

Waste Management in Education - Grade 8 and 9

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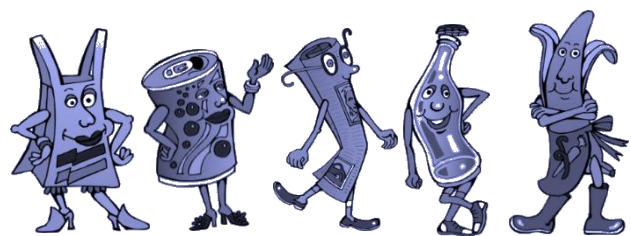
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Why work with waste at school?

Problem Statement

South Africa produces 470 million tons of waste a year. Each person produces almost *2kg* of domestic waste **A DAY**. Most of this waste is dumped and buried in landfill or waste dump sites. This causes precious resources to be wasted and the physical state of many of the landfill sites create **HUGE** environmental problems, as well as **HEALTH** problems for those living close by. This situation is totally unacceptable and unsustainable.

"The government will promote the education and empowerment of South Africa's people with regards to integrated pollution and waste management by increasing their awareness of and concern for pollution and waste and assisting in the developing of the knowledge, skills, values and commitment necessary for successful integrated management."

<http://easd.org.za/sapol/polwp6&7.htm#7.2>

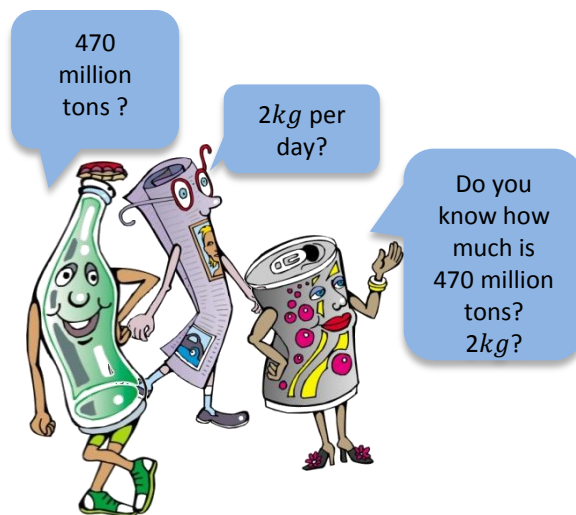
How are you going to create awareness and concern for waste at your school?

The Bill of Rights

The most pertinent fundamental right in the context of integrated pollution and waste management is the Environmental Right (s 24) which provides that:

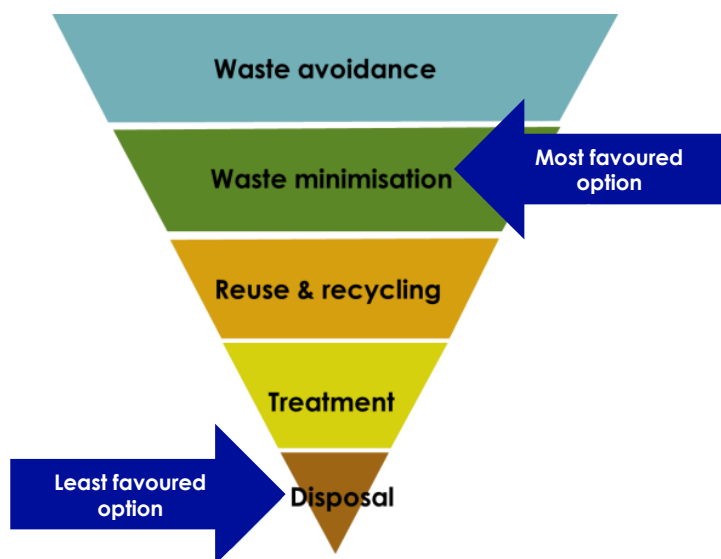
"Everyone has the right

- a. to an environment that is not harmful to their health or well-being; and
- b. to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that
 - i. prevent pollution and ecological degradation;
 - ii. (promote conservation; and
 - iii. secure ecologically sustainable development and the use of natural resources while promoting justifiable economic and social development.



This section of the Bill of Rights guarantees the people of South Africa the right to an environment not detrimental to human health or well-being and specifically imposes a duty on the State to promulgate legislation and take other steps to ensure that the right is upheld and that, among other things, pollution and ecological degradation are prevented.

What can be done to minimise the impact of waste?



Teacher guide

1. Our environment

Subject: Life Skills

Objective: To make learners aware of waste around them

Note that you will find the Grade 7 activities in the Intersen Waste Management in Education guide.

CAPS link:

Grade 7



Grade 8

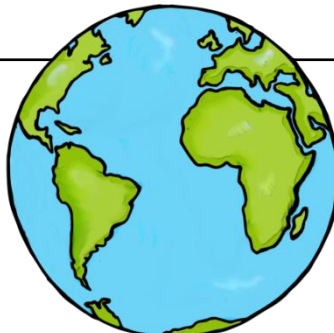


Grade 9



Term 4 Personal and social well-being Topic: Health, social and environmental responsibility <ul style="list-style-type: none">• Concept: environmental health• Local environmental health problems• Community and individual projects and strategies to prevent and deal with environmental health problems• Problem-solving skills: an action plan to address an environmental health problem and formulate environmentally sound choices and actions	Term 3 Personal and social well-being Topic: Health, social and environmental responsibility <ul style="list-style-type: none">• Environmental health issues:• Application of laws and policies to protect the environmental health: address an environmental issue• Earth Day: preservation of the environment• Honouring Earth Day: ways of being kinder to Earth• Develop and implement an environmental health programme	Term 3 Personal and social well-being Topic: Health, social and environmental responsibility <ul style="list-style-type: none">• Individual and community responsibility• Different types of volunteer organisations: contributions of community-based and non-profitable organisations to social and environmental health and sustainable development Different types volunteer activities: helping those less privileged; assisting those affected and infected by HIV and AIDS and other terminal illnesses
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Life Skills



Readings

Grades 7 – 9

Learners read the reading.

👉 Ask the learners what the reading tells them.

👉 Ask them why they think people litter.

Grade 9

Give the learners the reading on 'What is a Volunteer'. In groups each group must share with the class what they think a Waste Volunteer is.

Grade 7

Picture

(See WASTE Intersen module)

Give learners the community picture. Ask them to give the environmental health problems. Ask learners to identify the same or similar problems in their community.

Tell learners that they have to come up with an action plan to address the environmental health problem in their communities.

Grade 8

Give the learners the reading on earth day. Ask them to summarise it in their groups and then present it to the rest of the class.

Worksheets

Grades 8 – 9

Learners use or complete the worksheets.



What is Environmental Health?

Environment: Environment can be defined as the surroundings or conditions in which a person, animal or plant lives or operates, it includes everything that affect an organism during its lifetime. The environment also includes the water, air and land interrelationships.

Health: Health can be defined as a state of being free from illness, injury or pain, in other words, there are no mental and physical conditions that is suffering from.

We can conclude from the above definitions that Environmental Health is the environmental issues that we find in our environment which can cause physical or mental illness, injury or pain. In a good environment people will be sound in body, mind and spirit.

Most of the time when we think of the word “Environment” we think of nature, but the environment is actually the place/environment where you live, work, learn and play. Everything that surround you are part of the environment that you live in. The environment have an enormous influence on your health.

A lot of environmental issues are caused by waste. The disposing of waste has an enormous environmental impact and can cause serious health problems. Some of the waste rot and start to smell and generate methane gas which is bad for any living organism.



The waste incineration causes severe health problems. The gases produced cause air pollution that contribute to the production of acid rain. Due to all the negative effects from burning waste, we are encouraged not to burn waste but rather recycle and re-use.

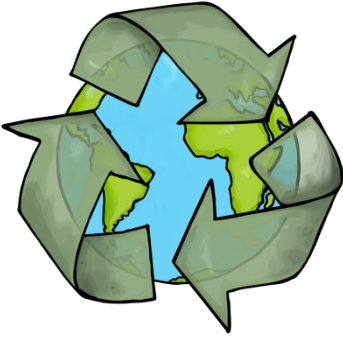


By throwing away waste we throw away resources. Instead of throwing things away, we should recycle and re-use the material. By doing that we save raw materials and the energy used for the manufacturing of those items. Doing that also saves money.

There are several effects that hazardous waste can have on humans. It has a dangerous effect on people who live close to the places where waste is deposited or to those who comes in contact with it. Waste sinks into the ground as well as into the water which is supplied to places of living. This means that when those people drink the water, they can contract various diseases. Sometimes people consume hazardous waste without realising it, such as when they eat fish that come from a contaminated stream. Diseases are then caused because the fish contain chemicals that are not suitable to be eaten.

What is Earth Day?

Grade 8



Earth Day is a special day that celebrates the Earth. Earth Day was started in San Francisco, America, on April 22, 1970 and is still celebrated by over a 100 different countries every year.

Earth Day is the largest, most celebrated environmental event worldwide. Earth Day is a day celebrated for 2 similar global observances.

While some people celebrate Earth Day around the time of the **March Equinox**, others celebrate the day on April 22, each year.

On Earth Day, we remember to appreciate nature and learn ways to protect our environment. See if you can find ways in which you can help keep the planet clean and to help protect our environment!

