

Numeracy lesson plans
Primary 5,
term 2, weeks 16—20

**Estimating measure, reflecting shape
and collecting data**

**Numeracy lesson plans
Primary 5,
term 2, weeks 16—20
Estimating measure, reflecting shape
and collecting data**

Introduction

The literacy and numeracy lesson plans arising from the School Improvement Programme (SIP) are part of efforts to improve teaching and learning in response to the baseline surveys and classroom observations in 2010. These indicated that teachers had challenges with lesson delivery, which in turn negatively affected children's learning.

To improve children's learning, ESSPIN (Education Sector Support Programme in Nigeria) supported the State to provide lesson plans to primary 1—3 teachers in all 1,223 public primary schools during the 2014/15 school year.

In the 2015/16 school year, we are glad to extend the lesson plans to primary 4—5 teachers to enable more children to benefit from the innovation.



Nneka Onuora
Executive Chairman,
Enugu State Universal
Basic Education Board

Foreword

Quality education comes about as a mix of factors. The teacher is the most important element in ensuring that a child acquires the right kind of education to meet acceptable learning outcome benchmarks. It takes a lot to bring a teacher to exhibit the right mix of attitudes, aptitudes and skills, which is why the state has partnered with ESSPIN to develop literacy and numeracy lesson plans.

I hope the lesson plans will empower our teachers to equip our children with the literacy and numeracy skills they need to succeed in both school and society.

Finally, I commend all who have worked hard to develop and produce the lesson plans, especially the Enugu State Universal Basic Education Board, the UK Department for International Development (DFID) and the DFID-funded Education Sector Support Programme in Nigeria (ESSPIN).



Professor Uche Eze
Honourable Commissioner
for Education Enugu State

The numeracy lessons teach calculation, shape, symmetry, fractions and time. Each week focuses on one of these topics.

How

How?

This section illustrates a key concept through simple instructions and photographs. A sign at the top of the column shows you which part of the lesson uses this resource.

Learning expectations

Every pupil in the class will be at a different stage of understanding in maths. The first page of each week outlines learning expectations for the week. These learning expectations are broken into three levels:

What **all** pupils will be able to do.

What **most** pupils will be able to do.

What **some** pupils will be able to do.

Assessment

On each weekly page there is an assessment task for you to carry out with five pupils at the end of the week. This will help you find out whether they have met the learning expectations.

Next to the task, there is an example of a pupil's work, which shows what a pupil can do if they have met the learning expectations.

If most pupils have not met the learning expectations, you may have to teach some of the week again.

Daily practice

Helps the pupils to practise something they have previously learned. It should only last 15 minutes and move at a fairly fast pace.

Introduction

Provides the focus for the lesson. Often involves a variety of fun, quick activities which prepare the pupils for the main topic.

Main activity

Gives the pupils the opportunity to explore the main topic in different ways. This usually involves group, pair or individual tasks. Your role as a teacher during the main activity is to work with groups and individuals to help them to understand the ideas.

Plenary

Finishes the lesson with different ways of reviewing learning.

Grade/
Type of lesson plan

Lesson
title

Weekly page

**Primary 5,
numeracy
lesson plans**

Week 16:

Division

Words/phrases

Write these words on the chalkboard and leave them there for the week.

division
repeated subtraction
short division
remainder
common factor
common multiple

Learning expectations

By the end of the week:

All pupils will be able to:

Divide a two-digit number by a single-digit number.

Most pupils will be able to:

Divide three-digit numbers by two-digit numbers.

Some pupils will be able to:

Divide three-digit numbers by two-digit numbers, including a remainder.

Assessment task

Instructions:

Ask the individual pupils to complete these tasks in their exercise books.

1

Use times table knowledge to solve the following sum:

$$81 \div 9 =$$

2

Use the vertical method to solve the following sums:

$$168 \div 24 =$$

$$603 \div 7 =$$

3

Choose your own method to solve the following sums:

$$318 \div 6 =$$

$$468 \div 56 =$$

Example of a pupil's work

This pupil can:

Use the times tables to solve simple division sums.

Solve division sums using the short method.

Solve division sums with a remainder.

$$1 \quad 81 \div 9 = 9$$

$$2 \quad 168 \div 24 =$$

$$\begin{array}{r} 168 \\ - 48 \quad (2 \times 24) \\ \hline 120 \\ - 96 \quad (4 \times 24) \\ \hline 24 \\ - 24 \quad (1 \times 24) \\ \hline 0 \end{array}$$

$$2 + 4 + 1 = 7$$

answer $168 \div 24 = 7$

$$3 \quad 318 \div 6 =$$

$$5 \times 6 = 30$$

$$50 \times 6 = 300$$

$$\begin{array}{r} 53 \\ 6 \overline{) 318} \\ - 300 \quad (50 \times 6) \\ \hline 18 \\ - 18 \quad (3 \times 6) \\ \hline 0 \end{array}$$

answer $318 \div 6 = 53$

Week 16: Division

Day 1: Dividing by 10 and 100

Learning outcomes

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

Use times tables to solve
division calculations.

