every
child
counts

Kwara State Government

Produced with the
support of

esspin

Education Sector
Support Programme
in Nigeria

UKaid

from the Department for
International Development

Numeracy
lesson plans
Primary 3

Term 2
Creating
opportunities for
classroom talk

Weeks
16—20

Type of lesson plans/
Grade

Term/
Learning theme

Numeracy lesson plans Primary 3

Term 2

Creating opportunities for classroom talk

This is the fourth in a series of six numeracy lesson plan publications, designed to be used throughout the three academic school terms.

Introduction

Quality education is a direct result of the quality of teaching and teachers, more than anything else. Unfortunately, it is in these most critical factors that Kwara State education has suffered the worst setback in recent years.

Reports showing that the majority of children completing the first six years of basic education are unable to read or write have raised serious concerns about the quality of teaching and teachers in our schools.

In trying to understand this, it was concluded that the teachers failed because their own basic education failed. In other words, they were also victims of an education system that has collapsed at all levels. Therefore, to address this serious problem, our intervention is holistic and will be delivered on a sustained basis.

These lesson plans have been described as a 'cookery book' approach to teacher training. As a teaching manual, they have been designed to provide a step-by-step guide to teachers of literacy and numeracy, while ensuring that children become active learners.

In using these lesson plans, teachers are continuously supported by both the state school improvement teams and the school support officers who have been trained to provide such support.

I am delighted to note that within a very short time of these lesson plans being introduced into our schools, children's learning abilities have improved considerably. The lesson plans have also made learning and teaching a lot more exciting for both teachers and pupils.

I am confident that these lesson plans will raise standards in our schools and improve the quality of children proceeding to higher levels of education in the near future.

I commend all those who have worked very hard to produce these lesson plans and thank the UK Department for International Development (DFID) for its abiding support to Kwara's education reform through its ESSPIN project.

Bolaji Abdullahi
Honourable Commissioner for Education,
Science and Technology,
Kwara State

**Numeracy
lesson plans
Primary 3**

Term 2
**Creating
opportunities for
classroom talk**

**Weeks
16—20**

Introduction
❭ Creating opportunities for classroom talk

Classroom talk

In any classroom, the pupils should do most of the talking, not the teacher. If pupils have the chance to talk they will quickly improve their language skills.

They should experience lots of different types of talk, in pairs, small groups, and within the whole class, eg:

Having conversations between themselves and with adults in the school.

Asking questions of each other and of the adults in the school.

Answering questions.

Expressing opinions.

Explaining how to do something.

Giving instructions.

Solving problems.

Designing ways of recording findings.

Carrying out investigations into numbers.

Sharing ideas.

Singing songs.

Saying rhymes.

These are all included in the numeracy lesson plans.

Here are some ideas to help you encourage all pupils to join in classroom talk:

Ask questions which have lots of different answers and can be answered by individuals, not the whole class at the same time.

When you ask a question, count to 15 in your head before you choose someone to answer. This gives all pupils the chance to think of something to say, not just the 'quick thinkers'.

When you ask a question, give the pupils 2 or 3 minutes to discuss the answer with a partner before putting their hands up.

When you ask a question, give the pupils 2 or 3 minutes to write the answer in their exercise books and then ask random pupils. This makes all pupils try to think of the answer.

Sit the pupils in a circle and ask them a question which has lots of different answers. Go around the circle and ask every pupil to answer.

**Numeracy
lesson plans
Primary 3**

**Term 2
Creating
opportunities for
classroom talk**

**Weeks
16—20**

Introduction
‣Essential low-cost
or free teaching aids

The balance scale

Balance scales are needed in Week 19 so that the pupils can explore weight.

You could try and borrow some from the local market.

You can also try to make your own using:
two empty plastic cartons
string
a nail
a wooden frame.

Put them together to make a balance.

Counters

For Weeks 16—20 you will need a great many counters. One way of collecting counters is to ask a local shopkeeper to put a container by the crates of soft drinks and ask people to put their bottle tops in them when they take them off the bottle. Once a week, or once a month collect the container, wash the tops and store them to use as counters. Replace the container in the shop to collect more.

This should provide you with a regular supply.

**Numeracy
lesson plans
Primary 3**

Term 2
**Creating
opportunities for
classroom talk**

**Weeks
16—20**

Introduction
▶ Songs and rhymes for the term

Peas

5 fat peas in a pea
pod pressed /
1 grew, 2 grew
and so did all the rest /
They grew and grew
and did not stop /
Until one day the pod
went pop.

1 finger 1 thumb

1 finger, 1 thumb
keep moving /
1 finger, 1 thumb
keep moving /
1 finger, 1 thumb
keep moving /
We'll all be merry and bright.

1 finger, 1 thumb, 1 arm
keep moving...

1 finger, 1 thumb, 1 arm,
1 leg keep moving...

1 finger, 1 thumb, 1 arm,
1 leg, 1 nod of the head
keep moving...

1 potato, 2 potatoes

1 potato, 2 potato,
3 potato, 4 /
5 potato, 6 potato,
7 potato more.

5 little speckled frogs

5 little speckled frogs
sat on a speckled log /
eating the most delicious
bugs, yum, yum /
1 jumped into the pool /
where it was nice
and cool /
then there were 4 green
speckled frogs, glub, glub.

4 little speckled frogs...
3 little speckled frogs...
2 little speckled frogs...
1 little speckled frog...

5 little ducks

5 little ducks went
swimming one day /
Over the hills and far away /
Mummy duck called, 'quack,
quack, quack, quack' /
But only 4 little ducks
came back.

4 little ducks...
3 little ducks...
2 little ducks...
1 little duck...

Week 16 Multiplication of two-digit numbers

Words/phrases

**multiply
product of
times by
vertical
horizontal**

Assessment

**During the lesson, walk
round the classroom
and ask questions to
see if the pupils clearly
understand what you
have taught them. If not,
help them to understand
by explaining the idea
to them again, or asking
other pupils to help them.
You may need to use
some different examples
of the idea.**

**Numeracy
lesson plans
Primary 3**

**Term 2
Creating
opportunities for
classroom talk**

**Week 16
Multiplication of
two-digit numbers
Day 1**

Multiplication of two-digit numbers

Learning outcomes

By the end of the lesson, most pupils will be able to:

Multiply two-digit numbers by one-digit numbers using repeated addition.

Count in fives from any given number up to 100.

Teaching aids

Before the lesson:

Read the lesson plans carefully, trying a few sums so that you understand the method.

Read MAN Primary Mathematics 3, page 103.

Daily practice

Whole class teaching

Ask pupils to sit in a circle and ask one of them to say a number between 1 and 30.

Ask them to count round the circle in fives, starting from that number and finishing at or near to 100.

Write the numbers in a vertical list on the chalkboard as they say them.

Ask the pupils if they can see any patterns in the numbers.

| 10 minutes | 25 minutes | MAN Primary Mathematics 3 | 10 minutes |

Introduction

Whole class teaching

Briefly revise the addition of two-digit numbers, by giving the pupils the following sums to do in their exercise books:

24 + 13 =
32 + 21 =
46 + 23 =

Ask the pupils to exchange their books and mark the sums.

