Exploring Mixtures

Lesson plan and teacher's notes · Grade 2 Mathematics and Science · 1 period of 40 minutes

School	(write school name)	**Teacher**	(write name)
Date	(date)	**Class**	Grade 2
Subject	Mathematics and Science	**Enrolment**	Boys ___ Girls ___ Total ___
Time	40 minutes	**Topic**	Exploring Mixtures

An overview of Grade 2 Term 3 Exploring Mixtures. Learners preview addition and subtraction in expanded notation up to 999, meet multiplication and division in everyday life, and learn the kinds of household waste and why chemical waste needs care. One period of 40 minutes.

Specific outcomes

By the end of the lesson, learners should be able to:

1. Explain what expanded notation means
2. Name the kinds of domestic waste with examples
3. Say why household chemical waste is dangerous if not handled properly

Prior knowledge

- Learners can count to 999
- Learners have seen rubbish at home or school

Teaching and learning materials

- Real or picture items of waste: food scraps, paper, plastic, glass, a used battery picture
- Four boxes or labelled sheets for sorting
- Place value cards for hundreds, tens and ones
- Manila paper and markers

References

Ministry of Education (CDC) Grade 2 Mathematics and Science syllabus and module; 25Schools learners' note: Exploring Mixtures.

Lesson development

Stage and time	Teacher activities	Learner activities
Introduction 10 min	Show a number such as 345 on place value cards and break it into hundreds, tens and ones. Say that this is expanded notation and that learners will add and subtract this way. Introduce multiplication and division as ways we use numbers in daily life.	Break numbers into place values.
Kinds of waste 15 min	Show items and pictures. Learners sort them into biodegradable, non-biodegradable, recyclable, hazardous and general waste.	Sort items into groups.
Chemical waste 10 min	Explain that household chemical waste is harmful or unused chemicals made at home and that it can be dangerous to people and the environment if not handled properly. Explain that waste management is proper handling, storage, recycling and disposal.	Discuss why care is needed.
Closure 5 min	Ask learners to say one kind of waste and one example.	Share one example each.

Teacher's content notes

Read these before the lesson. They are what you need to know, not what to copy onto the board.

Expanded notation

Addition and subtraction in expanded notation is done by breaking numbers into thousands, hundreds, tens and ones before adding or subtracting. Whole numbers go up to 999. Multiplication and division are introduced and used in everyday life.

Household chemical waste

Household chemical wastes are harmful or unused chemical substances produced in homes that can be dangerous to people and the environment if not handled properly. Management is the proper handling, storage, recycling and disposal.

Kinds of domestic waste

Biodegradable, non-biodegradable, recyclable, hazardous and general waste, each with examples such as food scraps, plastics, paper, batteries and soiled packaging.

Questions to ask during the lesson

Question	Expected answer

The teacher shows food scraps and a plastic bottle collected from the school yard after lunch. (a) Which rots naturally. (b) Which does not break down easily. (c) What do we call each kind.	(a) Food scraps. (b) The plastic bottle. (c) Biodegradable and non-biodegradable.
The teacher asks about old batteries and paint that a family keeps in a store room at home. (a) What kind of waste is this. (b) Why is it dangerous. (c) What must we do with it.	(a) Hazardous waste. (b) It can harm people and the environment. (c) Use special disposal.
The teacher shows a number 345 on place value cards to the class at the front of the room. (a) How many hundreds. (b) How many tens. (c) How many ones.	(a) 3. (b) 4. (c) 5.

Worked examples for the board

Expanded notation

Step 1: Take the number 345. Step 2: Break it into 300, 40 and 5. Step 3: Write 345 as 300 plus 40 plus 5.

Sorting waste

Step 1: Take an item, such as paper. Step 2: Ask if it rots or can be recycled. Step 3: Put it in the right group.

Board plan

Write the title Exploring Mixtures. Draw the table of five kinds of waste with examples.

Kind of waste	Example
Biodegradable	Food scraps
Non-biodegradable	Plastic
Hazardous	Battery

The finished board

Mistakes to expect

Learners often think	Put it right
All waste can be thrown in one place.	Show that hazardous waste needs special disposal and recyclable waste can be made into new products.
Chemicals at home are safe to touch or play with.	Explain that household chemical waste can be dangerous to people and the environment.

Differentiation

Learners who struggle

Use only three groups at first: biodegradable, non-biodegradable and hazardous.

Learners who finish early

Ask learners to name two recyclable items at home and say what they could become.

Hearing or visual impairment

Use real objects that learners can handle safely and pictures for hazardous items. Pair learners who find reading hard with a helper.

No projector, no printing

Use real rubbish from the school yard in clean boxes and drawings of batteries and chemicals.

If time is short

Keep kinds of waste and the danger of chemical waste. Move expanded notation to the next lesson.

Evaluation

Question or task	A correct answer shows
The teacher puts banana peels, a plastic bottle and a battery picture on the desk for Bupe to sort. (a) Which is biodegradable. (b) Which is non-biodegradable. (c) Which is hazardous.	(a) Banana peels. (b) Plastic bottle. (c) Battery.
Mwamba finds paint and old batteries in a store at home and asks his teacher what to do. (a) What kind of waste is this. (b) Why is it dangerous. (c) What is proper handling called.	(a) Hazardous or household chemical waste. (b) It can harm people and the environment. (c) Waste management.

Homework

Njavwa is at home after school on a Saturday and wants to help her mother sort the rubbish heap behind the house before it is burnt. She looks at everything carefully. (a) Name one biodegradable item. (b) Name one recyclable item. (c) Name one item that is dangerous.

Extra practice with answers

Question	Answer
1. Chanda is helping her mother clean the kitchen at home and finds food scraps, glass and a battery. (a) Which is biodegradable. (b) Which is recyclable. (c) Which is hazardous.	(a) Food scraps. (b) Glass. (c) The battery.
2. Mulenga is in class and his teacher writes 428 on the board and asks him to break it into place values for the class. (a) How many hundreds. (b) How many tens. (c) How many ones.	(a) 4. (b) 2. (c) 8.

3. Banji sees her neighbour putting old paint and batteries into the ordinary rubbish pit behind the house. (a) What kind of waste is this. (b) Why is it a problem. (c) What is the right handling called.	(a) Hazardous waste. (b) It can harm people and the environment. (c) Waste management.
4. Bwalya collects soiled packaging and broken items from the school yard for her class clean-up. (a) What kind of waste is this. (b) Does it fit the other groups. (c) Name one other kind of waste.	(a) General waste. (b) No. (c) Recyclable waste.

Answers to the learners' check-yourself questions

1. What is domestic waste.
   Waste from the home from everyday activities.
2. Name one biodegradable waste.
   Food scraps, garden waste or paper.
3. Name one hazardous waste.
   Batteries, chemicals, paints or electronic waste.
4. Why must chemical waste be handled with care.
   It can be dangerous to people and the environment.
5. Mulenga is cleaning the yard at home and finds banana peels, an old battery and a plastic bottle in the rubbish. (a) Which is biodegradable. (b) Which is hazardous. (c) Which is non-biodegradable.
   (a) Banana peels. (b) The battery. (c) The plastic bottle.
6. Chanda helps her mother sort waste after supper at home with paper, glass and soiled packaging in a box. (a) Which two can be recycled. (b) Which is general waste. (c) What is the sorting called.
   (a) Paper and glass. (b) Soiled packaging. (c) Waste management.

Teacher's reflection

What went well:

What I will change next time:

Learners who need follow-up: