. LESSON CONTENTS

What does 'Recycle waste' mean?

To convert waste into useful recycled products.
Introduce the recycling symbol to the class.

Do you know that recycling

- 1 tonne of paper can save 17 trees;
- Aluminium cans can save 95% of the energy needed to make new cans out of new materials; and
- 17 500ml plastic bottles can make one extra large T-shirt.



LESSON PLAN 7: WHAT CAN BE RECYCLED?

Pictocard to use : 7



1. LESSON OBJECTIVES

This lesson serves to educate the children on :

- What the third R in 3R means; and
- The do's and don'ts of recycling.

2. LESSON CONTENTS

What does 'Recycle waste' mean?

To convert waste into useful recycled products.

What are the four common types of recyclables?

- Paper – packet drink, old newspaper, magazine, cardboard packaging, paper written on both sides;
- Plastic – drink bottle, plastic packaging, detergent bottle;
- Glass – bottle, jar; and
- Cans – drink can.

What are the things that cannot be put in the recycling bin?

Some examples include :

- Tissue paper;
- Styrofoam;
- Porcelain;
- Ceramic;
- Anything dirtied by food and drinks;
- Food waste; and
- Light bulbs

LESSON PLAN 8: RECYCLE WASTE AT HOME

Pictocard to use : 8



1. LESSON OBJECTIVES

This lesson serves to educate the children on :

- What the third R in 3R means; and
- How to recycle at home.

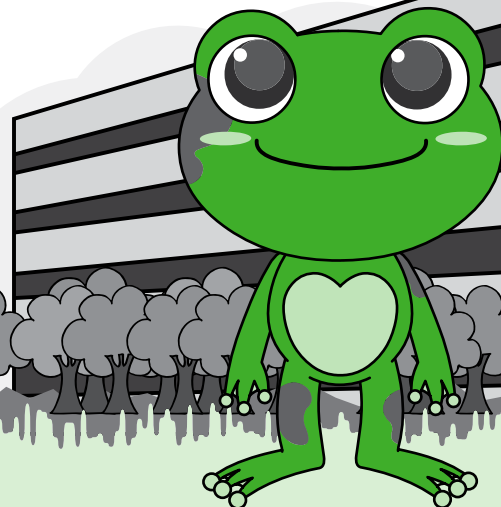
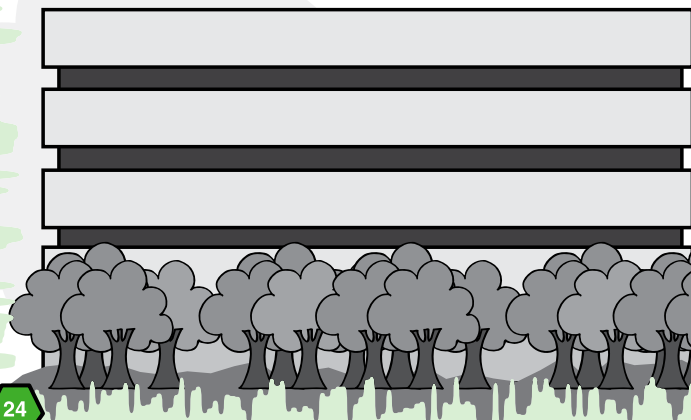
2. LESSON CONTENTS

What does 'Recycle waste' mean?

To convert waste into useful recycled products.

How can you recycle at home and what is the right way to do recycling?

- Empty drink cans, plastic and glass containers, and rinse if needed;
- Put the recyclables into a used plastic bag;
- Deposit the bag of recyclables into the nearest recycling bins.



LESSON PLAN 9: RECYCLE WASTE AT SCHOOL

Pictocard to use : 9



1. LESSON OBJECTIVES

This lesson serves to educate the children on :

- What the third R in 3R means; and
- How to recycle at school.

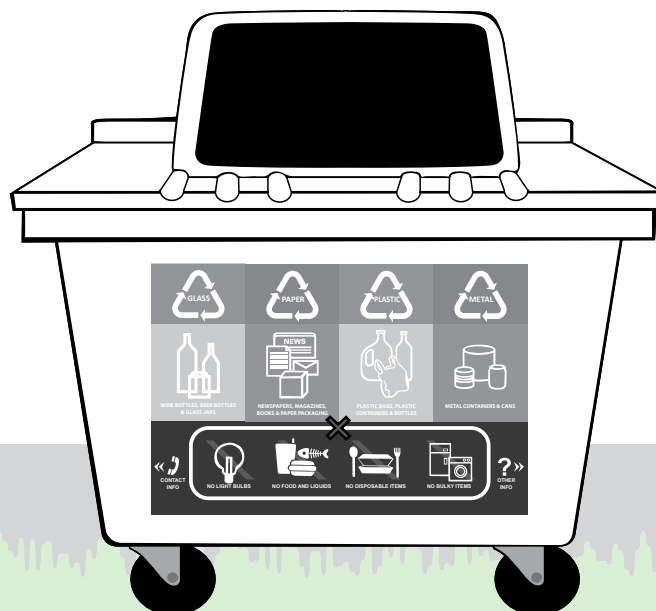
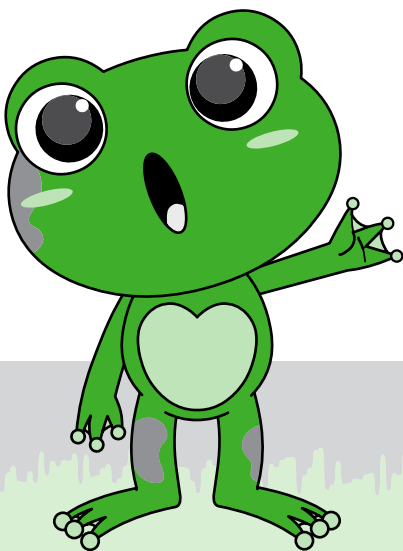
2. LESSON CONTENTS

What does 'Recycle waste' mean?

To convert waste into useful recycled products.

How can you recycle at school ?

- Help the teacher to start a recycling point in the classroom;
- Use old cartons to make recycling boxes for paper, plastic, cans, etc ;
- Participate in the recycling programme in school and get your classmates to be involved in recycling.



LESSON PLAN 10 : AFTER COLLECTION OF RECYCLABLES

Pictocard to use : 10



1. LESSON OBJECTIVES

This lesson serves to educate the children on:

- What happens to the different materials that are thrown into the recycling bin.

2. LESSON CONTENTS

What is a Material Recovery Facility?

A place that sorts all the materials that have been collected into paper, plastic, glass and cans.

Why use a commingled bin (i.e. bin for different types of recyclables)?

It is more convenient for users to put their recyclables into one bin.

Only one recycling truck is required to collect all the items.

What happens after the waste is thrown into the recycling bin?

- Recyclables are collected by the recycling truck and sent to a Material Recovery Facility.
- At the Material Recovery Facility, the recyclables are sorted into different waste materials like paper, plastic, glass and cans.
- After sorting, each type of waste is packed into a bundle and sent to the respective recycling plants.

LESSON PLAN 11 : HOW IS PAPER RECYCLED?

Pictocard to use : 11



1. LESSON OBJECTIVE

This lesson serves to educate the children on:

- The recycling process for paper

2. LESSON CONTENTS

What does 'Recycle waste' mean?

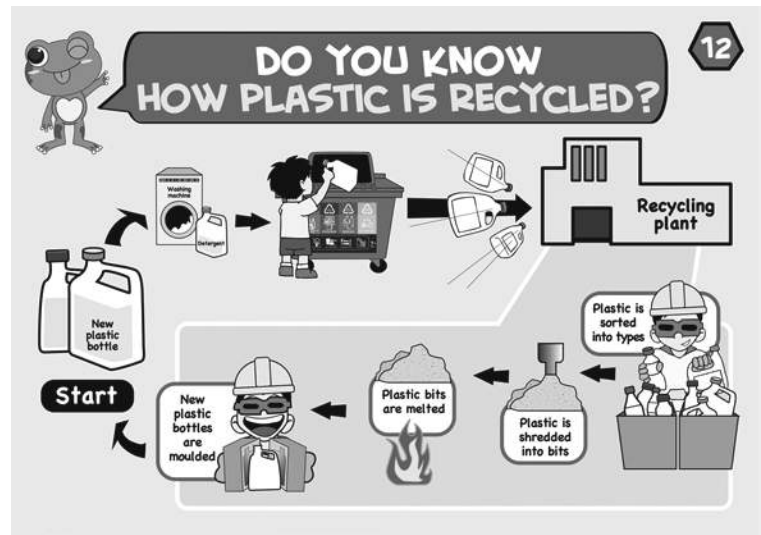
To convert waste into useful recycled products.

How is paper recycled?

- Used paper is put into the recycling bin.
- The papers, together with other recyclables in the recycling bin, are collected and sent to a Material Recovery Facility.
- The papers are sorted from the other recyclables at the Material Recovery Facility and packed into bundles, which are then sent to a paper recycling plant.
- At the recycling plant, the papers are mixed with water to form a mixture called pulp.
- The pulp is then sent through a machine which is pressed to form new paper.

LESSON PLAN 12 : HOW IS PLASTIC RECYCLED?

Pictocard to use : 12



1. LESSON OBJECTIVE

This lesson serves to educate the children on:

- The recycling process for plastic

2. LESSON CONTENTS

What does 'Recycle waste' mean?

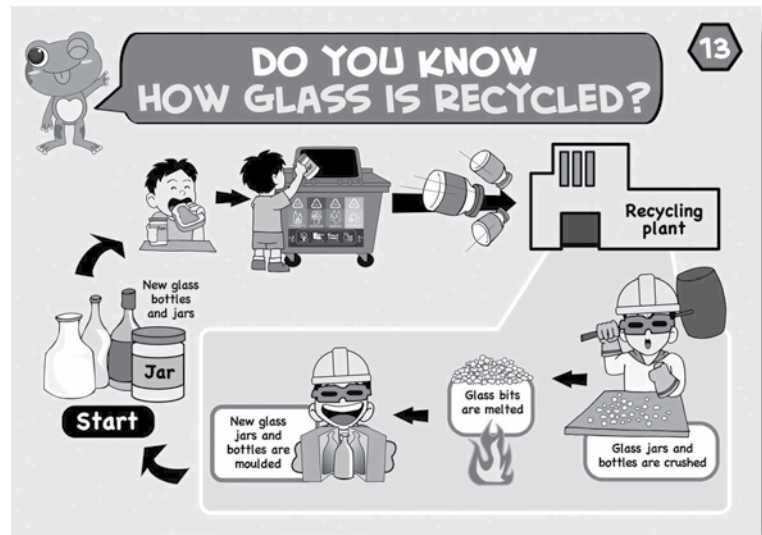
To convert waste into useful recycled products.

How is plastic being recycled?

- Unwanted plastic such as empty plastic bottles are put into the recycling bin.
- The plastic, together with other recyclables in the recycling bin, are collected and sent to a Material Recovery Facility.
- The plastics are sorted from the other recyclables at the Material Recovery Facility and packed into bundles, which are then sent to a plastic recycling plant.
- At the recycling plant, the plastics are first sorted into the different types of plastic and then shredded into small pellets.
- The pellets are melted and sent to a moulding machine.
- New plastic bottles are made.

LESSON PLAN 13 : HOW IS GLASS RECYCLED?

Pictocard to use : 13



1. LESSON OBJECTIVE

This lesson serves to educate the children on:

- The recycling process of glass

2. LESSON CONTENTS

What does 'Recycle waste' mean?

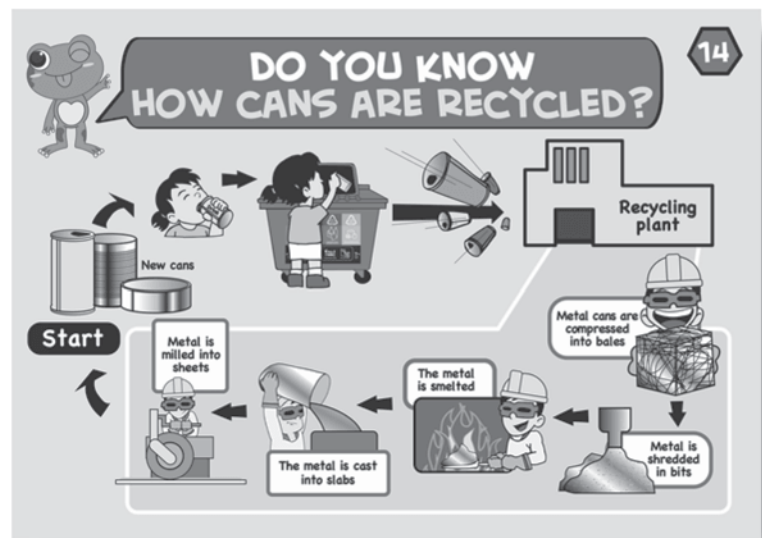
To convert waste into useful recycled products.

How is glass being recycled ?

- Glass containers should be empty. E.g. after consuming jam from a jar, the empty glass jar should be rinsed and put into the recycling bin.
- The glass jar, together with other recyclables in the recycling bin, are collected and sent to a Material Recovery Facility.
- The glass is sorted from the other recyclables at the Material Recovery Facility and packed into bundles, which are sent to a glass recycling plant.
- The glass is first crushed into bits.
- The glass bits are melted and sent to a moulding machine.
- New glass bottles and jars are made.