Divide decimal numbers
by 10 and 100.

Preparation

Before the lesson:

Have ready **nine counters** for each pair.

Prepare the **question cards** from today's
introduction, opposite.

Read **How? Division bingo**, as
shown below.

How? Division bingo



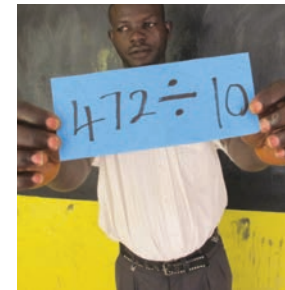
Write the answers
to the question
cards and give
out the counters
to each pair.



Ask the pairs
to draw a 3 x 3
grid in their
exercise books.



Ask them to
choose 9 numbers
from the chalkboard
and write one
in each square.



Ask questions from
the cards. If pairs
have the answer
they should cover it
with a counter.



The first pair to
cover all their
numbers correctly
should shout
'Bingo!'

10
minutes

Daily practice

Individual task

Remind the class that we can use times tables to work out division sums.

Write ' $56 \div 7 =$ ' on the chalkboard.

Ask the pupils what multiplication fact they can use to solve this, ie:
 $7 \times 8 = 56$ so $56 \div 7 = 8$.

Write the following calculations on the chalkboard for the pairs to complete in their exercise books:

$$\begin{aligned} 72 \div 9 &= \\ 54 \div 6 &= \\ 42 \div 7 &= \\ 72 \div 8 &= \\ 72 \div 6 &= \\ 108 \div 9 &= \end{aligned}$$

15
minutes

How

Question cards

Introduction

Whole class teaching

Ask the class, 'What happens when a number is divided by 10?', 'What happens when a number is divided by 100?' (The numbers becomes 10 times and 100 times smaller.)

Teach [How? Division bingo](#), as shown left, using the following [question cards](#):

$$\begin{aligned} 160 \div 10 &= \\ 160 \div 100 &= \\ 300 \div 10 &= \\ 300 \div 100 &= \\ 472 \div 10 &= \\ 472 \div 100 &= \\ 509 \div 10 &= \\ 509 \div 100 &= \\ 29.8 \div 10 &= \\ 29.8 \div 100 &= \\ 56.3 \div 10 &= \\ 56.3 \div 100 &= \end{aligned}$$

25
minutes

Main activity

Whole class teaching

Write the following calculations on the chalkboard:

$$\begin{aligned} 54.3 \div 10 &= \\ 923.1 \div 100 &= \\ 63.2 \div 10 &= \\ 652.5 \div 100 &= \end{aligned}$$

Invite some pupils to write the answers on the chalkboard, explaining how they worked it out.

10
minutes

Plenary

Whole class teaching

When most of the pupils have finished, tell the pupils to exchange books with their partner.

Ask one pupil to read out the answers. If the class agrees, they should mark it with a small tick.

Individual task

Write the following division calculations on the chalkboard:

$$\begin{aligned} 64.1 \div 10 &= \\ 465.3 \div 10 &= \\ 124.6 \div 100 &= \\ 154.10 \div 100 &= \\ 433.2 \div 100 &= \\ 624.1 \div 100 &= \\ 383.40 \div 10 &= \\ 546.27 \div 100 &= \end{aligned}$$

Ask the pupils to complete the calculations in their exercise books.

Week 16: Division

Day 2: Dividing three- digit numbers

Learning outcomes

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

Find common multiples of
whole numbers.

Divide three-digit numbers
by single-digit numbers.

Preparation

Before the lesson:

Copy the [division calculations](#)
from today's main activity, shown right,
on to the chalkboard.

Read [How? Finding common multiples 1](#),
as shown below.

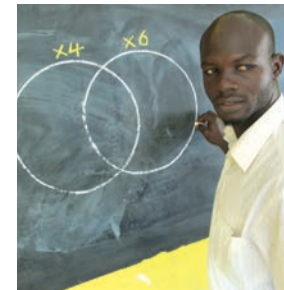
How? Finding common multiples 1



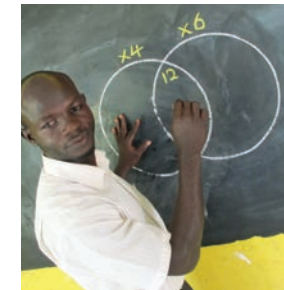
Choose some pupils
to write multiples
of 4 and 6 on
the chalkboard.