Every year Earth Day is celebrated in all different ways, like having outdoor performances, performing acts of service to the earth. Other ways of celebrating this day is to plant trees at schools, communities getting together to clean up waste, organisations having programmes for recycling and conservation in their communities, etc. Throughout the year, but especially around the time Earth Day is celebrated, there are lots of petitions to governments and municipalities, calling for stronger or immediate action to stop global warming and to reverse environmental destruction.

There are many symbols people use to describe Earth Day. Such symbols are drawings of planet earth, flowers or leaves showing growth and then the well known recycling symbol.

Earth Day is not a public holiday like for instance Worker's Day. No businesses or schools are closed or have to change any of their working hours.

What is a Volunteer?

Grade 9

A volunteer is a person who freely offers their time and sometimes resources to do something or to assist somewhere or someone. A volunteer usually has a great spirit of service, good moral values and are willing to work as a team. By doing voluntary work, a person gets a feeling of self-worth and respect without gaining any financial benefits. Most of the time volunteers are specifically trained in the areas that they volunteer in.

People who do voluntary work, do it to contribute to a greater cause that will be good for their fellow man and their society in general. They also do it to try and live in a better society and to make the situations that they live in as good as possible.

There are a lot of reasons why people do voluntary work.

- To feel that they are useful and can make a difference in their society.
- To do something good in their society and to do it good.
- To have some fun and to do something that are not part of their daily lifestyle.
- To give something back to the society.
- To meet people who have the same kind of interest like them.
- To build up some knowledge and to share their knowledge or even a talent.



The solidary key in waste management is that people want to create a better life for everyone and themselves. They help to meet people's needs, help to solve problems as well as their social needs.

We have to take action. It doesn't help that we are good people but don't do anything to help others or to solve problems that we might have in our communities. For instance, we know that waste is a big problem in our society and we as citizens have to start doing something about it. We have to take "action" to make the environment better for everyone. This is where the recycling process comes in handy. We can collect the waste and use it to make new things or just re-use it. We can start compost heaps using the materials that we cannot re-use or recycle. Most important of it all is that we have to reduce the use of the materials that can't be recycled.

The main goal of a volunteer is to improve the reality that we have to transform the world in an effective way to benefit everyone. There has to be some kind of structure so that the actions can be organised and in the end help to make a difference.



Keeping places clean

Grade 8

Name: _____

Environmental health reading

To revise the work you have done in Grade 7 on environmental health, your teacher will give you the reading on environmental health, or you can research the topic.

1. Answer the following questions:

- a) What is environment?
- b) What is environmental health?
- c) What effect does waste have on the environment? How can we make a difference in our current waste situation?

Read and research what “Earth Day” is.

2. In one paragraph explain what Earth Day is.

Earth Day is usually celebrated on the 22nd of April.



3. Design you own Earth Day symbol.

4. Place the date on your calendar and send your friends an email on Earth Day.

5. Look at this poster on the next page.

- a) In one sentence describe this poster.
- b) How will you use the poster during Earth Day?
- c) What is LEADSA?



The assessment rubric on the next page will be used to assess you.

Earth Day Poster



Source: Used with permission from LEADS.

Rubric	Not achieved	Elementary achievement	Moderate achievement	Adequate achievement	Substantial achievement	Meritorious achievement	Outstanding achievement
	1	2	3	4	5	6	7
	0 - 29	30 - 39	40 - 49	50 - 59	60 - 69	70 - 79	80 - 100
	Did not answer any questions	Correctly answered 1 question	Correctly answered 2 questions	Correctly answered 3 questions	Correctly answered 4 questions	Correctly answered 5 questions	Correctly answered 5 questions and added more information

A safe environment

Grade 9

Name: _____

Volunteer for the environment

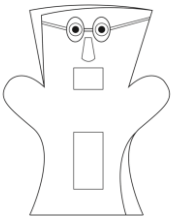
Read the readings on:

- 'What is a volunteer'
- Environmental health

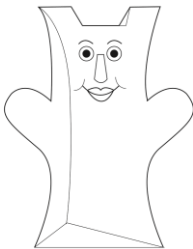
Answer the following questions:

1. What is environmental health? Describe it in one sentence.
2. What is a volunteer? What would a volunteer organisation be?
3. You have volunteered to work on the Waste Management Volunteers Programme in your community. Write a paragraph of what you think your role would be.
4. On the next few pages are templates of puppets. In groups of five make the puppets and then volunteer to do a puppet show at your nearest Primary School.

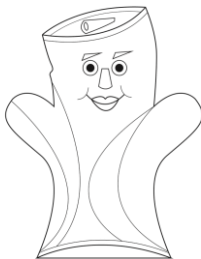
Peter Paper



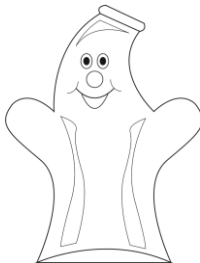
Penny Plastic



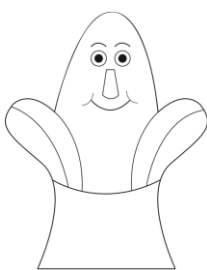
Milly Metal



Gugu Glass



Compi Compost

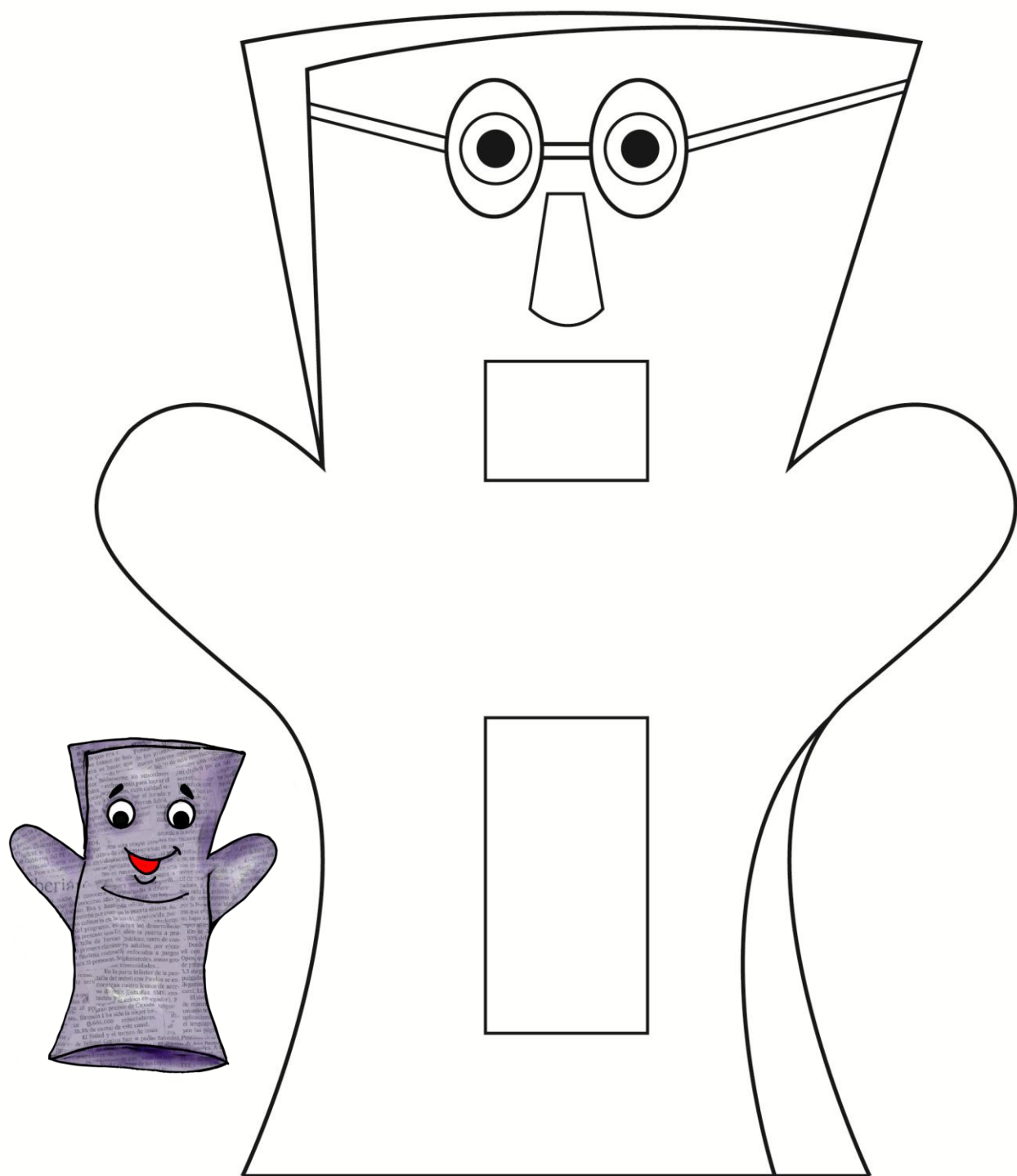


The following rubric will be used to assesses you:

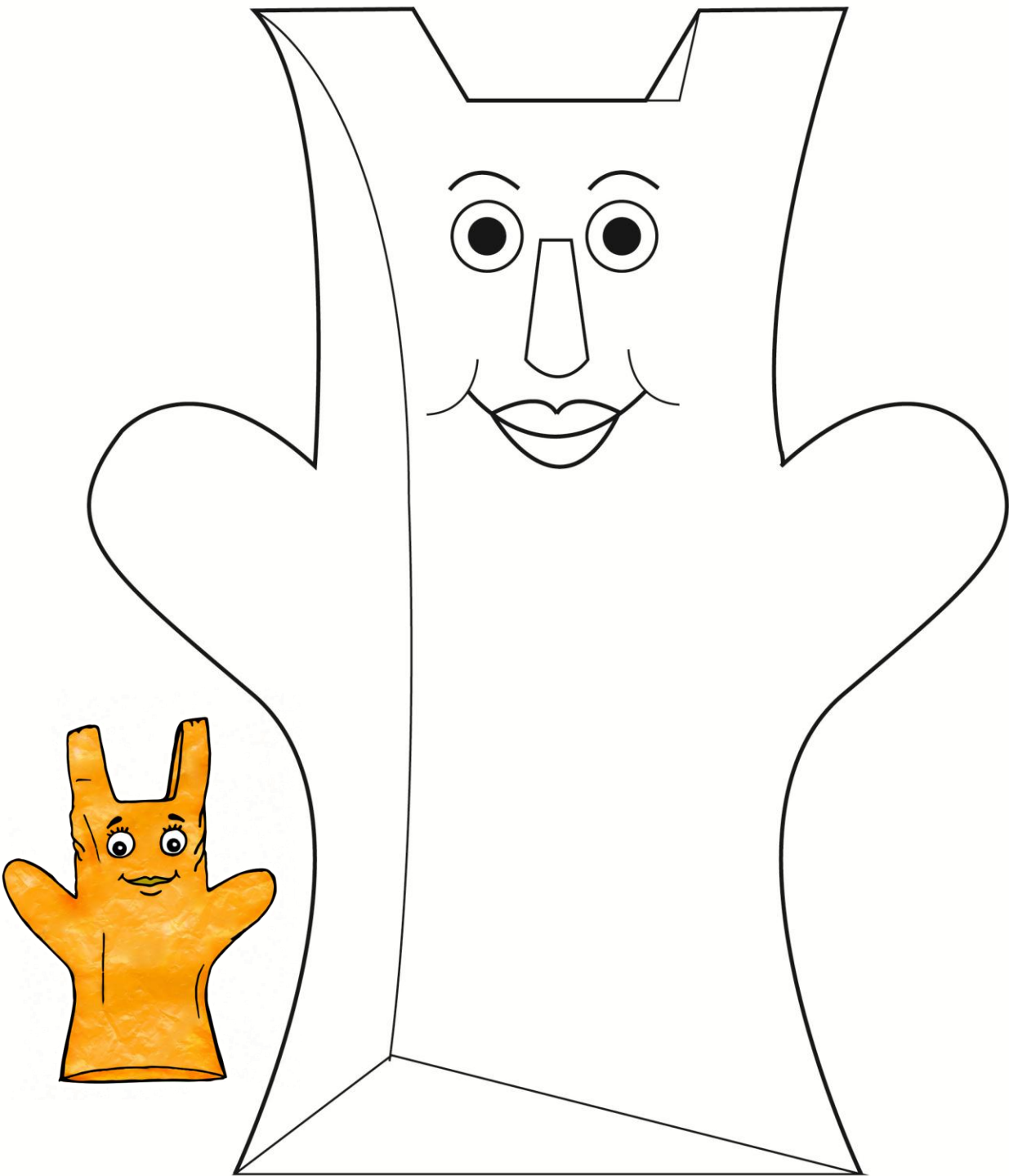
Rubric

Not achieved	Elementary achievement	Moderate achievement	Adequate achievement	Substantial achievement	Meritorious achievement	Outstanding achievement
1	2	3	4	5	6	7
0 - 29	30 - 39	40 - 49	50 - 59	60 - 69	70 - 79	80 - 100
Wrote a sentence	Attempted to write a paragraph	Wrote a paragraph with support	Wrote a paragraph but needed guidance	Wrote an average paragraph	Wrote a good paragraph	Wrote an excellent paragraph
Start making a puppet	Attempted to make all the puppets	Made puppets with support	Made puppets but needed guidance	Made a set of puppets	Made a good set of puppets	Made an excellent set of puppets
Did not give appropriate feedback	Attempted to give feedback	Gave feedback with support	Gave feedback on puppet show but needed some guidance	Gave feedback	Gave good feedback	Gave excellent feedback