LESSON PLAN 14 : HOW ARE CANS RECYCLED?

Pictocard to use : 14



1. LESSON OBJECTIVE

This lesson serves to educate the children on :

- The recycling process of metal cans

2. LESSON CONTENTS

What does 'Recycle waste' means?

To convert waste into useful recycled products.

How are cans being recycled?

- Drink cans should be empty. E.g. after drinking from a canned drink, ensure that it is empty before putting it into the recycling bin.
- The cans, together with other recyclables in the recycling bin, are collected and sent to a Material Recovery Facility.
- The cans are sorted from the other recyclables at the Material Recovery Facility and packed into bundles, which are sent to a metal recycling plant.
- At the recycling plant, the cans are shredded into bits.
- The metal bits are smelted over very high heat and cast into slabs.
- The slabs are then sent to the milling machine to make thin metal sheets which are used to make new cans.

ADDITIONAL INFORMATION

- #1: The National Environment Agency (NEA) implemented the National Recycling Programme (NRP) in 2001 to provide a convenient means for households to recycle. Under the programme, one recycling bin is provided for every HDB flat. For landed estates, one recycling bin is provided for every unit.
- #2: Since 1 Nov 2008, it is mandatory for condominiums to have recycling facilities for residents to recycle.
- #3: The locations of the recycling bins in Singapore can be found online at <http://www.nea.gov.sg/energy-waste/recycling/recycling-programmes>
- #4: Other than reaching out to the residents and the public in recycling, NEA has also implemented structured recycling programmes for schools and industries. More details of the recycling programmes that are implemented by NEA can be found at <http://www.nea.gov.sg/energy-waste/recycling/recycling-programmes>
- #5: Singapore aims to reach a recycling rate of 70% by 2030. The recycling rate for 2013 is 61%. More information on the recycling statistics and waste generation for 2013 can be viewed online at <http://www.nea.gov.sg/energy-waste/waste-management/waste-statistics-and-overall-recycling>

More information pertaining to waste minimisation and recycling in Singapore can be found at <http://www.nea.gov.sg/energy-waste/waste-management/overview>

SUGGESTED ACTIVITIES

Activity 1

Make your own recycling box for the classroom.

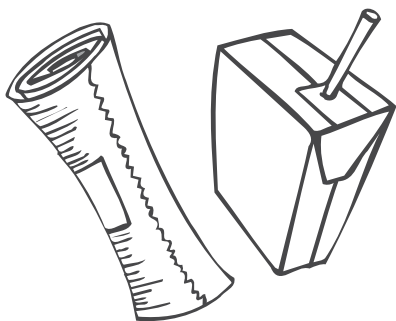
Aim : The children will be able to reuse old carton boxes as recycling boxes.

Main materials needed : **3 paper carton boxes** (could be empty A4 paper ream boxes and sizes depending on the space in the classroom), **scissors, sticky tape/glue, crayons/paints, used plastic bags** to line the recycling boxes.

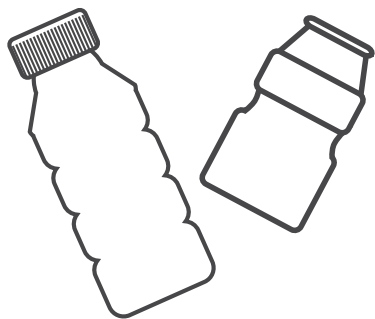
Get the children to paint the boxes and cut out the recycling labels (provided in the teacher's guide, page 32) for the recycling boxes. Use old plastic bags to line the recycling boxes.

MATERIALS FOR ACTIVITY 1 – LABEL FOR THE RECYCLING BOXES

Cut out the right pictures to match the right words for the different recycling bins.



Plastic



Cans



Paper

ACTIVITY 1 – LABEL FOR RECYCLING SYMBOL



Activity 2

As a follow-up to Activity 1, the teacher can arrange with the Public Waste Collector in charge of her area to allow the children to observe the recyclables collection process from the preschool/ kindergarten, on one of the scheduled collection days.

Activity 3

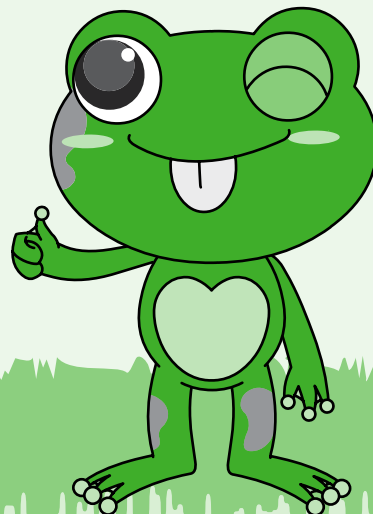
Make recycled paper from scrap paper.

Aim : The children will be able to make recycled paper from scrap paper.

Main materials needed: **Scrap paper, water, 1 to 2 kitchen blenders, kitchen strainers, large basins, newspapers, aluminium foil, roller pins.**

Preparatory stage – Divide the children into four groups (4 to 5 children per group).

Step 1	Tear the scrap paper into pieces of 3 to 5 cm
Step 2	Fill half of a large basin with pieces of paper.
Step 3	Pour water into the basin to cover the pieces of paper. Let them soak overnight.



Actual making process – Divide the children into the same groups. The teacher to assist each group throughout the steps.

Step 1	Drain the water from the basin. Put the soaked pieces of paper into a blender together with 3 to 4 cups of water.
Step 2	Blend the pieces of paper until the mixture is fairly smooth.
Step 3	Use a kitchen strainer to drain the liquid. What is left is pulp paper.
Step 4	Squeeze out the excess water in the pulp using hands and transfer the pulp into a basin.
Step 5	Cut the aluminum foil to a desired size.
Step 6	Spread the paper pulp evenly on the aluminum foil, leaving some space around the perimeter.
Step 7	Place a newspaper over the pulp. Use a rolling pin and slowly compress the pulp into a thin sheet. The newspaper will absorb the moisture.
Step 8	Repeat step 7 until most of the moisture is absorbed.
Step 9	Slowly remove the newspaper from the pulp. Leave the aluminum foil with the pulp to dry for a day.
Step 10	Check on the recycled paper the next day. If it is dry enough, carefully remove the sheet of recycled paper from the aluminium foil. Show the class the recycled papers that have been made from the different groups.

The children can make recycling point signages and 3R messages from the recycled paper to decorate the recycling point in the classroom.

Activity 4

Trace the paper recycling process.