Choose some
pupils to under-
line multiples
that are in both
times tables.



Draw a Venn
diagram on the
chalkboard.



Write the common
multiples of 4
and 6 in the centre
of the diagram
and explain why.



Write the other
multiples of 4 and 6
in the first and
last segments of
the diagram.

15
minutes

How



10
minutes

20
minutes

Calculations

15
minutes

Game

Daily practice

Whole class teaching

Ask the pupils to discuss the multiples of 5 with a partner (5, 10, 15, 20, 25, 30, 35, 40, 45, 50).

Ask the pupils to discuss the multiples of 6 with a partner (6, 12, 18, 24, 30, 36, 42, 48).

Teach [How? Finding common multiples 1](#), as shown left.

Explain that the numbers in the middle of the Venn diagram are called the 'common multiples'.

Choose some pupils to repeat this for the 5 and 10 times tables and then the 3 and 9 times tables.

Introduction

Pair task

Remind the pupils that they have been dividing using repeated subtraction and their times table knowledge.

Write ' $516 \div 6 =$ ' on the chalkboard.

Choose some pupils to help you answer the calculation.

Main activity

Whole class teaching

Look together at the following [calculations](#) on the chalkboard:

$$275 \div 5 =$$

$$711 \div 9 =$$

$$336 \div 7 =$$

$$448 \div 8 =$$

$$553 \div 7 =$$

Ask the pupils to complete these sums in their exercise books using repeated subtraction.

Plenary

Whole class teaching

Play the [circle game](#).

Ask the pupils to stand in a circle and count round the circle in the 5 times table.

Go round again, starting with a different pupil.

Repeat, counting in sixes.

Remind the pupils that multiplication is the inverse (opposite) of division and can help us to work out division problems.

Week 16: Division

Day 3: Division with a remainder

Learning outcomes

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

Find common multiples
of whole numbers.

Divide three-digit numbers
by single-digit numbers
with a remainder.

Preparation

Before the lesson:

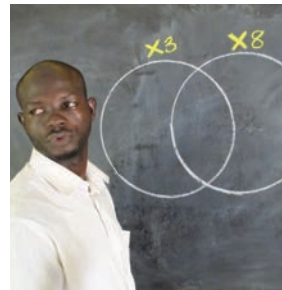
Copy the [division calculations](#)
from today's main activity, shown right,
on to the chalkboard.

Read [How? Finding common multiples 2](#),
as shown below.

How? Finding common multiples 2



Choose some pupils
to write the multiples
of 3 and 8 on
the chalkboard.



Draw a Venn
diagram on the
chalkboard.



Ask, 'What are the
common multiples
of 3 and 8?' Write
them in the centre.



Write the other
multiples of
3 and 8 in the
correct places.

15
minutes

How



10
minutes

25
minutes

Calculations

10
minutes

Daily practice

Introduction

Main activity

Plenary

Pair task

Ask the pupils to discuss the multiples of 3 with a partner (3, 6, 9, 12).

Ask them to discuss the multiples of 8 with a partner (8, 16, 24).

Teach **How? Finding common multiples 2**, as shown left.

Repeat for the common multiples of 3 and 6.

Whole class teaching

Ask the pupils, 'How many fives are there in 48?' (9)

Tell them that sometimes things cannot be shared equally and there is a remainder.

Write the following on the chalkboard:
' $48 \div 5 = 9 \text{ r}3$ '.

Explain that this is how we write an answer with a remainder.

Invite some pupils to the chalkboard to work out:

$$44 \div 7 =$$

$$59 \div 8 =$$

Whole class teaching

Write ' $336 \div 7 =$ ' on the chalkboard and choose a pupil to answer it, explaining each step as they go.

Individual task

Ask the pairs to complete the following **calculations** in their exercise books, using repeated subtraction:

$$614 \div 9 =$$

$$542 \div 5 =$$

$$498 \div 8 =$$

$$763 \div 6 =$$

Remind the pupils to make the multiples they subtract as big as they can.

Whole class teaching

When most of the pupils have finished, tell the pupils to exchange books with their partner.

Ask one pupil to read out the answers. If the class agrees, they should mark it with a small tick.

Week 16: Division

Day 4: Dividing by two- digit numbers

Learning outcomes

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

Find factors of whole
numbers.

Divide three-digit numbers
by two-digit numbers.

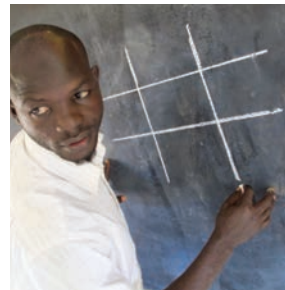
Preparation

Before the lesson:

Copy the [division calculations](#)
from today's main activity, shown right,
on to the chalkboard.