Main activity

Whole class teaching

Explain to the pupils the relationship between **multiplication** and **repeated addition** with this example:

$$3 \times 24 = 24 + 24 + 24 = 72$$

Ask the pupils to complete MAN Primary Mathematics 3, page 103, exercise C, numbers 1—10 using repeated addition.

Plenary

Whole class teaching

Ask the pupils to explain how they worked out the sums.

Numeracy lesson plans
Primary 3

Term 2
Creating opportunities for classroom talk

Week 16
Multiplication of two-digit numbers
Day 2

Multiplication of two-digit numbers

Learning outcomes

By the end of the lesson, most pupils will be able to:

Use a multiplication table.

Multiply two-digit numbers by a one-digit number, using expansion.

Teaching aids

Before the lesson:

Read the lesson plans carefully, trying out a few sums using that method so you understand it clearly.

Read MAN Primary Mathematics 3, page 101, and make sure you understand the method.

Daily practice

Whole class teaching

Ask the pupils to find the multiplication table at the back of MAN Primary Mathematics 3.

Explain that the place where the horizontal and the vertical lines meet gives the answer.

Ask the class some questions and tell them to find the answer using the table, eg:
1 x 1 =
5 x 4 =
10 x 1 =
7 x 8 =

Ask one or two pupils to show how they found each answer, using the multiplication table.

Tell pupils to ask each other questions they can answer using the table.

Introduction

Main activity

Plenary

Whole class teaching

Ask the pupils to expand
these numbers:

12

23

35

52

29

17

32

Ask them to explain how
they worked out the answers.

Whole class teaching

Show the pupils the
following examples on
the chalkboard:

$$12 \times 2 = (10 + 2) \times 2$$
$$= (10 \times 2) + (2 \times 2)$$
$$= 10 + 10 + 2 + 2$$
$$= 20 + 4$$
$$= 24$$

$$13 \times 3 = (10 + 3) \times 3$$
$$= (10 \times 3) + (3 \times 3)$$
$$= 30 + 9$$
$$= 39$$

Give the pupils the following
sums, one at a time, to
do in their exercise books
using the same method:

$34 \times 2 =$

$22 \times 3 =$

$11 \times 4 =$

$15 \times 2 =$

$12 \times 5 =$

After each sum, ask
different pupils to explain
how they did it.

Whole class teaching

Call out a number and ask
the pupils to tell you as
many ways as they can to
make that number.

Numeracy lesson plans
Primary 3

Term 2
Creating opportunities for classroom talk

Week 16
Multiplication of two-digit numbers
Day 3

Multiplication of two-digit numbers

Learning outcomes

By the end of the lesson, most pupils will be able to:

Say the 7 and 8 times tables.

Multiply two-digit numbers by one-digit numbers.

Teaching aids

Before the lesson:

Find the multiplication chart at the back of MAN Primary Mathematics 3.

Read MAN Primary Mathematics 3, page 101, exercise B.

Daily practice

Whole class teaching

Ask the class to say their 7 and 8 times tables all together, using the multiplication chart at the back of MAN Primary Mathematics 3 to help them.

Ask the pupils to look at the multiplication charts at the back of MAN Primary Mathematics 3, and use them to answer the following questions:

6 x 7 =
6 x 6 =
7 x 8 =
6 x 8 =
8 x 3 =
7 x 8 =

Introduction

Main activity

Plenary

Whole class teaching

Ask the pupils to do the following sums in their exercise books using the method they learned on the previous day:

33 x 3 =

21 x 4 =

32 x 3 =

25 x 2 =

45 x 2 =

Pair task

Ask pupils to look at MAN Primary Mathematics 3, page 101, exercise B.

Explain that many books write multiplication as a vertical sum, ie:

$$\begin{array}{r} 23 \\ \times\ \ 3 \\ \hline \end{array}$$

When you find a vertical sum first write it horizontally, ie:

23 x 3 =

After that, follow the method you know.

Ask the pupils to complete MAN Primary Mathematics 3 page 101, exercise B, question 1, a—f.

Whole class teaching

Ask some pupils to explain how they completed the task.

**Numeracy
lesson plans
Primary 3**

**Term 2
Creating
opportunities for
classroom talk**

**Week 16
Multiplication of
two-digit numbers
Day 4**

Multiplication of two-digit numbers

Learning outcomes

By the end of the lesson, most pupils will be able to:

Complete a multiplication chart.

Multiply two-digit numbers by one-digit numbers using the vertical method.

Teaching aids

Before the lesson:

Read MAN Primary Mathematics 3, page 93, exercise E.

Read MAN Primary Mathematics 3, page 104, exercise D, numbers 11—20.

Daily practice

Whole class teaching

Ask the class to look at MAN Primary Mathematics 3, page 93, exercise E, questions i and ii.

Ask the pupils to copy and complete the tables in their exercise books.

| 10 minutes | 25 minutes | MAN Primary Mathematics 3 | 10 minutes |

Introduction

Whole class teaching

Ask pupils to give you step-by-step instructions to complete the following sum:

$$\begin{array}{r} 39 \\ \times \; 8 = \\ \hline \end{array}$$

Write their instructions on the chalkboard as they say them.

Main activity

Pair task

Ask the pupils to work in pairs to complete MAN Primary Mathematics 3, page 104, exercise D, numbers 11—20 using the above method.

Plenary

Whole class teaching

Ask a few pupils to explain how they worked out the sums to the rest of the class.

Numeracy lesson plans
Primary 3

Term 2
Creating opportunities for classroom talk

Week 16
Multiplication of two-digit numbers
Day 5

Multiplication problem solving

Learning outcomes

By the end of the lesson, most pupils will be able to:

Answer multiplication questions orally.

Solve word problems leading to multiplication of two-digit numbers by single digit numbers.

Teaching aids

Before the lesson:

Read MAN Primary Mathematics 3, pages 102—104.

Daily practice

Group task

Ask each group random multiplication questions.

When they have the answer, one member of each group should come out and write it on the chalkboard.

The first group to write the answer on the chalkboard gets a point.

Record their points and declare the first group to reach 10 the winners.

Introduction

Main activity

Plenary

Whole class teaching

Ask the pupils to tell you how many words they can think of to describe multiplication, eg:
multiply
times by
product of

Give the pupils an example of a multiplication problem:

'If 1 packet of biscuits contains 44, how many biscuits are there in 2 packets?'

'If 1 packet contains 44, 2 packets contain 44 + 44 which is the same as 44 x 2.'

Work out 44 x 2 with the class using the method they have learned during the week.

Pair task

Ask the pupils to complete MAN Primary Mathematics 3, page 104, questions 22—28.