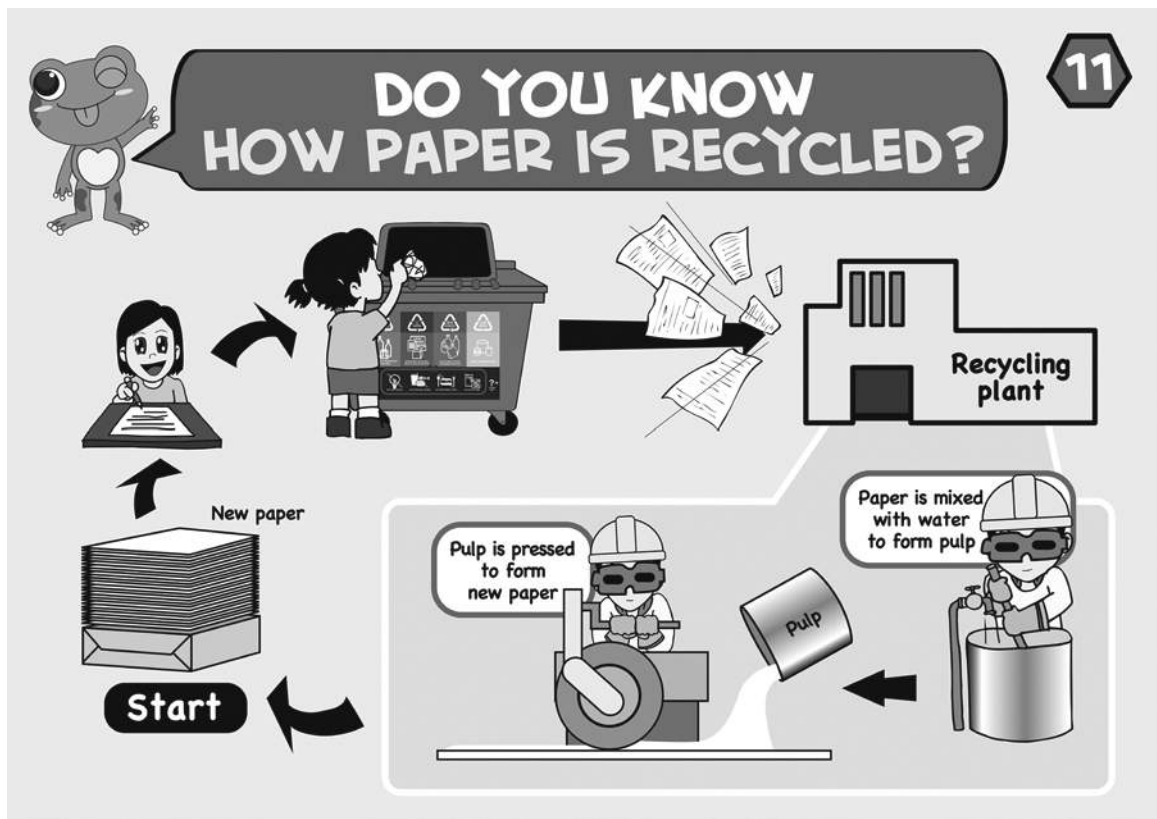
Aim : Children will be able to understand the recycling process for paper.

Main materials needed : **4 large vanguard sheets, picture cards (refer to next page), glue/sticky tape and black marker.**

Divide the class into four groups (four to five children per group). Distribute a vanguard sheet and the picture cards for the paper recycling to each group.

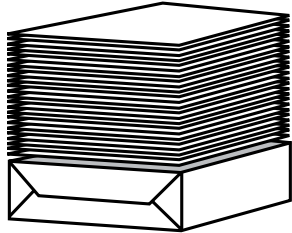
Ask each group to put together the entire paper recycling process with reference to the lesson taught to show the flow of the process.

Ask each group to show their completed work to the class. With reference to **Pictocard 11**, the teacher will go through the work of each group and discuss with the class on the paper recycling process.

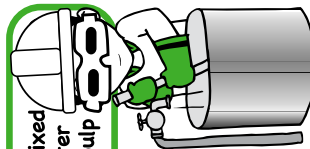
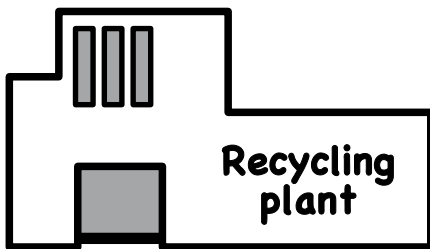
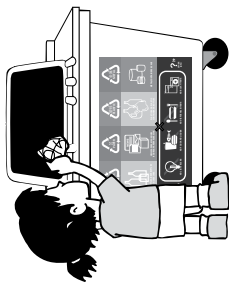
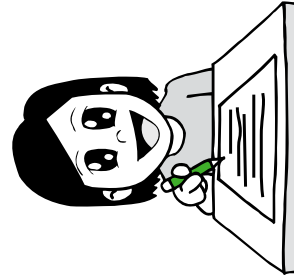


MATERIALS FOR ACTIVITY 4 – PICTURE CARDS ON THE PAPER RECYCLING PROCESS

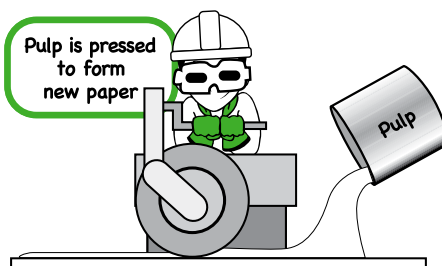
Cut out these pictures to make picture cards and arrange them to show the correct process of recycling paper.



New paper



Paper is mixed with water to form pulp



Pulp is pressed to form new paper

Activity 5

Trace the plastic recycling process.

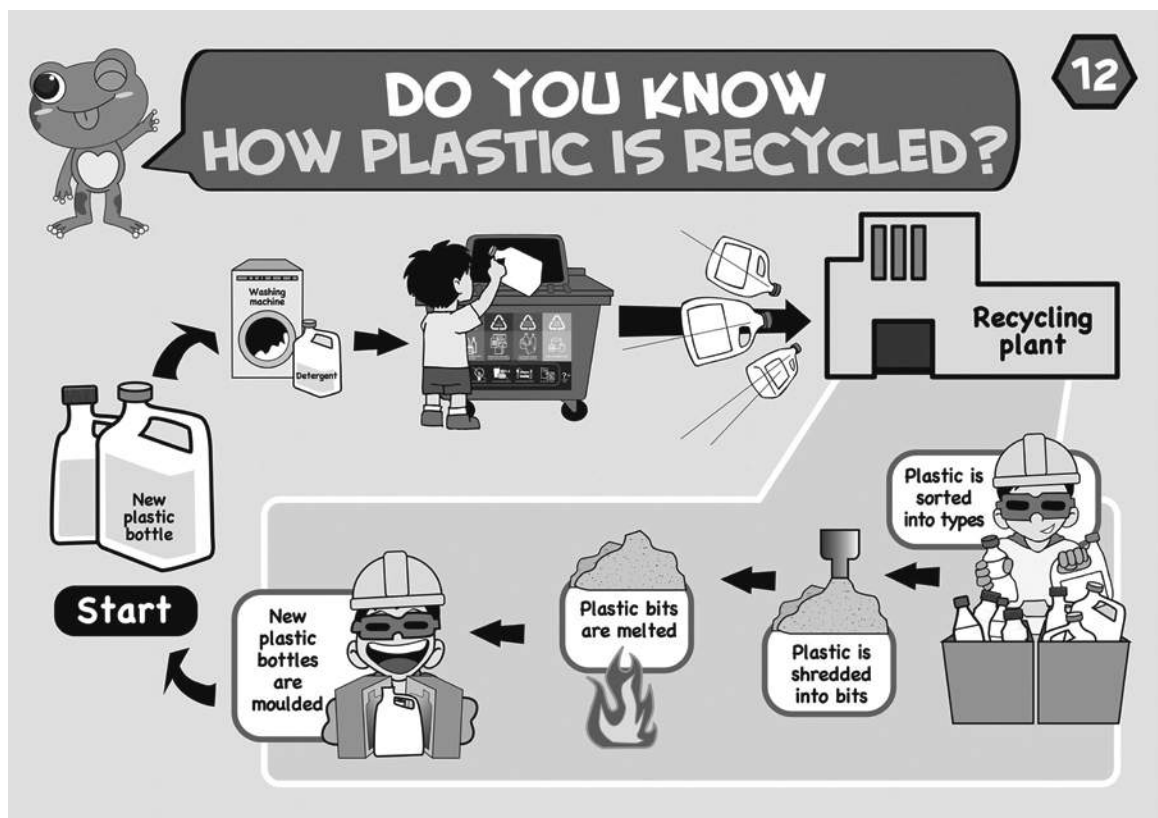
Aim : Children will be able to understand the recycling process for plastic.

Main materials needed : **4 large vanguard sheets, picture cards (refer to next page), glue/sticky tape and black marker.**

Divide the class into four groups (four to five per group). Distribute a vanguard sheet and the picture cards for the plastic recycling to each group.

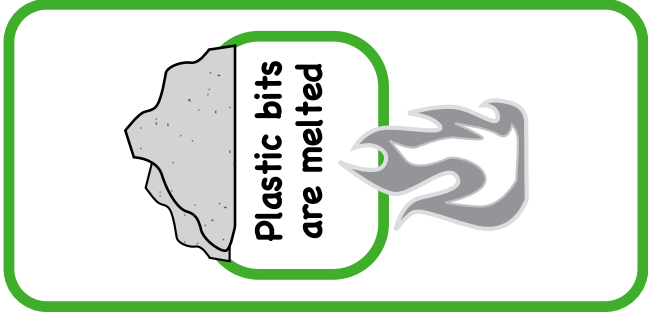
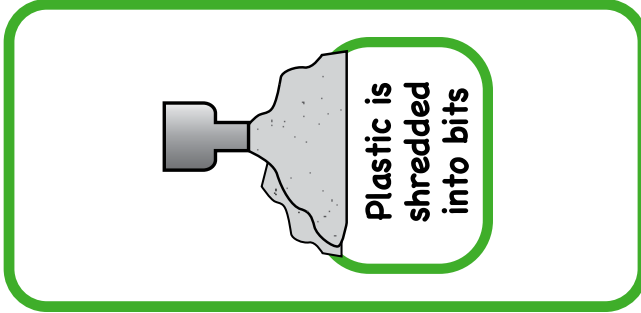
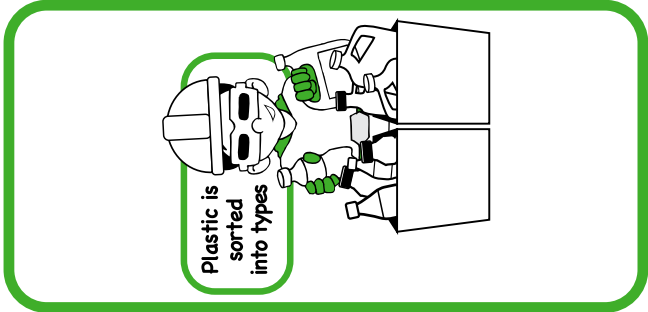
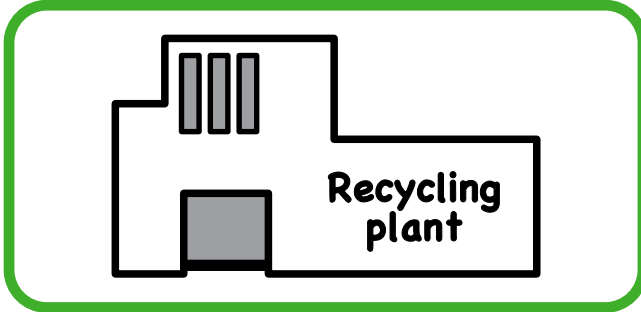
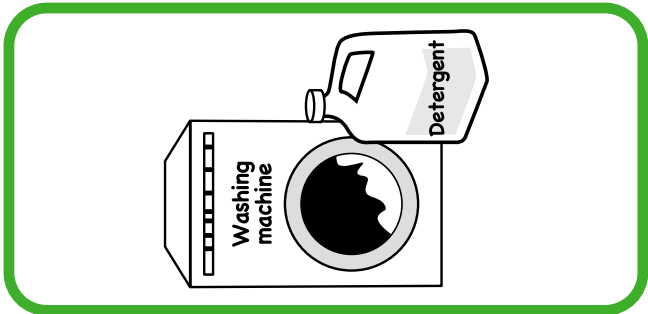
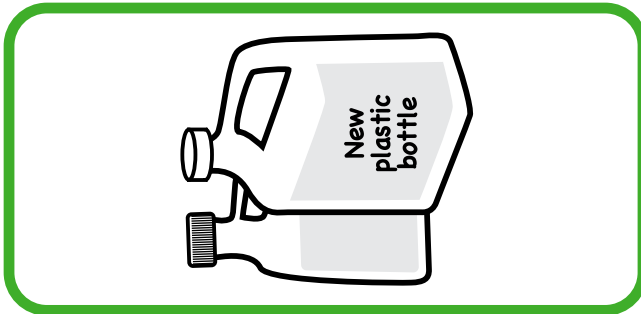
Ask each group to put together the entire plastic recycling process with reference to the lesson taught to show the flow of the process.

Ask each group to show their completed work to the class. With reference to **Pictocard 12**, the teacher will go through the work of each group and discuss the plastic recycling process.



MATERIALS FOR ACTIVITY 5 – PICTURE CARDS ON THE PLASTIC RECYCLING PROCESS

Cut out these pictures to make picture cards and arrange them to show the correct process of recycling plastic.



Activity 6

Trace the glass recycling process.

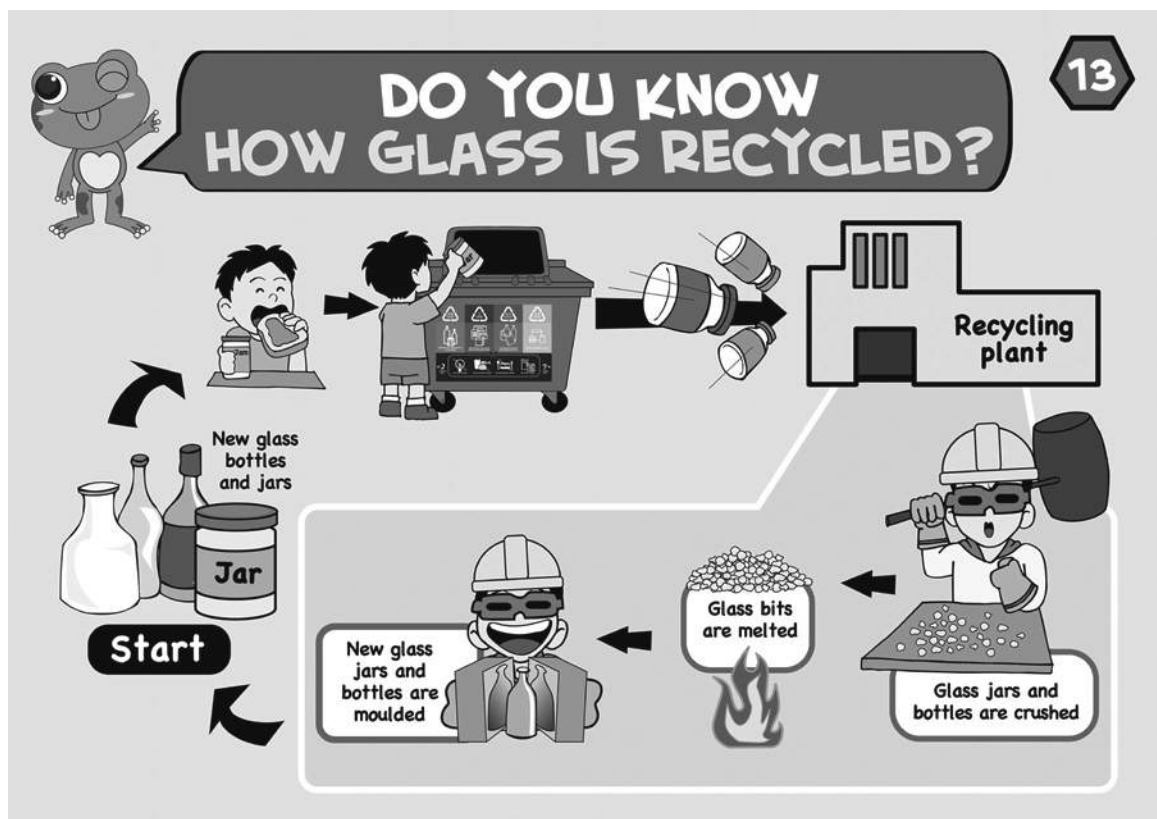
Aim : Children will be able to understand the recycling process for glass.

Main materials needed : **4 large vanguard sheets, picture cards (refer to next page), glue/sticky tape and black marker.**

Divide the class into four groups (four to five children per group). Distribute a vanguard sheet and the picture cards for the glass recycling to each group.

Ask each group to put together the entire glass recycling process with reference to the lesson taught to show the flow of the process.

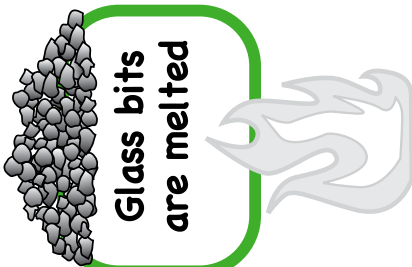
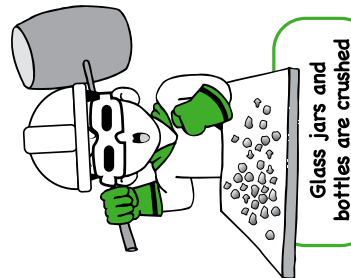
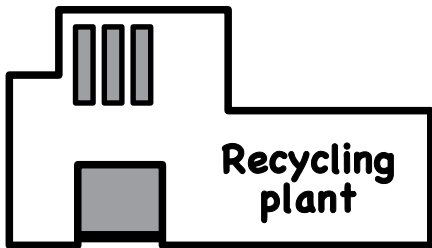
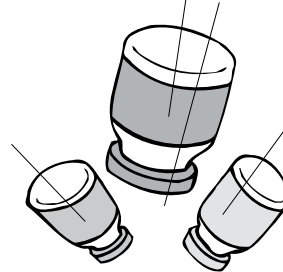
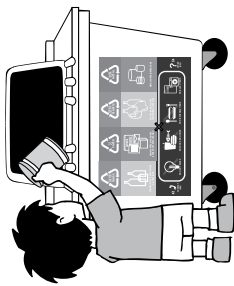
Ask each group to show their completed work to the class. With reference to **Pictocard 13**, the teacher will go through the work of each group and discuss the glass recycling process.



MATERIALS FOR ACTIVITY 6 – PICTURE CARDS ON THE GLASS RECYCLING PROCESS

Cut out these pictures to make picture cards and arrange them to show the correct process of recycling glass.

New glass bottles and jars



New glass jars and bottles are moulded



Activity 7

Trace the cans recycling process.