Read [How? Noughts and crosses](#),
as shown below.

How? Noughts and crosses



Draw a 3 x 3 grid on
the chalkboard.



Add a different
calculation in
each square,
using +, -, x or \div



Choose one pupil
to be 'O' and
another to be 'X'.



Ask them to choose
a square. If they
answer the question
correctly, they
win the square.



Explain that the
first person to get
three correct
answers in a line
wins the game.

15
minutes

Daily practice

Whole class teaching

Ask the pupils to discuss with a partner what a factor is.

Look at the factors of 45 together (3, 5, 9, 15).

Choose some pupils to write the factors of 30, 52 and 64 on the chalkboard.

Tell the pupils to write the factors of 36, 48 and 72 in their exercise books.

15
minutes

Introduction

Whole class teaching

Remind the pupils that using our times table knowledge helps with division.

Demonstrate the following calculation on the chalkboard:
 $276 \div 23 =$

$$\begin{array}{r} \text{H T U} \\ 276 \\ - 230 \text{ (10 x 23)} \\ \hline 46 \\ - 46 \text{ (2 x 23)} \\ \hline 0 \end{array}$$

Write the answer:
 $276 \div 23 = 12$

Repeat with another calculation:
 $564 \div 12 =$

15
minutes

Calculations

Main activity

Pair task

Ask the pupils to complete the following calculations in their exercise books using repeated subtraction:

$$\begin{aligned} 427 \div 15 &= \\ 625 \div 14 &= \\ 516 \div 24 &= \\ 735 \div 16 &= \end{aligned}$$

Remind the pupils to begin by subtracting multiples of 10.

15
minutes

How

Plenary

Whole class teaching

Teach [How? Noughts and crosses](#), as shown left.

Play several times with different pupils, changing the calculations.

Week 16: Division

Day 5: Short division

Learning outcomes

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

Find number facts.

Divide three-digit numbers
by single-digit numbers
using short division.

Preparation

Before the lesson:

Copy the [division calculations](#) from
today's main activity, shown right, on to
the chalkboard.

Have ready a set of [0—9 number
cards](#) for each group.

Read [How? short division](#), as shown below.

How? Short division



Remind the pupils
that they have
been dividing
using repeated
subtraction.



Explain a similar
method, short
division. Copy the
sum shown on
to the chalkboard.



Demonstrate
where to write
the 3 Tens from
 $30 \times 5 = 150$.



Demonstrate
where to write
the 6 Units
from $6 \times 5 = 30$.



Write the answer
and discuss the
similarities and
differences between
the two methods.

10
minutes

0—9 number cards

15
minutes

How

25
minutes

Calculations

10
minutes

Game

Daily practice

Group task

Write '55' on the chalkboard and ask, 'What facts do you know about this number?' ($11 \times 5 = 55$, $100 - 45 = 55$, $25 + 30 = 55$, $110 \div 2 = 55$)

Give each group a set of 0—9 number cards.

Explain that one pupil will choose two cards and the group will record as many facts about that number as they can.

Tell them to include at least one +, −, × and ÷ calculation for each number.

Introduction

Whole class teaching

Teach **How? Short division**, as shown left.

Main activity

Whole class teaching

Demonstrate short division with another calculation:

$$\begin{array}{r} 59 \\ 9 \overline{) 534} \\ \underline{- 450} \quad (50 \times 9) \\ 84 \\ \underline{- 81} \quad (9 \times 9) \\ 3 \end{array}$$

Write the answer:
 $534 \div 9 = 59 \text{ r}3$

Plenary

Pair task

Play **noughts and crosses** in the same way as yesterday (Day 4), changing the calculations.

When the pupils have played this several times, they can play in small groups.

Weekly page

Primary 5, numeracy lesson plans

Week 17:

2D shapes

Words/phrases

Write these words on the chalkboard and leave them there for the week.

measure
line of symmetry
mirror line
reflect
reflection
regular polygons
tangram
perimeter
angles
properties

Learning expectations

By the end of the week:

All pupils will be able to:
Find lines of symmetry on a range of 2D shapes.

Most pupils will be able to:
Draw the reflection of simple shapes in a mirror line.

Some pupils will be able to:
Draw the reflection of more complex shapes in a mirror line.

Assessment task

Instructions:

Ask individual pupils to complete these tasks in their exercise books.

1

Draw a rectangle and add two lines of symmetry.