Whole class teaching

Ask some pairs to tell the rest of the class how they got their answers.
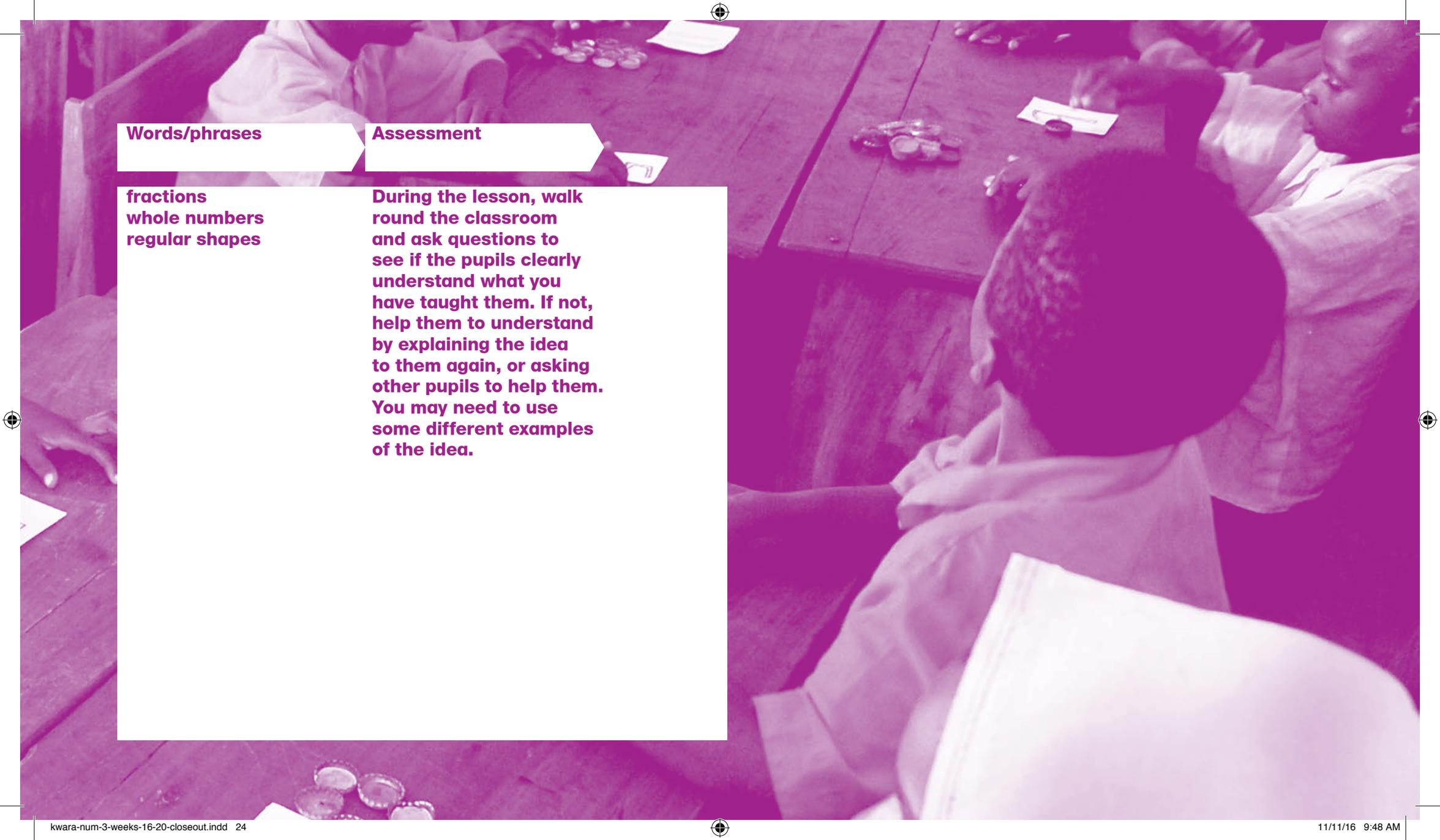
Week
17
Fractions

fractions
whole numbers
regular shapes

During the lesson, walk round the classroom and ask questions to see if the pupils clearly understand what you have taught them. If not, help them to understand by explaining the idea to them again, or asking other pupils to help them. You may need to use some different examples of the idea.

**Numeracy
lesson plans**
Primary 3

Term 2
Creating
opportunities for
classroom talk

**Week 17
Fractions
Day 1**

Fractions
of objects

Learning outcomes

By the end of the lesson, most pupils will be able to:

Use number lines to multiply two-digit numbers by single digit numbers.

Cut objects into various fractions.

Teaching aids

Before the lesson:

Collect plenty of ground nuts, kola nuts and sugar cane pieces.

Read MAN Primary Mathematics 3, pages 29 and 30.

Daily practice

Whole class teaching

Ask the pupils to draw separate number lines to answer the following sums:

$20 \times 4 =$
$12 \times 5 =$
$13 \times 5 =$
$32 \times 3 =$
$46 \times 2 =$

| 10 minutes | 25 minutes | MAN Primary Mathematics 3 | 10 minutes |

Introduction

Group task

Give each group a set of either kola nuts, ground nuts or sugar cane pieces.

Ask them to tell you what the object is.

Explain that you are going to look at fractions and will use these objects to help.

Main activity

Group task

Ask each group to discuss what they understand by the word fraction.

Ask the groups to write down any fractions that they know, and share them with the rest of the class.

Ask the pupils to cut one of their objects in half, (two pieces) one into quarters (four pieces) and one into thirds (three pieces).

Ask them to complete MAN Primary Mathematics 3, pages 29 and 30, exercise D in their exercise books.

Plenary

Whole class teaching

Ask each group to choose one person to tell everyone else what they have learned.

**Numeracy
lesson plans
Primary 3**

**Term 2
Creating
opportunities for
classroom talk**

**Week 17
Fractions
Day 2**

Fractions of rectangles and squares

Learning outcomes

By the end of the lesson, most pupils will be able to:

Identify fractions of shapes in rectangles and squares.

Cut different sets of paper into squares and rectangles.

Teaching aids

Before the lesson:

Cut paper or newspaper into different sized squares and rectangles.

Read MAN Primary Mathematics 3, page 29.

Daily practice

Whole class teaching

Ask pupils to do the following sums using any method they have learned.

Explain that they can use different methods for each sum if they wish:
4 x 6 =
23 x 5 =
65 x 7 =
8 x 12 =
10 x 3 =
54 x 9 =

Ask different pupils to explain the method they used.

Introduction

Main activity

Plenary

Whole class teaching

Give each pupil paper squares and rectangles.

Go through the examples in MAN Primary Mathematics 3, page 29, unit 2 to explain to the pupils the concept of two thirds and three quarters.

Group task

Give each group two pieces of paper.

Ask each group to fold the paper shapes into two, three and four equal parts.

Tell each group to draw the opened up shapes in their exercise books.

Ask them to shade one section of each shape and say what fraction of the shape they have shaded.

Ask them to write the fraction next to the shape, eg:

$$\frac{1}{2} \quad \frac{1}{3} \quad \frac{1}{4}$$

Individual task

Ask pupils to complete MAN Primary Mathematics 3, page 30, exercise E, questions a—d, copying the shapes into their exercise books and writing the fraction shaded underneath.

Pair task

Ask the pupils to compare their answers with a classmate.