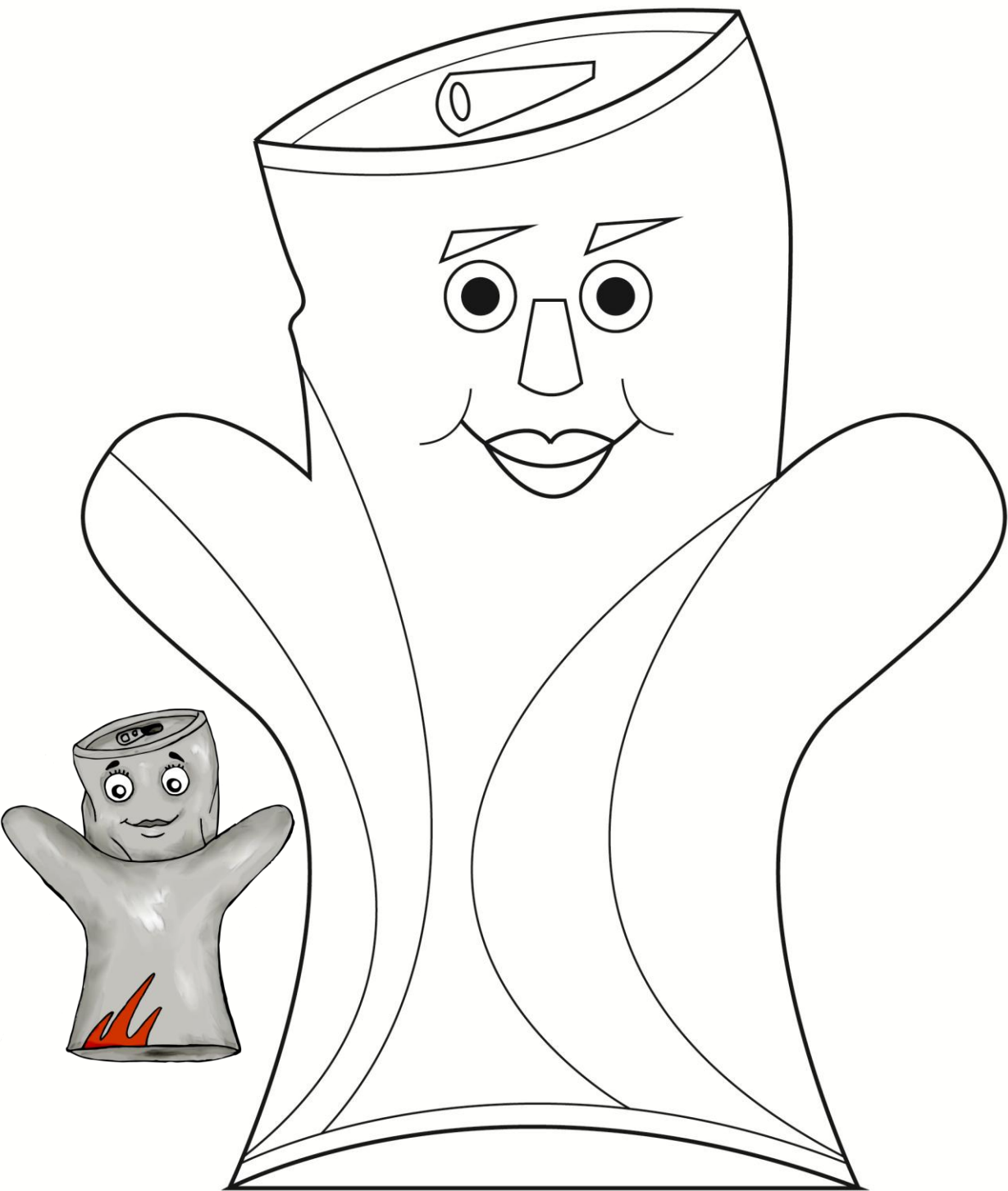
Hand puppet template: Peter Paper



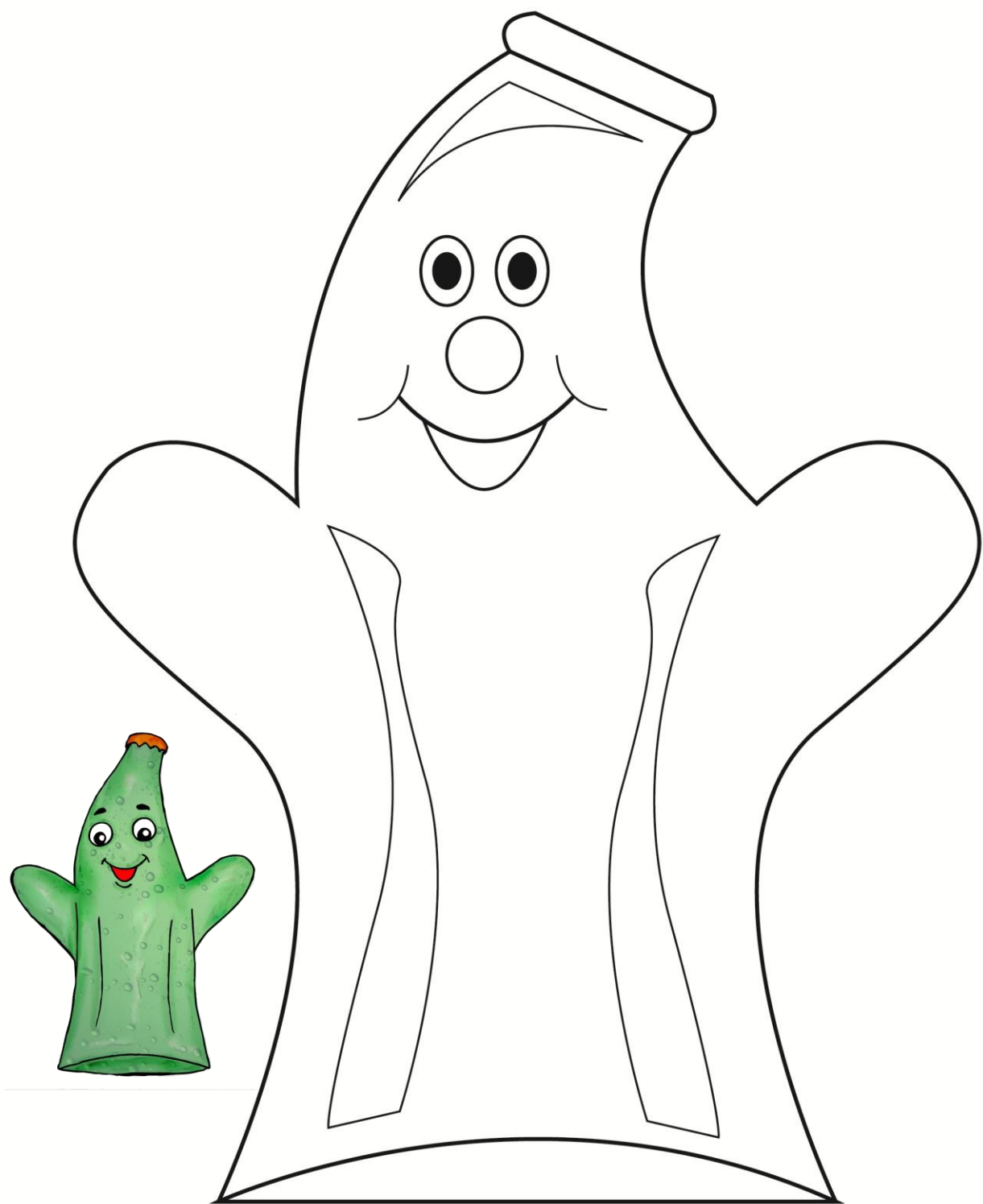
Hand puppet template: Penny Plastic



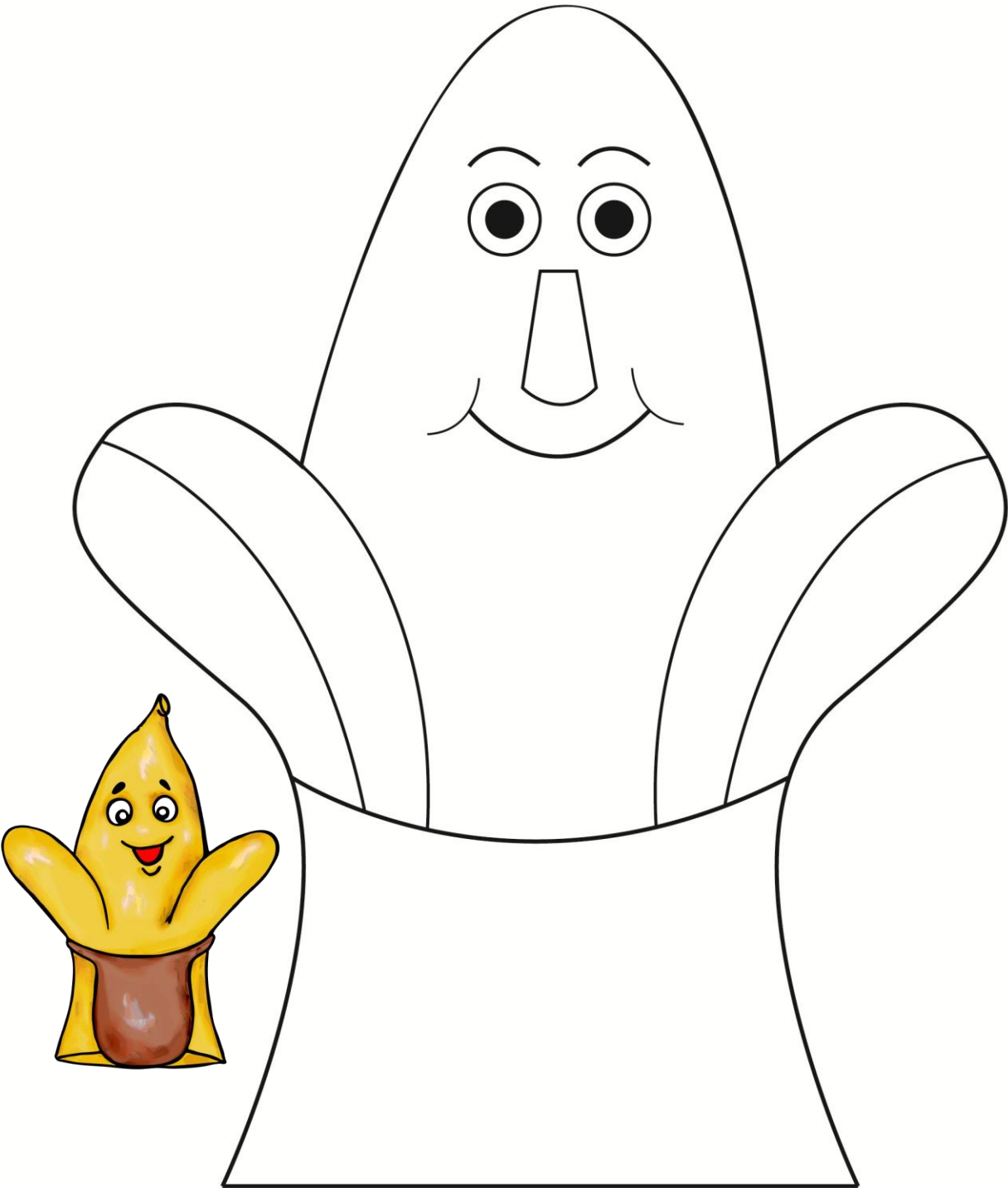
Hand puppet template: Milly Metal



Hand puppet template: Gugu Glass



Hand puppet template: Compi Compost



Teacher guide

2. Waste we create

Subject: Mathematics

Objective: To make learners aware of how much waste we create

CAPS link:

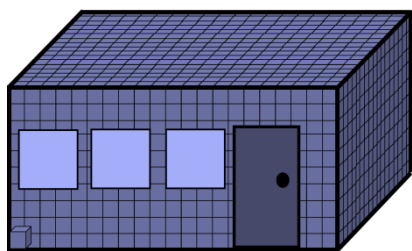
Grade 7 ✓	Grade 8 ✓	Grade 9 ✓
<p>Term 4</p> <p>Measurement Volume</p> <p>Measurement of volume</p> <ul style="list-style-type: none"> Continue to find volume/capacity of objects (by packing or filling them) Develop an understanding of why you can describe the volume of rectangular prisms as their length multiplied by their breadth multiplied by their height 	<p>Term 4</p> <p>Measurement Volume</p> <p>Surface Area and Volume</p> <ul style="list-style-type: none"> Use appropriate formulae to calculate the surface area and capacity of it. Cubes Rectangular prisms Triangular prisms <p>Calculations and solving problems.</p> <ul style="list-style-type: none"> Solve problems, with or without a calculator, involving surface area, volume and capacity. Use and convert between appropriate SI units, including 	<p>Term 4</p> <p>Measurement Volume</p> <p>Surface Area and Volume</p> <ul style="list-style-type: none"> Use appropriate formulae and conversations between SI units to solve problems and calculate the surfaced area and capacity of: Cubes Rectangular prisms Investigate how doubling any or all the dimensions of right prisms and cylinders affects its volume.

Mathematics

Grade 7

Tell the learners that each person creates about 2kg of waste per day. Divide them into groups of three. Give them some waste and let them fill up a bag with 2kg of waste. Give them the following problem:

How long will it take a class to fill a classroom with waste? See worksheet for guidance.



Grade 8

Learners read the story of Jack and then solve the volume problem.

Jack is unemployed and collects recyclable materials in exchange for cash. He has collect 4 283 cardboard boxes from a bakery that has closed down. He cannot decide whether or not to flatten the boxes or not. Use the measurements to calculate the volume of the boxes when flattened and when not flattened. If only 2 123 not flattened boxes can fit into his bag, what is the volume of his bag?



Worksheets

Grades 7 – 9

Learners use or complete the worksheets.

Grade 9

Learners solve a volume and capacity problem.

Jack is unemployed and collects cans to be recycled. If he collects 3 234 cans, what is the volume of his bag? If the bag is $\frac{3}{4}$ full, what is the capacity of the bag?