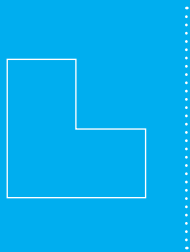
2

Draw the reflection of the following shape:



3

Draw the reflection of the following shape:



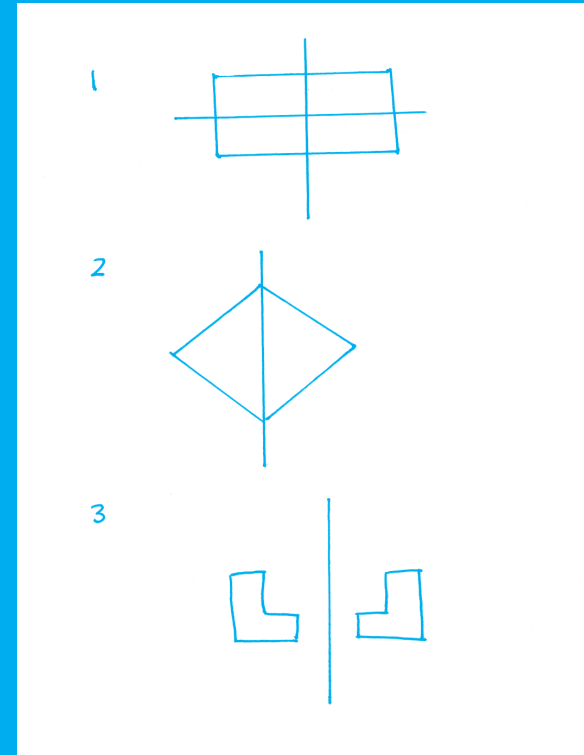
Example of a pupil's work

This pupil can:

Draw a rectangle with two lines of symmetry.

Draw the reflection of a triangle touching the mirror line.

Draw the reflection of a more complex shape.



Week 17: 2D shapes

Day 1: Symmetry

Learning outcomes

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

Explain the properties
of 2D shapes.

Find lines of symmetry
in 2D shapes.

Preparation

Before the lesson:

Have ready a **ruler** and a set of **large 2D shape cards** for each group (square, rectangle, parallelogram, rhombus, trapezium and kite).

Copy the **2D shapes** from today's plenary, shown opposite, on to the chalkboard.

Read **How? Lines of symmetry**, as shown below.

How? Lines of symmetry



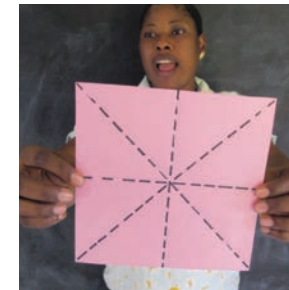
Fold the large
rhombus in half.



Open it and draw
the line of symmetry.



Fold it in half
a different way
and draw another
line of symmetry.



Explain that some
shapes have many
lines of symmetry,
eg: squares, circles.



Explain that some
shapes have no
lines of symmetry,
eg: irregular shapes.

15 minutes | 2D shape cards

Daily practice

Group task

Show the pupils a set of **2D shape cards** and ask them to name them.

Remind the pupils that we describe shapes by their properties.

Hold up the rhombus and say, 'This is a rhombus because all sides are of equal length, opposite sides are parallel and diagonally opposite angles are equal.'

Give each group a set of large 2D shape cards.

Ask them to find the properties of each shape.

Tell them to discuss the angles, sides and diagonals of each shape.

10 minutes | **How**

Introduction

Whole class teaching

Remind the pupils that if a shape can be folded into equal parts it is symmetrical.

Teach **How? Lines of symmetry**, as shown left.

Draw some irregular shapes on the chalkboard to demonstrate shapes that have no lines of symmetry.

25 minutes | 2D shape cards

Main activity

Group task

Ask the groups to look at their **2D shape cards**.

Tell the groups to draw the lines of symmetry on their shapes.

Ask each group to say how many lines of symmetry they found for each shape.

Ask the other groups if they agree. If not, ask them to explain why.

Continue this activity until all the shapes have been discussed.

10 minutes | 2D shapes

Plenary

Whole class teaching

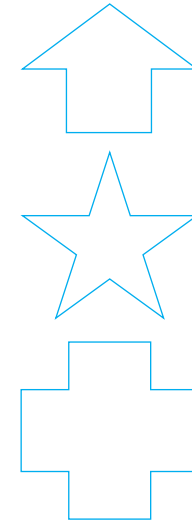
Ask the pairs to look at the **2D shapes** on the chalkboard.

Ask them to discuss the lines of symmetry in the shapes.

Invite some pairs to the chalkboard to draw on the lines of symmetry.

Ask the class if they agree. If not, ask them to explain why.

2D shapes



Week 17: 2D shapes

Day 2: Tangram

Learning outcomes

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

Measure and draw
quadrilaterals accurately.

Create shapes using
tangram pieces.

Preparation

Before the lesson:

Have ready a **16cm x 16cm square card**.