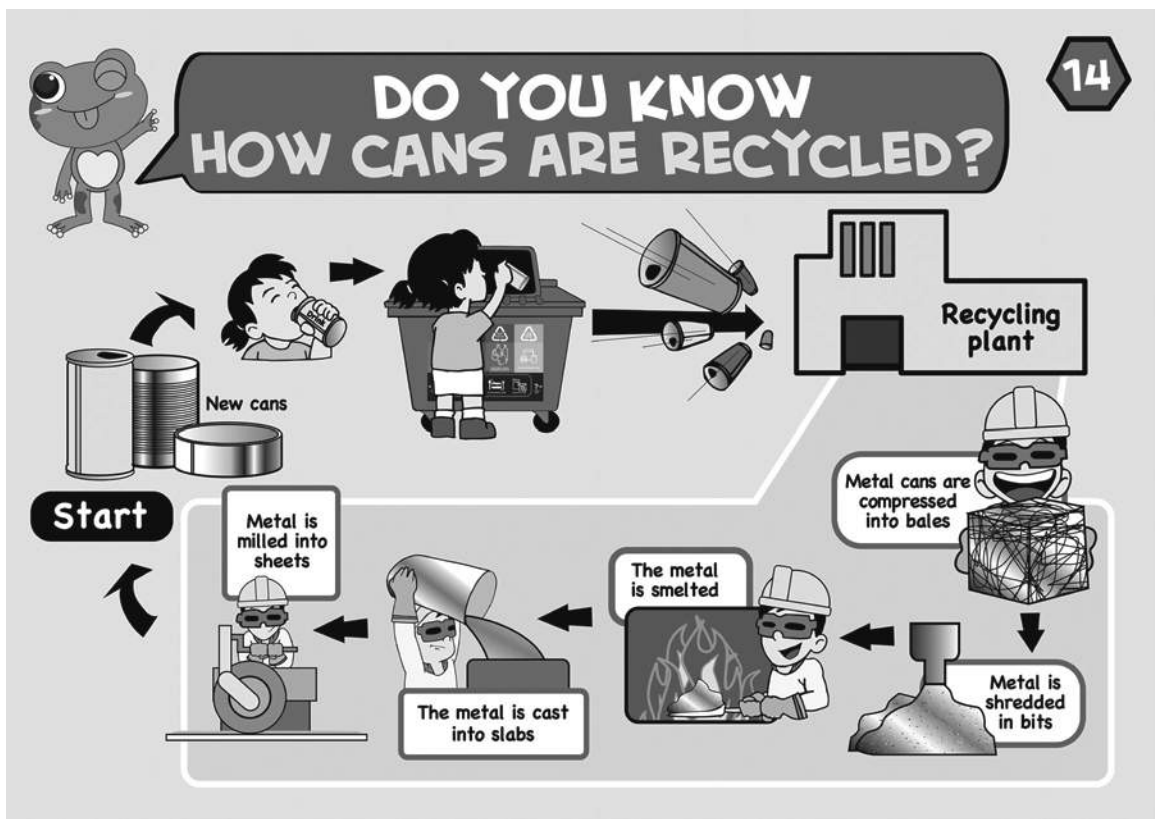
Aim : Children will be able to understand the recycling process for cans.

Main materials needed : 4 large vanguard sheets, picture cards (refer to next page), glue/sticky tape and black marker.

Divide the class into four groups (four to five children per group). Distribute a vanguard sheet and the picture card for the cans recycling to each group.

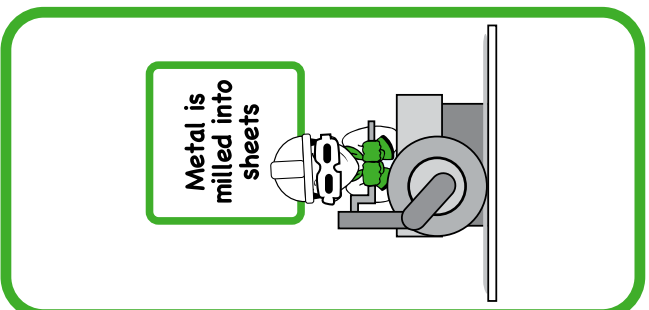
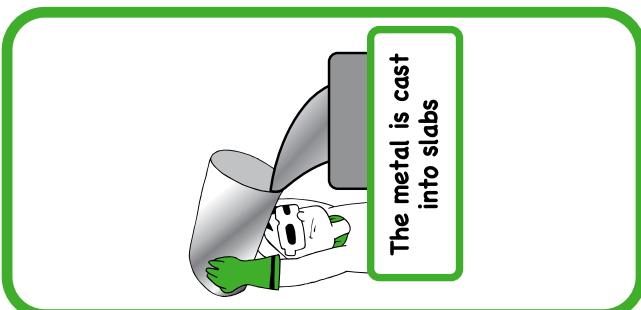
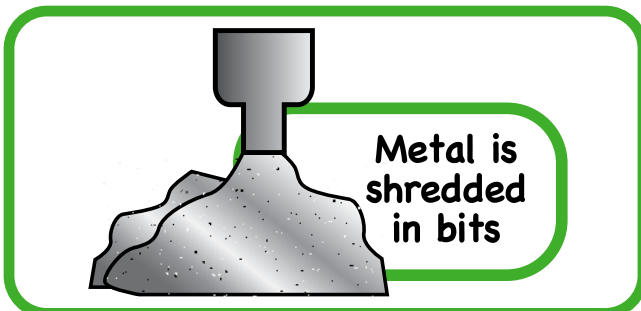
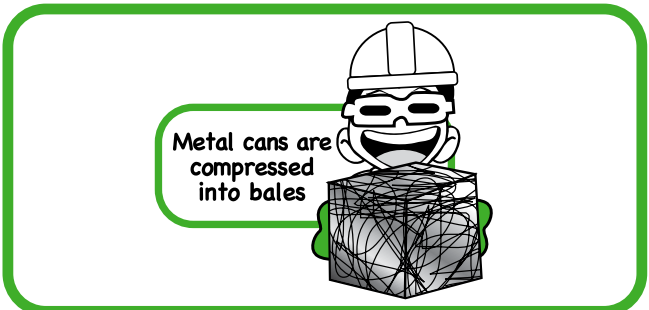
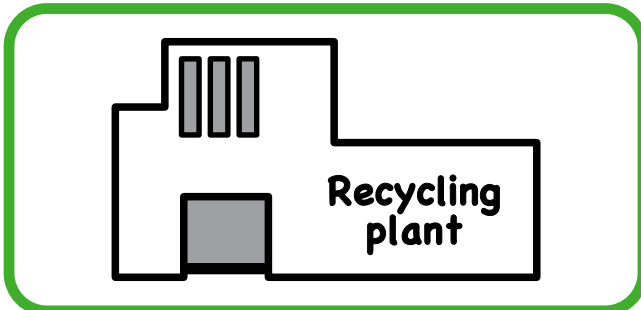
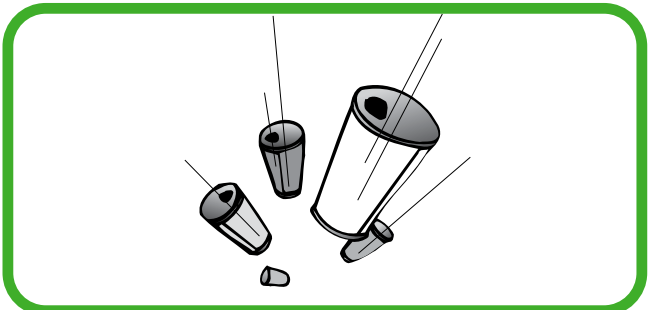
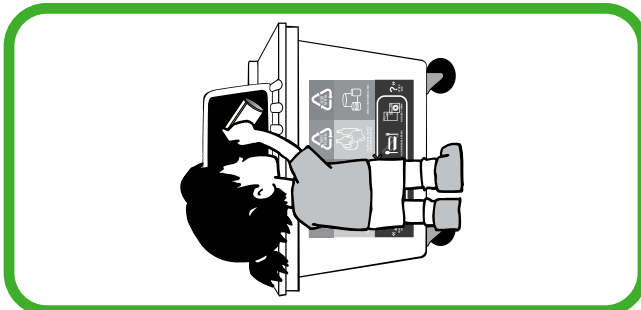
Ask each group to put together the entire cans recycling process with reference to the lesson taught to show the flow of the process.