Numeracy lesson plans
Primary 3

Term 2
Creating opportunities for classroom talk

Week 17
Fractions
Day 3

Fractions of regular shapes

Learning outcomes

By the end of the lesson, most pupils will be able to:

Find factors of different numbers.

Identify fractions of regular shapes.

Teaching aids

Before the lesson:

Cut paper or newspaper into different sized circles and rectangles.

Read MAN Primary Mathematics 3, pages 29—31.

Daily practice

Whole class teaching

Ask the pupils to find the multiplication square in MAN Primary Mathematics 3, page 91.

Give them the following numbers and ask them to find the pairs of numbers which make that number when they are multiplied together, eg: 36 = 6 x 6 and 12 x 3.

Ask pupils to go through the same process with the following numbers:
28
42
117
99
108
64

Introduction

Main activity

Plenary

Whole class teaching

Give each pupil a paper circle or triangle.

Ask the pupils if they can say anything about the shapes.

Tell them to follow the instructions in MAN Primary Mathematics 3, pages 29 and 30, unit 2, exercises A and B and unit 3, exercise C.

Ask them what they have learned from doing the paper folding.

Pair task

Give each pair two pieces of rectangular paper.

Help them fold their shapes equally into eight.

Ask them to open it up and write how many sections they can count, ie: 8.

Ask each pair to draw the shape into their exercise book, numbering each section.

Ask them to shade three sections and describe what they have done in the following words: 'I have shaded 3 out of 8 sections'.

Explain that this can be written as a fraction and write it on the chalkboard for everyone to see: $\frac{3}{8}$

Ask pupils to write the fraction next to the shaded shape in their exercise books.

Ask them to draw the shape again and colour five sections.

Ask them to write the fraction they have shaded next to the shape, ie: $\frac{5}{8}$

Repeat similar exercises with the numbers 4, 6 and 7, using different fractions.

Individual task

Ask the pupils to complete MAN Primary Mathematics 3, page 31, exercise E.

Tell them to write the answer to each question before moving on to the next question.

Numeracy
lesson plans
Primary 3

Term 2
Creating
opportunities for
classroom talk

Week 17
Fractions
Day 4

Fractions of whole numbers

Learning outcomes

By the end of the lesson, most pupils will be able to:

Answer multiplication questions orally.

Identify the numerator and denominator in a given fraction.

Identify fractions of whole numbers.

Teaching aids

Before the lesson:

Collect enough counters for each pair to have 12.

Read MAN Primary Mathematics 3, page 32 — 33.

Daily practice

Whole class teaching

Ask the pupils to answer the following questions orally, one sum at a time:
2 x 5 =
12 x 3 =
16 x 4 =
18 x 4 =
7 x 6 =
14 x 8 =
20 x 3 =
35 x 2 =

Write down all the different answers that they give you.

Ask all the pupils to check the answers, by completing the sum in their exercise books using any method they like.

Ask the pupils which answer is correct and ask them to explain how they did it.

Introduction

Main activity

Plenary

Whole class teaching

Ask the pupils to look at MAN Primary Mathematics 3, page 32.

Read it through with them, explaining it in their local language if necessary.

Draw a rectangle on the chalkboard and explain to the pupils that this shape is a whole.

Divide the rectangle into seven equal sections and colour three sections.

Ask the pupils to tell you what fraction of the rectangle you have coloured: $\dfrac{3}{7}$

Explain that the top number is called the numerator and the bottom number the denominator.

Ask them to complete MAN Primary Mathematics 3, page 33, exercise H.

Pair task

Give each pair 12 counters.

Ask them to divide the 12 counters into four.

Explain that you have divided them into quarters and this is written as $\dfrac{1}{4}$

Ask them how many are in each pile.

Write this as a fraction sum on the chalkboard:
$\dfrac{1}{4}$ of 12 = 3

Repeat the exercise, asking them to divide their pile of 12 into two equal piles, six equal piles and 12 equal piles.

Ask pupils to try and write a fraction sum for each:

$\dfrac{1}{2}$ of 12 = 6

$\dfrac{1}{6}$ of 12 = 2

$\dfrac{1}{12}$ of 12 = 1

Whole class teaching

Ask different pairs to explain their answers to the rest of the class.

Numeracy lesson plans
Primary 3

Term 2
Creating opportunities for classroom talk

Week 17
Fractions
Day 5

Fractions of whole numbers

Learning outcomes

By the end of the lesson, most pupils will be able to:

Solve multiplication word problems.

Find fractions of whole numbers.

Teaching aids

Before the lesson:

Read MAN Primary Mathematics 3, page 110.

Collect enough counters for each pair to have 20 counters.

Read MAN Primary Mathematics 3, pages 36 and 37 and make sure you understand the method.

Daily practice

Pair task

Ask the pupils to complete the word problems in MAN Primary Mathematics 3, page 110, exercise H, questions 1—7.

Ask each pair to explain how they found the answer to one of the questions.

Introduction

Pair task

Ask the pupils to tell you what they learned the previous day about fractions of whole numbers.

Give each pair a set of 20 counters and ask them to divide them into four equal piles.

Ask if anyone can answer the question: 'How many is one quarter of 20?'

Remind them that to find the answer they have to count the number of counters in each pile.

Ask them to divide 20 counters again into two equal piles and ask the question: 'How many is one half of 20?'

Ask pupils how they found the answer.

Main activity

Individual task

Ask the pupils to use counters to answer MAN Primary Mathematics 3, page 37, exercise M, questions 1—8.

Walk round the classroom and explain it again to those pupils who are finding it difficult to understand.

Plenary

Whole class teaching

Ask a few pupils to show, on the chalkboard, the rest of the class how they got their answer.

Week
18
Fractions

Words/phrases

half
quarter
order
is greater than
is less than
equal to
divide

Assessment

During the lesson, walk round the classroom and ask questions to see if the pupils clearly understand what you have taught them. If not, help them to understand by explaining the idea to them again, or asking other pupils to help them. You may need to use some different examples of the idea.

Comparison of fractions

15
minutes

Learning outcomes

By the end of the lesson, most pupils will be able to:

Use a number line to add together three-digit numbers.

Use the symbol < or > to order fractions.

Teaching aids

Before the lesson:

Prepare two flash cards as below.

Cut four strips of paper for each pair.

Daily practice

Whole class teaching

Ask the pupils to do the following questions by drawing their own number line:
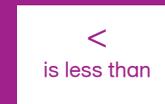432 + 245 =
234 + 351 =

Flash cards

<	>
is less than	is greater than

Strips of paper

Introduction

Whole class teaching

Show the pupils the flash cards with < and > signs and ask if anyone can tell you what they mean.

Write a pair of numbers on the chalkboard and ask a pupil to place the correct card between them, eg:

>

23 is greater than 18

Write pairs of numbers and ask pupils to copy them and write the correct sign between the two numbers.

Main activity

Pair task

Give each pair four strips of paper.

Ask each pair to put one strip down on the table.

Ask them to fold another strip in half and label each side: $\dfrac{1}{2}$

Ask pupils to tear the strip along the fold and put the two halves next to the whole strip to show they are the same size.