Have ready a **ruler** for each pupil.

Prepare a large card **tangram**
and a smaller tangram for each group.

Read **How? Making a tangram**,
as shown below.

How? Making a tangram



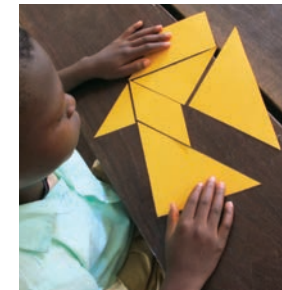
Draw a 16cm x 16cm
square on paper
or card and make
the tangram shape.



Cut along the thick
lines so that you
have seven shapes.



Look at the different
shapes in the
tangram and ask,
'What shape is this?'



Arrange the shapes
in different ways
to make a pattern.

15
minutes

Shapes

Rulers

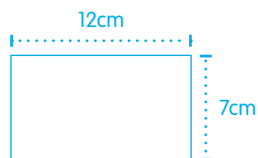
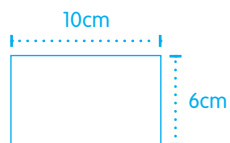
Daily practice

Whole class teaching

Ask the pupils to discuss how many different 2D shapes they know.

Draw the following shapes on the chalkboard and look at them with the pupils:

2D shapes



Ask the pupils to draw one of the shapes carefully in their exercise books, using a ruler.

15
minutes

How

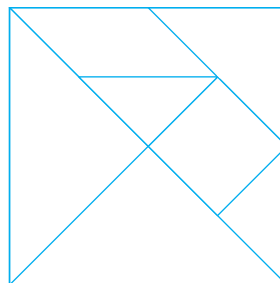
Introduction

Whole class teaching

Explain that a 'tangram' is an ancient Chinese seven-piece puzzle, as shown below.

Teach **How? Making a tangram**, as shown left.

Tangram puzzle



20
minutes

Tangram pieces

Main activity

Group task

Give each group a set of **tangram pieces**.

Ask them to make shapes or design pictures using all of the pieces.

Explain that they must use all of the shapes and the shapes must touch each other.

10
minutes

Plenary

Whole class teaching

Ask the groups to lay their designs out for everyone to see.

Tell the pupils to move around the class and look at what other pupils have made.

Keep the tangram pieces safely to use again tomorrow.

Week 17: 2D shapes

Day 3: More regular plane shapes

Learning outcomes

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

Calculate the perimeter of
regular polygons.

Find lines of symmetry in
regular polygons.

Preparation

Before the lesson:

Prepare a set of [pentagon](#), [hexagon](#),
[heptagon](#) and [octagon](#) shapes for each
group and copy the [symmetry chart](#),
shown opposite, on to the chalkboard.

Have ready a set of [tangram pieces](#) for
each group from Week 17, Day 2 (yesterday).

Read [How? Regular polygons](#), as
shown below.

How? Regular polygons



Show the pupils
the pentagon
and the hexagon
and count the
number of sides.



Show the pupils
the heptagon
and the octagon
and count the
number of sides.



Fold the pentagon
to find out how
many lines of symmetry
it has.



Fold the octagon
to find out how
many lines of
symmetry it has.

15
minutes

Polygons

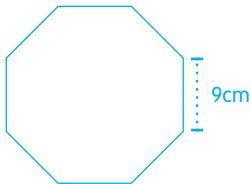
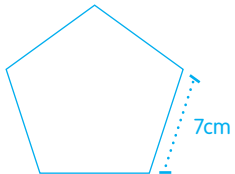
Daily practice

Pair task

Remind the pupils that the 'perimeter' of a shape is the total distance around the outside of that shape.

Ask the pupils to work out the perimeter of the following shapes:

Regular polygons



10
minutes

How

Introduction

Whole class teaching

Ask the pupils to discuss the different 2D shapes they know.

Explain that many-sided 2D shapes are called 'polygons', eg: pentagon, heptagon, hexagon, octagon.

Teach **How? Regular polygons**, as shown left.

Ask, 'How many sides does a hexagon have?', 'How many lines of symmetry does a pentagon have?'

20
minutes

Polygons/
Chart

Main activity

Pair task

Tell the pupils to look carefully at their **regular polygon shapes**.

Ask them to complete the **symmetry chart**, shown below, in their exercise books.

Symmetry chart

Polygon	Number of sides	Lines of symmetry
Pentagon		
Hexagon		
Heptagon		
Octagon		

15
minutes

Tangram pieces

Plenary

Group task

Give each group a set of **tangram pieces**.

Choose some pupils to name the different shapes in the tangram puzzle.

Ask them to make shapes or design pictures using all of the pieces.

Remind them that the shapes must touch each other.