Keeping places clean

Name: _____

Things to remember:

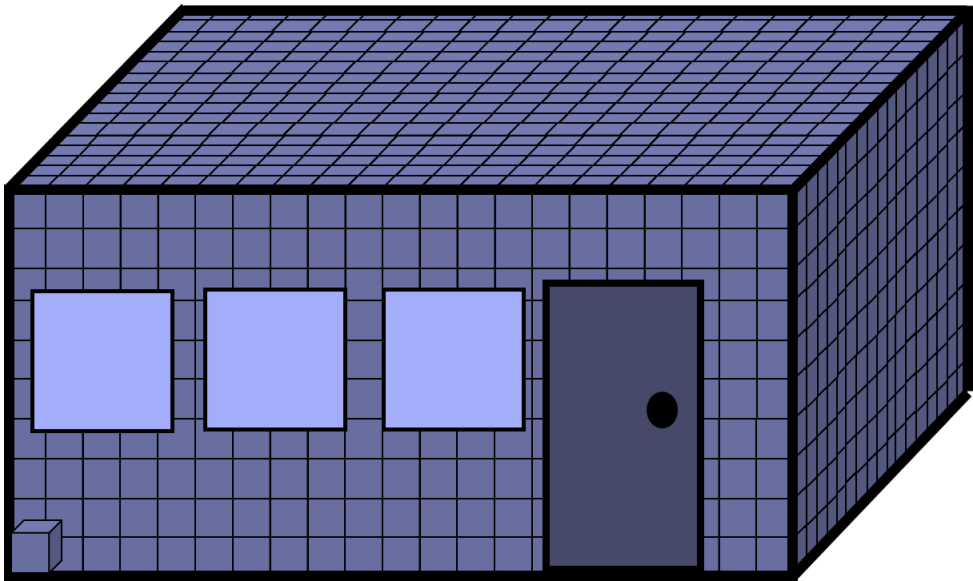
The average person creates 2kg of waste per day.

1. Solve the problem.

a. Each person creates about 2kg of waste per day. How long will it take to fill this classroom?

Here are some clues:

- I have a 2kg bag with waste. I compressed it into a cube of 30cm x 300mm.
- I have a class that is 6,3m x 5 100mm x 3m.
- There are 42 children in the class.



b. Repeat the same activity but do it for your class.

Rubric	Not achieved	Elementary achievement	Moderate achievement	Adequate achievement	Substantial achievement	Meritorious achievement	Outstanding achievement
	1	2	3	4	5	6	7
	0 - 29	30 - 39	40 - 49	50 - 59	60 - 69	70 - 79	80 - 100
	Attempted to solve the problem		Solved the first problem with support		Solved the first problem		Solved the problems and presented it to the class
	Attempted to solve the problem		Solved the second problem with support		Solved the first problem		

Name: _____

Things to remember:

The equation used to calculate the volume of a box is:

$$V = l \times w \times h$$

1. Solve the problem.



Jack is unemployed and collects recyclable material in exchange for cash. He has collect 4 283 cardboard boxes from a bakery that has closed down. He cannot decide whether or not to flatten the boxes or not. Use the measurements to calculate the volume of the boxes when flattened and when not flattened. If only 2 123 not flattened boxes can fit into his bag, what is the volume of his bag?

Here are some clues:

- The dimensions of the box: Length is 40cm, height is 30cm and width is 25 cm.
- The dimensions of the box flattened: Length is 40cm, height is 4cm and width is 25cm.

Rubric	Not achieved	Elementary achievement	Moderate achievement	Adequate achievement	Substantial achievement	Meritorious achievement	Outstanding achievement
	1	2	3	4	5	6	7
	0 - 29	30 - 39	40 - 49	50 - 59	60 - 69	70 - 79	80 - 100
	Attempted to solve the problem		Solved the first problem with support		Solved the first problem		Solved the problems and presented it to the class
	Attempted to solve the problem		Solved the second problem with support		Solved the first problem		

Keeping places clean

Grade 9

Name: _____

Things to remember:

The equation used to calculate the volume of a cylinder is:

$$V = \pi r^2 h$$

1. Solve the problem.



Jack is unemployed and collects cans to be recycled. If he collects 3 234 cans, what is the volume of his bag? If the bag is $\frac{3}{4}$ full, what is the capacity of the bag?

Here are some clues:

- First work out the volume of one can and then you can calculate the volume of the bag.
- The dimensions of the can: The diameter is 6,6cm and the height is 12,1 cm.



Rubric

Not achieved	Elementary achievement	Moderate achievement	Adequate achievement	Substantial achievement	Meritorious achievement	Outstanding achievement
1	2	3	4	5	6	7
0 - 29	30 - 39	40 - 49	50 - 59	60 - 69	70 - 79	80 - 100
Attempted to solve the problem		Solved the problem with support		Solved the problem		Solved the problem and presented it to the class

Teacher guide

3. Solid waste

Subject: Mathematics

Objective: To make the learners aware of the five types of solid waste and how to sort it

CAPS link:

Grade 7 ✓	Grade 8 ✓	Grade 9 ✓
<p>Term 4</p> <p>Data handling Collect, organise and summarise data Collect data</p> <ul style="list-style-type: none"> Pose questions relating to social, economic, and environmental issues in own environment. <p>Content: Organise and summarise data</p> <ul style="list-style-type: none"> Organise (including grouping where appropriate) and record data using <ul style="list-style-type: none"> tallies tables <p>Content: Represent data</p> <ul style="list-style-type: none"> Draw a variety of graphs by hand/technology to display and interpret data (grouped and ungrouped) including: <ul style="list-style-type: none"> bar graphs and double bar graphs <p>Content: Analyse, interpret and report data Interpret data</p> <ul style="list-style-type: none"> Critically read and interpret data represented in words. 	<p>Term 4</p> <p>Data handling Collect data</p> <ul style="list-style-type: none"> Pose questions relating to social, economic and environmental issues. Select appropriate sources for the collection of data (including peers, family, newspapers, books, magazines), including distinguishing between samples and populations. Design and use simple questionnaires to answer questions with multiple choice responses. <p>Organise and summarise data</p> <ul style="list-style-type: none"> Organise (including grouping where appropriate) and record data using <ul style="list-style-type: none"> Tallies Tables <p>Represent data</p> <ul style="list-style-type: none"> Draw a variety of graphs by hand/technology to display and interpret data including: <ul style="list-style-type: none"> Bar graphs and double bar graphs <p>Interpret data</p> <ul style="list-style-type: none"> Critically read & interpret data represented in: <ul style="list-style-type: none"> Words Bar Graphs Double bar Graphs <p>Analyse data</p> <ul style="list-style-type: none"> Critically analyses data by answering questions related to: <ul style="list-style-type: none"> Data categories, including data intervals 	<p>Term 4</p> <p>Data handling Collect data</p> <ul style="list-style-type: none"> Pose questions relating to social, economic, and environmental issues Select and justify appropriate sources for the collection of data. Select and justify appropriate methods for collecting data <p>Organise and summarise data</p> <ul style="list-style-type: none"> Organise numerical data in different ways in order to summarise by determining <ul style="list-style-type: none"> Measures of central tendency Measures of dispersion, including extreme and outliers <p>Represent data</p> <ul style="list-style-type: none"> Draw a variety of graphs by hand/technology to display and interpret data including: <ul style="list-style-type: none"> Bar graphs and double bar graphs <p>Interpret data</p> <ul style="list-style-type: none"> Critically read and interpret data represented in a variety of ways Critically compare two sets of data related to the same issue <p>Analyse data</p> <ul style="list-style-type: none"> Critically analyse data by answering questions related to <ul style="list-style-type: none"> Data collection methods Summary statistics of data Sources of error and bias in the data

Story

Grades 7 – 9

Learners read the story. Ask them to summarise the story for you in a few words.

Data handling

Grades 7 – 9

The Data handling cycle starts with collecting data. Once we have collected the data, the question is: What can we do with the data?

The data in its raw format very often does not tell us much about our problem. For data to help us solve our problem, we need to organise, represent and summarise it. In this lesson we are going to do the Data handling cycle by focusing on waste.

WAME game

Learners play the game and collect data.

Game rules

What you need:

- Tokens to cover the bins
- Dice (your teacher will provide you with a template on how to make a dice.)
- Game board

How to play:

- Divide your group into two teams.
- Each team has a token.
- Place your token on any empty square. You can move in any direction.
- Throw the dice. The number on the dice will indicate how many places you can move.
- Your aim is to land on a recycling bin. When you land on a recycling bin, make a tally (see worksheets for more information) in the tally column on your table.

If you tick the contents on your table, place a token on the recycling bin. This means that no-one can answer a question on this square again; it is now the same as a white square.

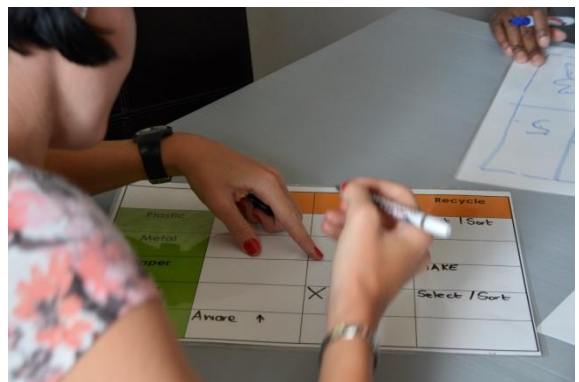
- The next team plays.
- If you land on an empty square you cannot take a turn, but must wait for your next turn to throw again.
- The game is over once all the recycling bins have been covered/ emptied.

Worksheets

Grades 7 – 9

Learners use or complete the worksheets.

WAME Games





Plastiek



Metaal



Papier

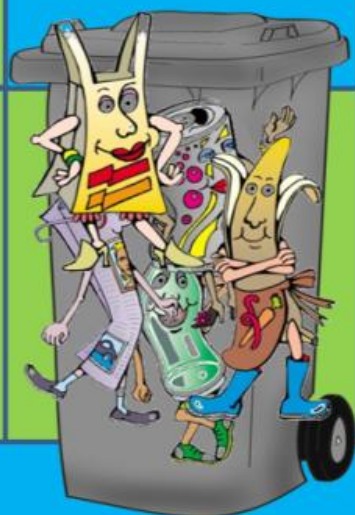


Glas



Kompi Kompos





Waste data






Name: _____

Grades
7 - 9

WAME game

Your teacher will explain to you how to play the game.

You are going to collect information on waste while playing the game. You will record your results in the tally table below. In each grade the type of solid waste (character) will have a different count. In Grade 4 each character in a bin will **count five points (one tally)**, in Grade 5 ten points, Grade 6 fifteen points and in Grade 7 twenty points. Grade 8 fourteen and a half points and Grade 9 12,3 points. (Grade 8 and 9 will need to add there decimal fractions separately and add to the tally only whole numbers, but keep record of decimals for later.

Type of solid waste	Tally
Metal 	
Plastic 	
Paper 	
Glass 	
Organic 	

Up to now we have collected information and we have organised the data into tables using tallies.

1. Use the information in the tally table to complete the frequency table. Each tally represents 1 kg.

Type of solid waste	Frequency (kilograms)
Metal	
Plastic	
Paper	
Glass	
Organic	

b. What is the total mass of all the waste?

2. Draw a bar graph to represent your data. You will need extra paper to do this.

Representing data

Up to now we have collected information and we have organised the data into a frequency table.

All this information helps us to find a solution to the problem we want to solve. From the tables and summary we can already draw some conclusions, but very often it is difficult to understand and interpret the data in this format.

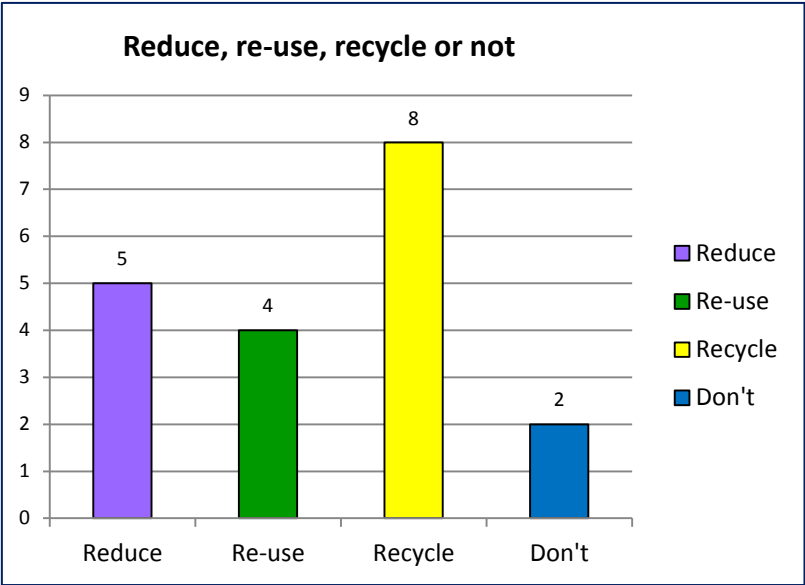
To help us understand and interpret the data, we can also display it in the form of a drawing. We call this a graphical representation of data, graphs or charts.

There are different types of graphs and charts and we need to choose the one that would help us best to interpret the data and find a solution to our problem.

See the examples of bar graphs on the next page.

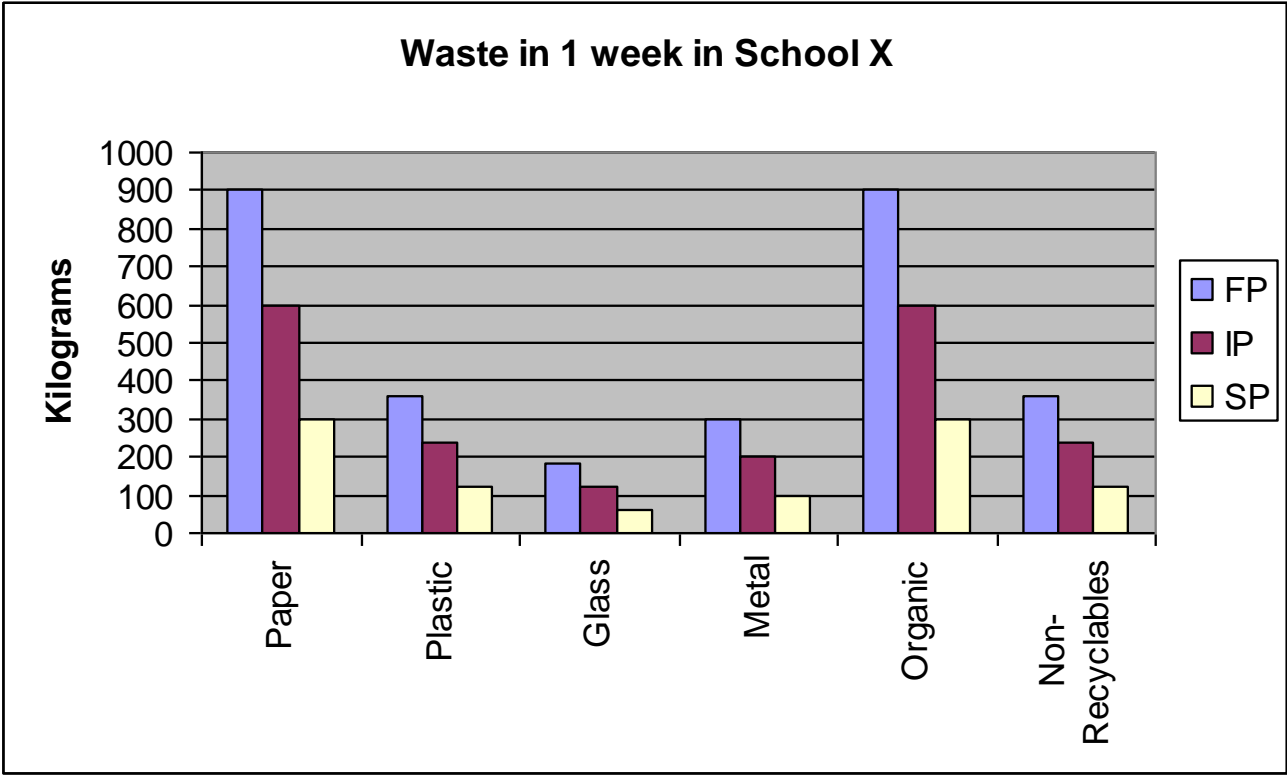
Examples of bar graphs

This is a bar graph that shows us how many reduce, re-use, recycle and which learners do neither.



Discuss with a partner the important facts that need to be included when drawing a bar graph. Remember to include all the important when you draw your own graph.

This is a grouped bar graph that allows us to compare more than one variable. This graph allows us to compare the waste collected by the foundation phase, intermediate phase and senior phase.





Did you know people earn money for recycling. It is not a get rich scheme, as people are paid per kg and different companies pay different rates.

Here is Mary's story.

My family and I managed to collect R4,50 for the 15kg of broken glass we collected.






I collect aluminium cans and am paid 50c a kilogram for squashed cans.



I collect paper to be recycled and earned R9,20 for 16kg.

I collect paper to be recycled and earned R9,20 for 25kg.

3. Find out what you can get from you local recycler for the different types of solid waste. Calculate what you will receive for the waste you have collected. Read the previous table.

Type of solid waste	Calculation
Metal 	
Plastic 	
Paper 	
Glass 	
Organic 	

4. Look at your graph again. Write five sentences about it.

	Not achieved	Elementary achievement	Moderate achievement	Adequate achievement	Substantial achievement	Meritorious achievement	Outstanding achievement
	1	2	3	4	5	6	7
	0 - 29	30 - 39	40 - 49	50 - 59	60 - 69	70 - 79	80 - 100
Tally and frequency table	Attempted to complete the tally and frequency table		Completed the tally and frequency table with support		Completed the tally and frequency table		Completed the tally and frequency table with ease
Bar graph	Attempted to draw a bar graph		Drew a bar graph with support		Drew a bar graph		Drew a bar graph with ease
Calculation	Got between 0% and 29 % of the calculations correct		Got between 40 % and 59 % of the calculations correct		Got between 60 % and 79 % of the calculations correct		Got between 80 % and 100 % correct
Five sentences	Wrote one to two sentences with support		Wrote 3 to 4 sentences with some support		Wrote 3 to 4 sentences		Wrote 5 correct sentences

Teacher guide



4. Re-use and reduce

Subject: Life Skills and Creative Arts

Objective: To create objects from waste

CAPS link:

Grade 7 ✓	Grade 8 ✓	Grade 9 ✓
<p>Term 3</p> <p>Creative arts: Visual arts</p> <p>Topic: Create in 2-D</p> <ul style="list-style-type: none"> Recommended resources: photographs in resource books (e.g. buildings) <p>Content/concepts/skills</p> <ul style="list-style-type: none"> Paper cut collage: buildings as heritage Art elements: shape, geometric and organic, line, tone, texture (colour to include monochromatic colour) Design principles: balance, contrast, harmony, proportion Pattern-making – in collages, designs (exploration of various repeat methods) Emphasis on the interpretation buildings in paper cut collage – cutting, layering, pasting, monochromatic colour Variation of paper size and format: different scale and degrees of detail 	<p>Term 2</p> <p>Creative arts: Visual arts</p> <p>Topic 2 Create in 3D</p> <p>Recommended resources</p> <ul style="list-style-type: none"> Photographs in resource books and/or examples from life, such as a garment for a particular function <p>Materials</p> <ul style="list-style-type: none"> Learners' choice of recyclable materials Appropriate tools: scissors, craft knives, etc., glue, cardboard strips for glue Applicators 	<p>Term 4</p> <p>Creative arts: Visual arts</p> <p>Topic 2 Create in 3D</p> <p>Recommended resources</p> <p>Recommended resource</p> <ul style="list-style-type: none"> Appropriate visual stimuli (e.g. making a ventriloquist puppet to show the arts in 3D making public commentary) <p>Materials</p> <ul style="list-style-type: none"> boxes, toilet rolls, polystyrene containers and packing materials, corks, wrapping paper, tin foil, wool, string, beads, wire

Life skills and Creative arts (Grade 7)

Resources needed:		
Story	Waste objects	Worksheets

Story

Grades 7 – 9

Learners read the story. Ask the learners to summarise the story for you in a few words.

Make from waste

Grades 7 – 9

Tell the learners that they are going to create an art object using waste. Give learners some guidance. See worksheets.

Grade 7

The Grade 7's topic is buildings as heritage. Learners should make a paper collage.

Steps in making an object from waste

Step 1: Ask the learners to plan the resources and tools that they are going to use.

Step 2: Learners make an object from waste.

Step 3: Learners present this object to the class.

What you need to observe when learners are making these objects from waste:

- Skills and techniques, like pasting, cutting, wrapping, tying, joining various recyclable materials

- Art elements: texture, shape/form, colour reinforced through use in own construction
- Design principles: reinforce conscious use and naming of contrast and proportion in construction
- Spatial awareness: reinforce conscious awareness of extending parts of models into space
- Appropriate use of tools

Grade 8

Spatial outfit

Grade 9

Ventriloquist puppet

Worksheets

Complete or use Grade 7 – 9 worksheets.

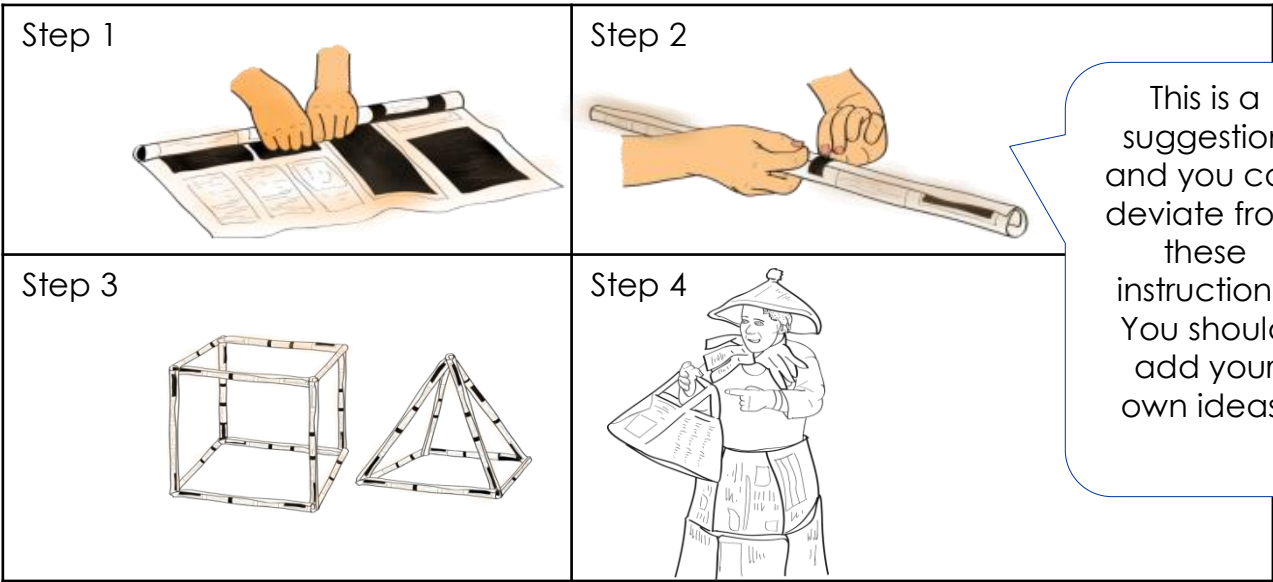
Spatial outfits from newspapers

Grade 8

You need to plan what resources and tools you need for your spatial outfits.

Make a four step drawing.

You can start this activity by using newspaper to build 3-D objects. Here is an example:



This is a suggestion and you can deviate from these instructions. You should add your own ideas.

What do you need:

Newspaper	ribbon
model	scissors
Straight pins	Zipper tape
Glue or stapler	Needle and thread (optional)
Duct tape	

Instructions

1. Cut newspaper into 10 cm-wide strips and fold each strip four times lengthwise to make thicker, 3 cm strips.
2. Drape two strips of newspaper over each of the dress form's or model's shoulders to make shoulder straps. Angle the strips toward the centre of the chest at a 45-degree angle to make a "V" neckline.
3. Pin the ends of the strips in place and glue or staple the long edges of the shoulder straps together.
4. Wrap a strip of newspaper under the arms so that the ends of these strips overlap the shoulder straps. Glue or staple the newspaper strips to the shoulder straps.
5. Continue adding vertical strips of newspaper, following the natural form of the model or dress form and gluing or stapling the ends of the newspaper to strips already on the model. Glue or staple the ends of the newspaper strips together to extend their length until the dress is as long as you desire.
6. Weave horizontal newspaper strips tightly into the vertical strips and glue or staple them in place.
7. Reinforce the back of the newspaper strips with duct tape once the basic dress is complete. This will help prevent the newspaper from tearing.
8. Glue strips of ribbon around the waist, neckline and/or hem.
9. Add a closure to the back of the newspaper dress, if it's difficult to slip on and off on its own. Cut a vertical slit down the back of the dress, from the neck to the waist. Glue or stitch zipper tape to the inside edges of the slit, or glue or stitch 2-inch long ribbons horizontally down either side of the slit to make tie closures.

Make a ventriloquist dummy

Grade 9

You need to plan what resources and tools you need to make a ventriloquist dummy. We first going to give you two methods on how to make paper maché.

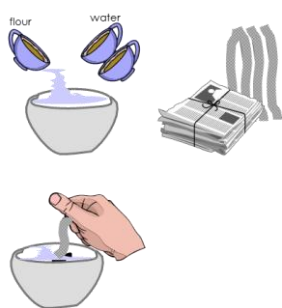
1. How to make paper maché.

Example 1: Paper maché paste



1. Mix one part flour with about 2 parts of water until you get a consistency like thick glue. Add more water or flour as necessary. Mix well to get out all the bumps. Add a few tablespoons of salt to help prevent mould!
2. Similar to the above recipe - Put 4 cups of water into a large pot. Place the pot on the stove and bring the water to a boil. While you are waiting for the water to boil, mix together 1 cup of flour with 2 cups of water, stir well to get out as many bumps as possible. Once the water is boiling, carefully add your flour and water mixture. Simmer this mixture for 2-3 minutes, until smooth. Add a few tablespoons of salt to help prevent mould. Cool down.
3. You can use regular glue mixed with a bit of water. Mix using about 1 part water with 2 parts glue.
4. Use wallpaper paste. Follow the directions from the manufacturer to mix this paste.

Example 2: Paper maché



1. Create your paper maché form and prepare your desired paper maché paste (See previous activity).
2. Tear newspaper into strips. Dip one piece of newspaper at a time into prepared paper maché paste.
3. Hold the strip over the paste bowl and run it through your fingers to squeeze off excess paste. over the form you want to paper maché, and smooth it down with your fingers.
4. Completely cover your creation with a layer of newspaper strips. They should all be over-lapping. After one layer is applied, let it dry about 24 hours. Add another layer of newspaper strips and let dry another 24 hours. Repeat this process until you get the desired effect, but you should have at least three layers.

2. How to make a ventriloquist dummy from paper maché.



What do you need?

2 l soda bottle	1 cup flour	Marker	Acrylic paints
Ruler	Pot	Straight-edge knife	Paint brushes
Mild liquid dish soap	Medium-size bowl	Plastic drinking straw	Cotton cloth
Scissors	Newspaper strips	Permanent adhesive	3 buttons
Masking tape	White paper towel strips	5 cups water	

Instructions

1. Remove any labels on the soda bottle. Wash the bottle with warm water and dish soap, and rinse it thoroughly. Dry the bottle with a clean dish towel.
2. Cut off the bottom 5 cm of the bottle with a pair of scissors or a straight-edge knife. Cut off the spout. Recycle the bottom and spout.
3. Cover the spout hole with masking tape. Stand the bottle straight up, with the taped hole upward.
4. Draw a 5 by 5cm bottom lip onto the upper third of the bottle, at the centre. The lip should resemble a half moon with its flat side facing upward. Carefully cut the lip out with a straight-edge knife. Glue the inside of the lip to one end of a plastic straw. The flat end of the lip should be about an eighth of an inch above the end of the straw.
5. Combine the water and flour in a pot to make the paper-maché mix. Boil the mixture for three minutes, and allow it to cool for five minutes. Pour the mix into the bowl.
6. Coat one newspaper strip in the paper-maché mix, and press the strip onto the bottle. Repeat until the bottle is covered in one layer of newspaper, taking care not to cover the hole you cut for the mouth. Apply one layer of newspaper to the cut-out lip as well. Repeat both steps with white paper towel strips, which provide an ideal surface for acrylic paint. Allow four hours for the paper-maché to dry.
7. Paint eyes, ears, a nose and hair onto the dummy's head. Paint an upper lip just above the hole for the lower lip. Paint the lower lip the same colour as the upper lip. Allow two hours for the paint to dry.
8. Cut out a 30cm by 40cm piece of cotton cloth. Glue the 30cm edge around the "neck" of the dummy with permanent adhesive. Use the same adhesive to place three evenly spaced buttons vertically down the front side of the fabric (i.e., the side under the dummy's face). Allow adequate time for the glue to dry, based on the manufacturer's instructions.
9. Stick your hand under the cloth and into the bottom of the bottle, while holding the straw. Hold the dummy upright with your free hand. Adjust the straw so that the painted side of the lip lines up with the mouth hole and the upper lip. Move the straw up and down to open and close the dummy's mouth.

Teacher guide

5. Recycling

Subject: Life Skills


Objective: To understand recycling

CAPS link:

Grade 7 ✓	Grade 8 ✓	Grade 9 ✓
<p>Term 1</p> <p>Topic: Mixtures</p> <ul style="list-style-type: none"> A mixture is made up of two or more substances or materials that have different properties. If the properties differ, the substances can be separated Methods of physical separation: hand sorting (e.g. sheep wool and thorns, paper and plastic) using a magnet to separate iron (or nickel) from non-magnetic components sieving/filtration, (e.g. sand or soil in water, stones in sand) Problems of recycling waste materials by local authorities: importance of separation of materials for recycling. Consequences of poor waste management by local authorities. Careers in chemistry, mining and waste management. 	<p>Term 4</p> <p>Topic: Mixtures</p> <p>Term 2</p> <p>Strand 2: Life and living</p> <p>Food chains and food webs: Energy flow</p> <ul style="list-style-type: none"> At the end (top) of every food chain or food web are the decomposers: they recycle the nutrients in dead plants or animals into the soil (keeping it fertile) <p>Term 2</p> <p>Stand 2: Life and living</p> <p>Disruptions in an ecosystem</p> <ul style="list-style-type: none"> Wise and sensitive use of limited resources: behaviour change. 	<p>Term 4</p> <p>Topic: Mixtures</p> <p>Term 3</p> <p>Strand 3: Energy and change</p> <p>Forces</p> <ul style="list-style-type: none"> Magnetism: Magnets attract magnetic substances, e.g. Iron, Nickel. Magnetic poles of a bar magnet: opposite poles attract and like poles repel each other. Earth's magnetic field. Magnetism: push or pull forces.

Story Grades 7 – 9

In this section we are only looking at components of the recycling process that are related to CAPS.

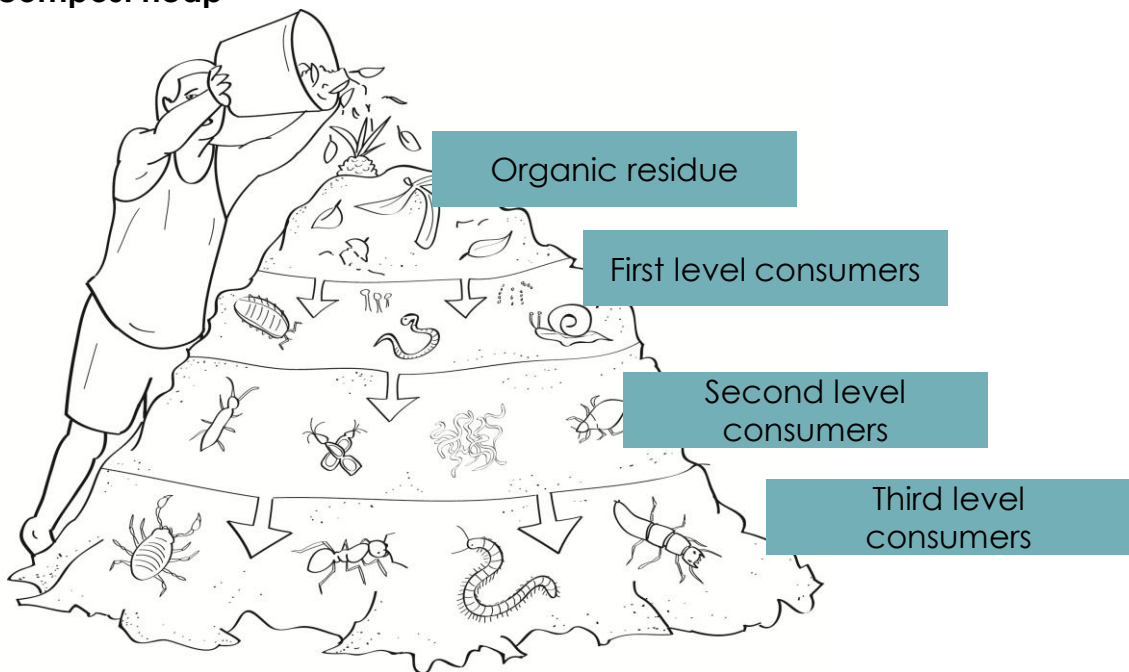
 **What is recycling?** (Recycling is the process of turning used waste and materials into new products. This prevents potentially useful materials from being wasted as well as reducing energy use and pollution.)

Grade 7 xxx

Grade 8 Researching a compost heap

Grade 9 Magnets and recycling metals

Study the compost heap



A compost heap is a collection of organic material which is kept in a state of aerobic decomposition, encouraging the material to break down into an extremely rich soil product which can be used in gardening.

As a group you have been tasked with planning a compost heap. You need to do research about:

1. Location of compost heap
2. What organic material you will use and where you will get your organic material
3. What are consumers
4. A few examples of each consumer level as well as what function this level plays in the compost heap
5. Give three advantages and three disadvantages of a compost heap

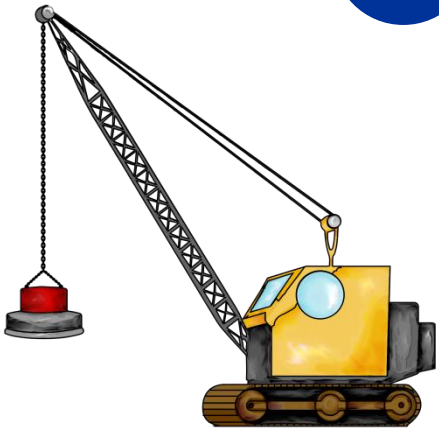
You will need to hand in a three page document with all this information as well as give a one minute speech that will summarise the compost heap and what your group has researched.

Not achieved	Elementary achievement	Moderate achievement	Adequate achievement	Substantial achievement	Meritorious achievement	Outstanding achievement
1	2	3	4	5	6	7
0 - 29	30 - 39	40 - 49	50 - 59	60 - 69	70 - 79	80 - 100
Did research on point 1 with some support		Did research on points 1 to 5 with some support		Did research on points 1 to 5		

Metal recycling process

Grade 9

Name: _____



What a magnet can tell you

The easiest way to sort steel from aluminium cans is with a magnet. In fact you may find a magnet symbol printed on the side of some steel cans.

Experiment for yourself. Collect several cans and touch each of them with a magnet. There will be no effect at all with those made from aluminium but the magnet will feel almost as though it is sticking to those made from steel. That is because anything iron, and therefore steel, is magnetic. Aluminium is non-magnetic.

There are other differences between metals as you will see on the next page.

If you left an empty steel can in the open for a few months, it would go rusty. So it is easy to prove that steel will rust. In fact the steel can is coated inside and out with a very, very thin layer of tin - so little that you might hardly believe it was there. Yet there is enough to help to preserve whatever is in the can - provided it isn't left out in all weathers for a long time.

People often talk about "tin cans", although they are not really made of that at all. If they were made of tin they would be so expensive that you wouldn't be able to afford to buy anything packed in them, because tin is a very much more valuable metal than steel. So we have learned to use it in very small quantities. Even so, the thin layer of tin on a can is still recyclable. It is possible to stop steel rusting by adding one or two other metals such as nickel and chromium, so making one of those alloys, or mixtures of metals.

The result is called stainless steel, which is too costly for cans but is very often used to make knives, forks and spoons, and perhaps the sink in your kitchen at home. In fact, in places where we want to keep things particularly clean and shiny.

1. Answer the following questions:

- Are aluminium cans magnetic? Why?
- What is rust? Why do some metals rust?
- Do some research and write a paragraph about how we use magnets to recycle metals. Your science teacher may be able to guide you as well.
- Do you think recycling is a positive or a negative and give reasons for your answers.

Not achieved	Elementary achievement	Moderate achievement	Adequate achievement	Substantial achievement	Meritorious achievement	Outstanding achievement
1	2	3	4	5	6	7
0 - 29	30 - 39	40 - 49	50 - 59	60 - 69	70 - 79	80 - 100
Answered question a		Answered question a and b. Answered question c and d with support		Answered question a to d		Answered question 1 to d with excellent solutions