Ask them to take the next strip, fold it into thirds and label each section: $\dfrac{1}{3}$

Tell pupils to tear the strips along the folds and put them next to the other two strips as shown in the diagram.

Ask them to take the last strip, fold it into quarters and label each section: $\dfrac{1}{4}$

Tear the strips along the folds and put them next to the other strips as shown in the diagram.

Ask them to arrange $1\ \dfrac{1}{2}\ \dfrac{1}{3}\ \dfrac{1}{4}$ in order of size.

Ask them to use the strips to show which of the following pairs of fractions is greater than, less than or equal to the other:

$\dfrac{1}{3}\quad \dfrac{1}{4}$

$\dfrac{1}{2}\quad \dfrac{1}{3}$

$\dfrac{2}{3}\quad \dfrac{2}{4}$

$\dfrac{3}{4}\quad \dfrac{2}{3}$

Plenary

Whole class teaching

Look at the different fractions and see if they have them in the correct order.

Ask pupils if anyone can notice anything about the order of the denominator (bottom number) in the fraction number line.

**Numeracy
lesson plans
Primary 3**

**Term 2
Creating
opportunities for
classroom talk**

**Week 18
Fractions
Day 2**

Fractions

Learning outcomes

**By the end of the lesson, most
pupils will be able to:**

Add three-digit numbers.

Describe fractions of
whole numbers.

Teaching aids

Before the lesson:

Read MAN Primary Mathematics
3, page 55, exercise 2.

Read MAN Primary Mathematics
3, pages 36 and 37.

Have ready enough counters for
each pair to have 12 counters.

Daily practice

Whole class teaching

Ask the pupils to answer
the questions in MAN Primary
Mathematics 3, page 55, exercise
2 in any way that they can.

Ask them to explain which
method they used to answer
the questions.

Introduction

Main activity

Plenary

Pair task

Give each pair 12 counters.

Ask each pair to divide those counters into four piles and say how many counters are in each pile.

Ask them to write it as a fraction, ie:

$\frac{1}{4}$ of 12 is 3

Ask them to say how many counters are in two piles and explain that this can be written as:

$\frac{2}{4}$ of 12 is 6

Ask them if they can work out the answer to:

$\frac{3}{4}$ of 12 =

Ask each pair to repeat this by dividing the pile of 12 into three piles and say how many counters are in each pile.

Ask them to do the following sums:

$\frac{1}{3}$ of 12 =

$\frac{2}{3}$ of 12 =

$\frac{3}{3}$ of 12 =

Group task

Ask the pupils to read and discuss MAN Primary Mathematics 3, page 36 together.

Ask them to complete MAN Primary Mathematics 3, page 37, exercise N, questions 8—18.

Walk round and help each group.

Whole class teaching

Ask one person from each group to explain what they have understood from the lesson.

15
minutes

Ordering fractions

Learning outcomes

By the end of the lesson, most pupils will be able to:

Add three-digit numbers.

Order fractions along a number line.

Teaching aids

Before the lesson:

Make a set of fraction number cards for each group with the following fractions:

$$\frac{1}{2} \quad \frac{1}{3} \quad \frac{1}{4} \quad \frac{1}{5} \quad \frac{1}{6} \quad \frac{1}{7} \quad \frac{1}{8} \quad \frac{1}{9} \quad \frac{1}{10} \quad \frac{1}{11} \quad \frac{1}{12}$$

Read MAN Primary Mathematics 3, page 37, exercise M and page 38.

Daily practice

Whole class teaching

Ask pupils to answer the following questions in their exercise books:
255 + 413 =
400 + 225 =
340 + 120 =

Ask them how they worked out the answer.

Introduction

Whole class teaching

Ask the pupils to complete MAN Primary Mathematics 3, page 37, exercise M.

Ask them to explain how they did it.

Main activity

Whole class teaching

Explain to the pupils that fractions can be ordered on a number line in the same way as whole numbers can.

Ask them to look at the chart in MAN Primary Mathematics 3, page 38, and tell you which one is the largest number and which one is the smallest.

Ask them what they notice about the denominators from the smallest fraction to the greatest (they get larger as the fraction gets smaller).

Group task

Give a set of fraction cards to each group and ask them to make a number line of fractions on their table.

Ask them to look at MAN Primary Mathematics 3, page 38 again and see if they are correct.

Plenary

Whole class teaching

Ask each group to identify one thing they have found out about fractions from this activity.

Numeracy lesson plans
Primary 3

Term 2
Creating opportunities for classroom talk

Week 18
Fractions
Day 4

Finding out about fractions

Learning outcomes

By the end of the lesson, most pupils will be able to:

Add three-digit numbers.

Order fractions according to their size.

Identify fractions which are equal in value to each other.

Teaching aids

Before the lesson:

Collect enough counters for each pair to have 12.

Collect the 'greater than' and 'less than' flash cards.

Draw the table shown right on the chalkboard (Table 1).

Daily practice

Whole class teaching

Ask the pupils to answer the following questions in their exercise books:
190 + 251 =
230 + 145 =
150 + 104 =

Ask them to show on the chalkboard how they worked out the answer.

Table 1

numerator	denominator	counters
3	6	
2	4	
1	2	

Introduction

Whole class teaching

Put the fraction number cards face down in a pile.

Ask a pupil to come out and hold one up for the class to see.

Ask the rest of the class to say the name of the fraction.

Ask them to guess whether the next fraction will be greater than or less than the one that is being held up.

Ask another pupil to come out and turn over the next card and show it to the class.

Ask one of the pupils to come out and choose the correct sign to go in the middle of the two fractions, ie:

$$\frac{1}{2} > \frac{1}{5}$$

Repeat two or three times.

Table 2

numerator	denominator	counters
3	6	
2	4	**6**
1	2	

Main activity

Whole class teaching

Ask the pupils to read MAN Primary Mathematics 3, page 36.

Write the fraction $\frac{2}{4}$ on the chalkboard.

Ask pupils to say which number is the denominator (4), and which number is the numerator (2).

Ask them to look at the denominator and divide their 12 counters into that number of piles (4).

Ask them to look at the numerator and combine that number of piles together (2).

Ask pupils to count the number of counters in those two piles.

On the table on the chalk-board record their answers as shown in the diagram (Table 2).

Give out 12 counters to each pair.

Explain to them that they are going to find out some-thing about fractions.

Pair task

Ask them to copy the table into their exercise books and complete it, using the method you have just explained.

Plenary

Whole class teaching

Ask the pairs what they found out about the fractions.

Numeracy lesson plans
Primary 3

Term 2
Creating opportunities for classroom talk

Week 18
Fractions
Day 5

Equivalent fractions

Learning outcomes

By the end of the lesson, most pupils will be able to:

Add three-digit numbers.

Order fractions using a number line.

Teaching aids

Before the lesson:

Read MAN Primary Mathematics 3, page 59, exercise D, questions 1—3.

Read MAN Primary Mathematics 3, page 41.

Collect enough counters for each group to have 36.

Daily practice

Pair task

Ask the pupils to complete MAN Primary Mathematics 3, page 59, exercise D, questions 1—3 in their exercise books.