Week 17: 2D shapes

Day 4: Reflecting shapes

Learning outcomes

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

Calculate the perimeter of
regular shapes.

Sketch the reflection of
simple shapes.

Preparation

Before the lesson:

Copy the [shapes for reflection](#),
shown opposite, on to the chalkboard.

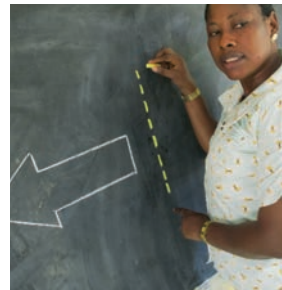
Have ready a set of [tangram pieces](#)
from Week 17, Day 2 for each group.

Read [How? Reflecting shapes](#),
as shown below.

How? Reflecting shapes



Draw a shape
on the chalkboard.



Draw a dotted line
and explain that
it represents a mirror.
It is a 'mirror line'.



Draw the reflection
on the other side of
the mirror line.



Explain that both
shapes are the same
distance from
the mirror line.



Repeat with another
shape and ask
a pupil to explain
where the shape will
be reflected.

10
minutes

Daily practice

Pair task

Write the following on the chalkboard: 'If the perimeter of a regular pentagon is 50cm, what is the length of each side?'

Remind the pupils that the length of each side will be equal and the calculation will be: $50\text{cm} \div 5 =$

Choose a pupil to work out the answer.

Ask the pairs to work out the following: 'If the perimeter of a regular octagon is 88cm, what is the length of each side?'

Choose some pairs to give their answers and explain how they solved the problem.

15
minutes

How

Introduction

Whole class teaching

Remind the class that a line of symmetry divides a shape in half so that one half is a mirror image (reflection) of the other.

Teach **How? Reflecting shapes**, as shown left.

Point out that the reflected shape does not touch the mirror line unless the original shape does.

25
minutes

Shapes

Main activity

Individual task

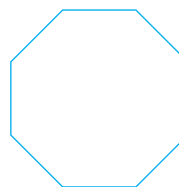
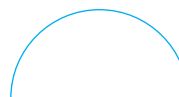
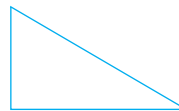
Ask the pupils to copy the **shapes for reflection** into their exercise books, leaving space for mirror lines and reflections.

Ask them to draw a mirror line and reflection for each shape.

Remind them that a reflected shape is the same size as the original but flipped over (reversed) on the opposite side of the mirror line.

Choose two or three pupils to share their work with the class and ask the class to say if they are correct.

Shapes for reflection



10
minutes

Tangram pieces

Plenary

Group task

Give each group a set of **tangram pieces**.

Choose some pupils to name the different shapes in the tangram puzzle.

Ask them to make shapes or design pictures using all of the pieces.

Remind them that the shapes must touch each other.

Week 17: 2D shapes

Day 5: Mirror lines

Learning outcomes

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

Draw a shape from the
perimeter measurement.

Sketch the reflection of
simple shapes.

Preparation

Before the lesson:

Copy the [shapes for reflection](#),
shown opposite, on to the chalkboard.

Read [How? Reflecting shapes 2](#),
as shown below.

How? Reflecting shapes 2



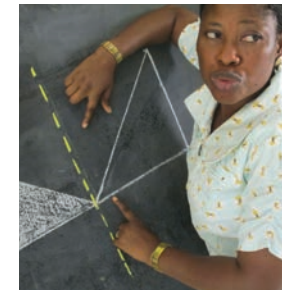
Draw a shape
on the chalkboard.



Draw a dotted line
and remind
the pupils that it
is a mirror line.



Draw the reflection
on the other side of
the mirror line.



Explain that this
shape touches the
mirror line.



Repeat with another
shape and ask
a pupil to explain
where the reflection
will go.

10
minutes

Daily practice

Whole class teaching

Write the following on the chalkboard:

25cm
38cm
8cm

Ask the pupils to draw three shapes that have these measurements as their total perimeter, eg: 25cm could be a pentagon with 5cm sides.

15
minutes

How

Introduction

Whole class teaching

Teach [How? Reflecting shapes 2](#), as shown left.

25
minutes

Shapes

Main activity

Individual task

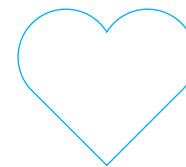
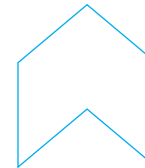
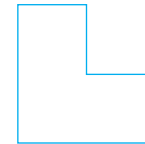
Ask the pupils to copy the [shapes for reflection](#) into their exercise books, leaving space for mirror lines and reflections.

Ask them to draw a mirror line touching each shape and then draw the reflection in the correct place.