Ask each group to show their completed work to the class. With reference to **Pictocard 14**, the teacher will go through the work of each group and discuss the cans recycling process.



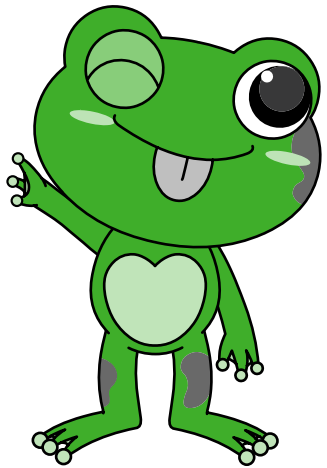
MATERIALS FOR ACTIVITY 7 – PICTURE CARDS ON THE CANS RECYCLING PROCESS

Cut out these pictures to make picture cards and arrange them to show the correct process of recycling cans.



WORKSHEET 1

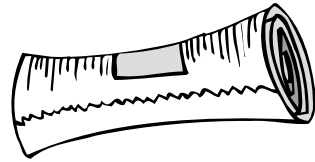
Don't throw me away. Circle and identify the recyclables from the rubbish.



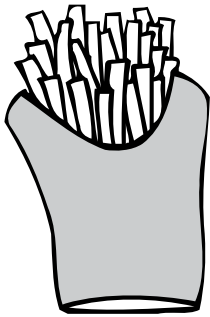
Empty drink bottle



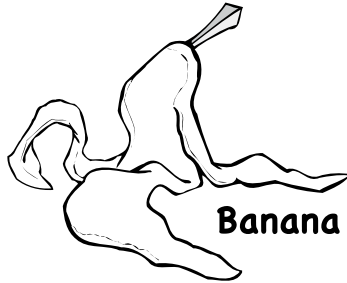
Tissue paper



Newspaper



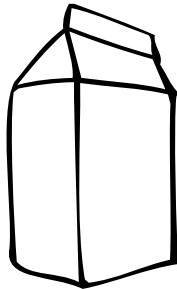
Pack of fries



Banana skin



Empty glass bottle



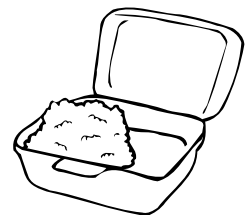
Milk carton



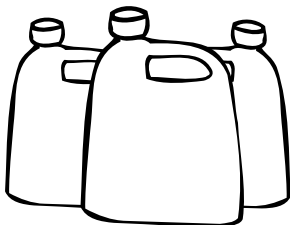
Magazine



Can drink



Pack of half eaten rice



Empty detergent bottles

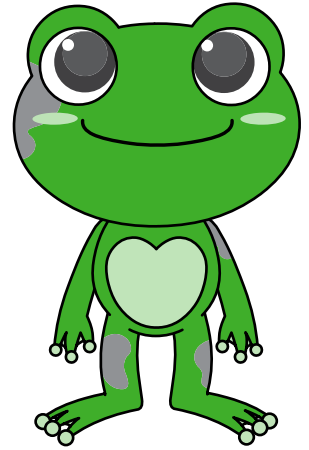


Empty food can

Apple core



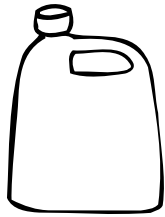
WORKSHEET 2



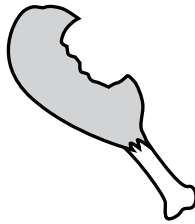
Throw the right items into the recycling bin!



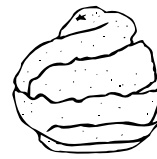
Milk carton



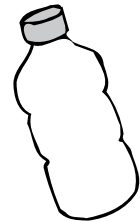
Detergent bottle



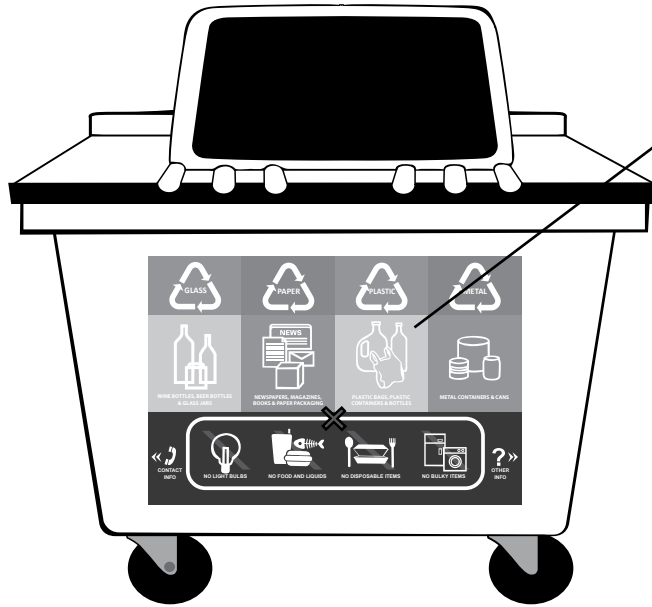
Half eaten chicken drumstick



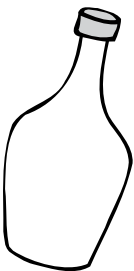
Orange Peel



Drink bottle



Glass bottle



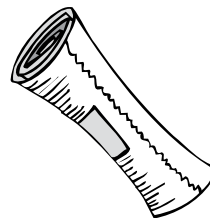
Glass jar



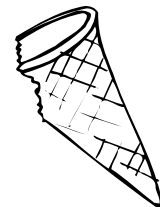
Drink can



Newspaper



Half eaten ice cream cone



ANSWERS TO WORKSHEETS 1 AND 2

Worksheet 1 - Don't throw me away. Circle and identify the recyclables from the rubbish.

Items to circle:

Empty drink bottle

Newspaper

Empty glass bottle

Milk carton

Magazine

Can drink

Empty detergent bottles

Empty food can

Worksheet 2 – Throw the right items into the recycling bin!

Items to be thrown into the recycling bin:

Milk carton

Detergent bottle

Drink bottle

Glass bottle

Glass jar

Drink can

Newspaper

An initiative by :



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Environment
Agency**

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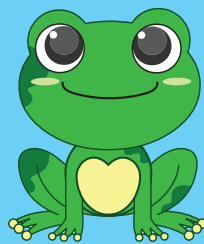
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