Ask them to explain how they arrived at the answers.

Introduction

Whole class teaching

Give each pupil six counters.

Ask the pupils to tell you what they learned yesterday about fractions.

Ask them to look at MAN Primary Mathematics 3, page 41, and put a counter on top of the fractions that they investigated on Day 4, eg:

$$\frac{3}{6} \quad \frac{2}{4} \quad \frac{1}{2}$$

Ask them to tell you something about the fractions they have covered (they are all on the same line).

Explain that this is a number line for fractions.

Read out random fractions and ask the pupils to cover them with a counter in their textbooks so that they can see where they come on the number line.

Main activity

Whole class teaching

Ask the pupils to look at the fraction number line and see if they can find any other fractions which come on the same vertical line.

Explain that these fractions are also equal to each other.

Give each pair 36 counters and ask them to cover up all the fractions on the same vertical line as $\frac{1}{3}$

Group task

Ask them to repeat the task from Day 4, designing and completing a table to show results.

When they have completed the task, ask them if they can tell you anything they notice about the numbers.
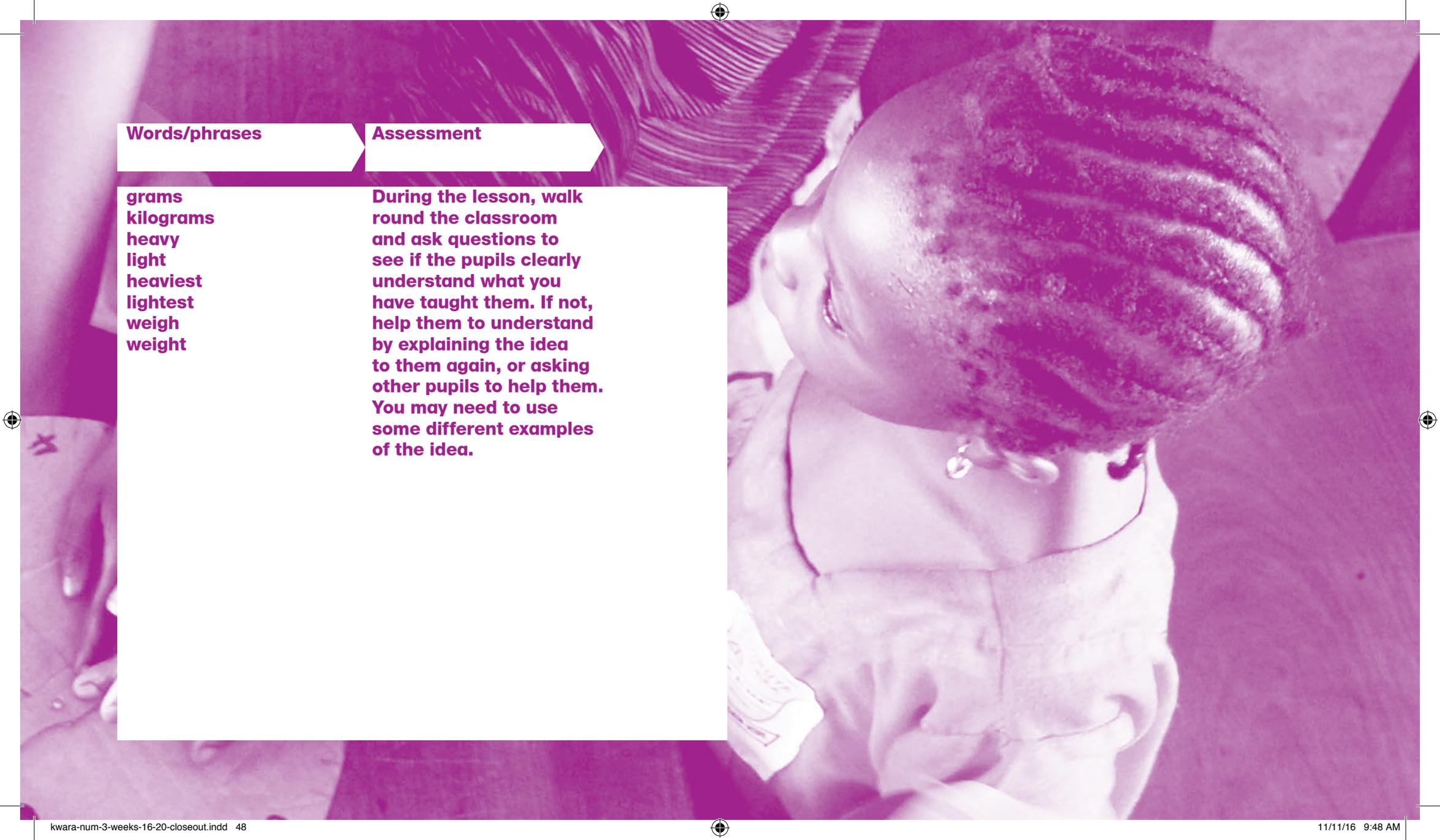
Plenary

Whole class teaching

Ask the pupils to tell you everything they have learned about fractions in the last two weeks and write their ideas on the chalkboard.

Week
19
Weight

Words/phrases

grams
kilograms
heavy
light
heaviest
lightest
weigh
weight

Assessment

During the lesson, walk round the classroom and ask questions to see if the pupils clearly understand what you have taught them. If not, help them to understand by explaining the idea to them again, or asking other pupils to help them. You may need to use some different examples of the idea.

Numeracy lesson plans
Primary 3

Term 2
Creating opportunities for classroom talk

Week 19
Weight
Day 1

Heavy and light

Learning outcomes

By the end of the lesson, most pupils will be able to:

Count forwards/backwards in twos, threes and fours, from and up to 300.

Identify units of measurement used for weighing objects.

Guess the weights of different objects.

Teaching aids

Before the lesson:

Find a selection of six objects of different sizes and weights.

Daily practice

Group task

In groups of four or five, ask pupils to count forwards/backwards in twos, fours, etc from any given number up to 300.

Introduction

Main activity

Plenary

Whole class teaching

Explain to the class that this week they are going to do some measuring.

Ask them to tell you some units of measurement that they know, eg: metres and centimetres.

If they say grams and kilograms ask them where they have heard them used and what for.

If they don't mention them, tell them that we use grams and kilograms to measure the weight of different things.

Explain that the next time they go to the market they should listen to see if the sellers use grams and kilograms, or different terms.

Group task

Put a selection of objects on the table and ask the pupils to guess the order according to their weight.

Ask them to draw a line in their exercise books and draw the objects on it in order from the heaviest to the lightest, as shown below:

heaviest   lightest

Whole class teaching

Ask each group to say the order they put the objects in and see if the rest of the groups agree.

If they do not, ask them to explain the reasons for their answers.

Numeracy lesson plans
Primary 3

Term 2
Creating opportunities for classroom talk

Week 19
Weight
Day 2

Comparing the weight of objects

Learning outcomes

By the end of the lesson, most pupils will be able to:

Compare the weights of different objects.

Count forwards/backwards in threes and fours.

Teaching aids

Before the lesson:

Make simple balance scales.

Collect the objects which you used on Day 1.

Bring in as many empty packets as you can find which have grams and kilograms on them.

Draw the table shown right on the chalkboard.

Daily practice

Group task

In groups of four or five ask pupils to count forwards/backwards in threes and fours, from any given number up to 300.

Weights of objects table

item	weight
Sugar packet	2 kilograms

Introduction

Main activity

Plenary

Whole class teaching

Ask the pupils if they found out the units of measurement that are used in the market to weigh different items and write their answers on the chalkboard.

Explain that on Day 1 they guessed which were the heaviest and lightest objects.

Ask them if they can tell you how to find out the weight of objects more accurately.

Group task

Ask the pupils to come out, one group at a time, to use the balance scales to find the order of the weight of the objects, from the heaviest to the lightest.

Ask them to put the objects in the correct order.

Ask them to look at the scale from heaviest to lightest that they drew on Day 1 and see if they had guessed the order correctly.

While each group is doing this, give out some empty packets to the other groups.

Ask them to complete the table on the chalkboard to show the different measurements of weight written on the packet.

Ask pupils to go outside and fill the packet with small stones, and let everyone in the group feel it. Then empty it, fill it with leaves and let everyone feel it again.

When they do this, ask them to discuss the difference in weight.

Whole class teaching

Ask each group to say one thing that they found out from their activities.

**Numeracy
lesson plans**
Primary 3

Term 2
Creating
opportunities for
classroom talk

**Week 19
Weight
Day 3**

Non-standard measurements

Learning outcomes

By the end of the lesson, most pupils will be able to:

Count numbers in fours and fives up to 300.

Use non-standard measures to find the weight of objects.

Draw a table to record the weight of different objects.

Teaching aids

Before the lesson:

Find the objects that you brought in on Days 1 and 2.

Collect plenty of bottle tops.

Collect flash cards with numbers up to 100.

Daily practice

Group task

Ask each group to count forward in fours and fives from any given number up to 300.

Introduction

Main activity

Plenary

Whole class teaching

Sit the pupils in a circle and go round the circle, asking each pupil to say one thing they know about weighing objects.

Encourage them to speak, even if it is only to say something very small.

Put the balance scales, number cards, objects and bottle tops in the middle of the circle and show the pupils how to weigh each object, ie: put the object on one side of the scales and see how many bottle tops need to go on the other side to make the scales level.

Ask one pupil to count the number of bottle tops and then put a number card next to the object to show how many bottle tops it weighed.

Group task

Ask each group to draw a table to record the weight in bottle tops of each object.

While they are doing this, ask each group to come out in turn and weigh the objects you have brought in, using the balance scales and bottle tops.

Ask them to write their answers in the table they have drawn.

Ask pupils to write the name of the heaviest object and the name of the lightest object underneath their table.

Whole class teaching

Ask each group to say what they found out about the weight of the objects.

Comparison of non-standard measurements

Learning outcomes

By the end of the lesson, most pupils will be able to:

Multiply two-digit numbers by single digit numbers.

Find the collective weight of a group of objects.

Find which group has the heaviest set of objects.

Teaching aids

Before the lesson:

Collect as many bottle tops as possible.

Read MAN Primary Mathematics 3, page 176 and make sure you understand it before you teach the lesson.

Daily practice

Whole class teaching

Ask the pupils to answer these multiplication questions in their exercise books:

$$\begin{array}{cc} 23 & 17 \\ \times\ \underline{8} & \times\ \underline{6} \end{array}$$

Ask the pupils to compare their findings.

Ask them to explain how they found the answers.

Introduction

Main activity

Plenary

Group task

Ask each group to collect six objects from within the school premises that they can weigh on the balance scales, using non-standard measurements (bottle tops).

Group task

Ask the pupils if anyone can suggest a way of finding out which group has the heaviest set of objects.

If the pupils' suggestions are not successful, ask them to:

'Weigh each object, using bottle tops and record its weight in their exercise books.'

'Add up the total weight of all the objects collected.'

Whole class teaching

Record the weight from each group.

Ask which group has the heaviest objects altogether.

Units of weight

Learning outcomes

By the end of the lesson, most pupils will be able to:

Count backwards/forwards in fives and sixes.

Measure and record weights in grams and kilograms.

Compare and order weights from the heaviest to the lightest.

Teaching aids

Before the lesson:

Find something that the pupils can use to weigh themselves.

Read MAN Primary Mathematics 3, page 176—178 and page 179, questions 1—4 and make sure you understand how to do them.

Daily practice

Group task

In groups of four or five, ask the pupils to count forwards in fives and sixes from any number up to 500, and then backwards.

Introduction

Main activity

Plenary

Whole class teaching

Remind the pupils that at the start of the week they discussed that standard measurements were grams and kilograms.

Ask them to look in MAN Primary Mathematics 3, pages 176—178, to find out the answers to the following questions:

'How many grams are in 1 kilogram?'

'How many grams are in half a kilogram?'

'How many grams are in a quarter of a kilogram?'

When they have found the answers ask them to tell you.

Pair task

Explain to the pupils that they are going to weigh themselves using grams and kilograms.

Ask them to write down a guess in their exercise books about how many kilograms and grams they weigh.

Bring the pupils out in pairs and help them to weigh each other.

Ask them to record their weight next to their guess.

Ask them if they were close to their guess.

While you are doing this, ask the pupils to try MAN Primary Mathematics 3, page 179, questions 1—4.

Whole class teaching

When you have weighed everyone, ask the pupils to use the results to arrange themselves in order of weight.

Week
20
Capacity

Words/phrases

Assessment

before
after
below
between
above
container
capacity
liquid
litre
gallon
greatest
least

During the lesson, walk round the classroom and ask questions to see if the pupils clearly understand what you have taught them. If not, help them to understand by explaining the idea to them again, or asking other pupils to help them. You may need to use some different examples of the idea.

Numeracy lesson plans
Primary 3

Term 2
Creating opportunities for classroom talk

Week 20
Capacity
Day 1

Measuring capacity

Learning outcomes

By the end of the lesson, most pupils will be able to:

Use a multiplication table to answer questions.

Explain the meaning of capacity.

Explain how to use containers to measure in litres.

Teaching aids

Before the lesson:

Bring in a selection of containers, eg: cylinders, bottles, tins, tea cups, cooking pots.

Read MAN Primary Mathematics 3, page 169, and make sure you understand the ideas.

Daily practice

Whole class teaching

Give the following sums to the pupils and ask them to use the multiplication table in MAN Primary Mathematics 3, page 91 to find the answers:

5 x 13 =
8 x 14 =
5 x 9 =
15 x 10 =
1 x 12 =
9 x 14 =
11 x 12 =

10 minutes	25 minutes	10 minutes
Introduction	**Main activity**	**Plenary**

Whole class teaching

Ask pupils to give examples of some liquids and the sort of containers they come in.

Write their ideas on the chalkboard.

Explain that the liquid in these containers can be measured so that everyone knows how much they are getting.

Explain that capacity describes the amount which a container can hold.

Whole class teaching

Ask the pupils if they know a measurement of liquid, eg: litre.

Ask them to say what they buy in litres, eg: kerosene, milk, water, etc.

Show them the containers you have brought in.

Ask them to draw the containers in order on a line, from the one which they think holds the most to the one which they think holds the least.

Whole class teaching

Ask one pupil to arrange the containers in the order in which they put them and ask the rest of the class if they agree.

Numeracy lesson plans
Primary 3

Term 2
Creating opportunities for classroom talk

Week 20
Capacity
Day 2

Comparison of capacity

Learning outcomes

By the end of the lesson, most pupils will be able to:

Use a multiplication table to carry out a simple investigation.

Measure capacity using non-standard measurements.

Compare the capacity of two containers.

Teaching aids

Before the lesson:

Read MAN Primary Mathematics 3, page 91.

Bring in the selection of containers from the previous day.

Daily practice

Whole class teaching

Ask the pupils to use the multiplication table in MAN Primary Mathematics 3, page 91. Ask them to use counters to cover all the numbers in the textbook that are made when you multiply a number by itself, eg:
1 x 1 = 1
2 x 2 = 4
3 x 3 = 9

Ask pupils if they can tell you anything they found out from doing this.

10 minutes	25 minutes	10 minutes

Introduction

Main activity

Plenary

Whole class teaching

Ask pupils to find the work they did on Day 1 about capacity.

Ask them whether the method they used was an accurate way of comparing capacities of containers.

Explain that they are going to use a different method to order the capacity of containers.

Group task

Give each group four containers that are of different sizes.

Ask them to fill one of the containers with sand or water.

Ask pupils to pour the water or sand from one container into the other and see if holds more, less, or the same amount as the first one.

Do the same thing for each of the containers and use the results to put them in order of capacity.

Whole class teaching

Ask the groups to compare their results.

Measuring capacity, using non-standard measurements

Numeracy lesson plans
Primary 3

Term 2
Creating opportunities for classroom talk

Week 20
Capacity
Day 3

Learning outcomes

By the end of the lesson, most pupils will be able to:

Use a multiplication table to answer questions.

Measure the capacity of containers using non-standard measurements.

Teaching aids

Before the lesson:

Read MAN Primary Mathematics 3, page 91.

Bring in a selection of containers of different shapes and sizes including spoons, small cups, etc.

Fill a bowl with water, sand or soil.

Collect number cards from 1—100.

Daily practice

Whole class teaching

Ask the pupils to look at the multiplication table in MAN Primary Mathematics 3, page 91, and write down the sums which give these answers:

11
22
33
44
55
66
77
88
99
110
121
132
143
154
165

Ask them if they can tell you anything about the sums.

Introduction

Main activity

Plenary

Whole class teaching

Sit the pupils in a circle and go round the circle, asking each pupil to say one thing they know about capacity.

Encourage them to speak, even if it is to say something very small.

Put a selection of containers in the middle of the circle.

Ask one pupil to fill the smallest container with water, sand or soil and pour it into one of the other containers.

Ask them to continue doing this until the larger container is full.

Ask the rest of the class to count how many small containers it took to fill the large container and then put a number card next to the object to record the answer.

Group task

Give each group some containers and tell them to draw a table to record the capacity of the containers.

Ask the groups to measure the capacity of their containers in the way you demonstrated.

Ask them to write their answers in the table they have designed.

Ask pupils to write the name of the object with the greatest capacity and the name of the object with the least capacity.

Whole class teaching

Ask each group to say what they found out about the capacity of the objects.

Numeracy lesson plans
Primary 3

Term 2
Creating opportunities for classroom talk

Week 20
Capacity
Day 4

Estimating capacity in litres

Learning outcomes

By the end of the lesson, most pupils will be able to:

Use a multiplication table to answer questions.

Estimate the capacity of containers in litres.

Teaching aids

Before the lesson:

Find number cards from 1—30.

Bring in containers that are larger than a litre, eg: a bucket, a large bottle, a cooking pot, a jerry can.

Bring in a litre container.

Daily practice

Whole class teaching

Ask the pupils to find the following numbers on the multiplication table:

'The number that comes above 77.'

'A number that comes before 104.'

'A number that comes after 168.'

'A number that comes below 42.'

'Any number that comes between 60 and 84.'

Tell the pupils, in pairs, to ask each other questions about the multiplication table, similar to the ones above.

Introduction

Main activity

Plenary

Whole class teaching

Show the class a litre container and fill it with water.

Ask them to estimate (guess) how many litres it will take to fill the largest container.

Write their answer on the chalkboard.

Give each of the pupils a number card.

Ask the pupil holding number 1 to come out and pour the first litre into the container, then the pupil holding number 2, then the pupil holding number 3, etc.

Continue until the container is full of water.

Ask the pupils to say which number they reached and see if it matches their estimates on the chalkboard.

Pair task

Explain to the pupils that they are going to do the same activity in pairs, to estimate and measure the capacity of the other containers.

Ask them to draw a table to record their estimates and their actual answers.

Ask each pair to come and measure the capacity of each container in litres and record it on their table.

Ask them to see what the difference is between their estimate and the actual amount.

Group task

Ask each pair to compare their results with those of another pair.

**Numeracy
lesson plans
Primary 3**

**Term 2
Creating
opportunities for
classroom talk**

**Week 20
Capacity
Day 5**

Measuring in litres

Learning outcomes

By the end of the lesson, most pupils will be able to:

Use a multiplication table.

Measure the number of litres a container holds.

Teaching aids

Before the lesson:

Read MAN Primary Mathematics 3, pages 171—172.

Bring in the items that are listed in the table on MAN Primary Mathematics 3, page 171.

Daily practice

Whole class teaching

Ask the pupils to write as many multiplication sums that make 30 as they can in 5 minutes.

Ask the pupils to check their answers using the multiplication square in their textbooks.

Introduction

Whole class teaching

Explain that they are going to do an individual task which will help you see how well each of them understands the work you have taught them.

Main activity

Individual task

Ask the pupils to complete the table in MAN Primary Mathematics 3, page 171.

When they have completed their estimate, ask them to come out on their own and measure the capacity of each container.

While they are waiting for their turn, ask them to read MAN Primary Mathematics 3, page 172, exercise B, and see if they can complete the task.

Ask one of the pupils to explain how they did it.

Plenary

Whole class teaching

Sit the pupils in a circle.

Go round the circle and ask the pupils what they have learned this week about measuring capacity.

Credits

Many different stakeholders have contributed to the development and production of the lesson plans.

Much of the work was done by the Kwara State School Improvement Team.

Special thanks go to:

Honourable Commissioner for Education, Science and Technology, Bolaji Abdullahi, the Executive Secretary of the State Universal Basic Education Board, Adetunji Fagbemi, and their staff for their time and valuable input.

The Teacher Quality Improvement Reform Group for their supervision of the work.

UK Department for International Development (DFID) and to the DFID–funded ESSPIN programme, whose staff and consultants provided inputs, focus, guidance and constructive criticism throughout.

Thanks also go to the teachers of Kwara who have used these plans and started to bring about change in their classrooms.