Remind them that a reflected shape is the same size as the original but flipped over (reversed).

Choose two or three pupils to share their work with the class and ask the class to say if they are correct.

[Shapes for reflection](#)



10
minutes

Plenary

Individual task

Explain that you are going to have a class quiz.

Ask the following questions and tell the pupils to write down the answers:

- 'How many sides does an octagon have?'
- 'How many angles does a triangle have?'
- 'Which has more sides: a hexagon or a pentagon?'
- 'How many pairs of parallel lines does a trapezium have?'
- 'Name four polygons.'

Discuss the answers.

Ask, 'Who got more than half of the answers right?'. Congratulate them.

Grade/
Type of lesson plan

Lesson
title

Weekly page

**Primary 5,
numeracy
lesson plans**

Week 18:

Capacity

Words/phrases

**Write these words on the chalkboard
and leave them there for the week.**

capacity
estimate
measure
container
litre (l)
millilitre (ml)
scale
interval

Learning expectations

By the end of the week:

**All pupils will be
able to:**

Read a simple scale on
a measuring jug.

**Most pupils will be
able to:**

Convert millilitres to litres,
and litres to millilitres.

**Some pupils will be
able to:**

Solve two-step capacity
word problems.

Assessment task

Instructions:

Ask individual pupils to complete these tasks in their exercise books.

1

Convert the following measurements from millilitres to litres:
5000ml
650ml
85ml

2

Convert the following measurements from litres to millilitres:
6 litres
0.4 litres
4.75 litres

3

Solve the following word problem:
Kali drinks one 330ml bottle of Coke every day. How much will he drink in:
1 week
1 month
1 year

Example of a pupil's work

This pupil can:

Convert units of measure for capacity, millilitres to litres and litres to millilitres.

Use multiplication to solve a two-step word problem.

$$\begin{aligned} 1 \quad 5000 \text{ ml} &= 5 \text{ litres} \\ 650 \text{ ml} &= 0.65 \text{ litres} \\ 85 \text{ ml} &= 0.085 \text{ litres} \end{aligned}$$

$$\begin{aligned} 2 \quad 6 \text{ litres} &= 6000 \text{ ml} \\ 0.4 \text{ litres} &= 400 \text{ ml} \\ 4.75 \text{ litres} &= 4750 \text{ ml} \end{aligned}$$

$$\begin{aligned} 3 \quad 7 \times 330 \text{ ml} &= 2310 \text{ ml} = 2.31 \text{ L} \\ 30 \times 330 \text{ ml} &= 9900 \text{ ml} = 9.9 \text{ L} \\ 12 \times 9.9 \text{ L} &= 118.8 \text{ L} \end{aligned}$$

$$\begin{array}{r|l} \times & 300 \quad 30 \\ 7 & 2100 \quad 210 \\ \hline & 2310 \end{array}$$

$$\begin{array}{r} 2100 \\ + 210 \\ \hline 2310 \end{array}$$

$$\begin{array}{r|l} \times & 300 \quad 30 \\ 30 & 9000 \quad 900 \\ \hline & 9900 \end{array}$$

$$\begin{array}{r} 9000 \\ + 900 \\ \hline 9900 \end{array}$$

Week 18: Capacity

Day 1: Estimating capacity

Learning outcomes

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

Calculate the area
of a rectangle.

Estimate and measure
in litres.

Preparation

Before the lesson:

Make a **capacity corner** using empty
containers with different capacities, eg:
bottles, buckets, cups, spoons.

Read **How? Estimating capacity**, as
shown below, and have ready a **cup** for
each group and a **bucket of water**.

How? Estimating capacity



Look at different
containers in the
capacity corner.



Ask, 'How many
cups of water do you
think we need
to fill a 1 litre bottle?'



Record the pupils'
ideas in a table
on the chalkboard.



Ask a pupil to
fill the litre bottle
with water
from the bucket.



Repeat with another
container from
the capacity corner.

Daily practice

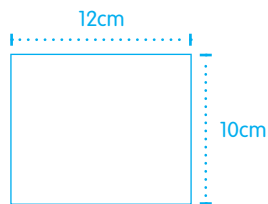
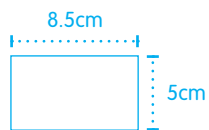
Individual task

Ask the pupils, 'Can you remember how to find the area of a rectangle?' (length x breadth, l x b)

Draw the **rectangles**, shown below, on the chalkboard.

Ask the pupils to work out the areas and write the answers in cm².

Rectangles



Introduction

Whole class teaching

Remind the class that litres are one way we measure liquids.

Explain that litres can be divided into millilitres – there are 1000 millilitres in a litre.

Write the following on the chalkboard and ask pupils to say the answers in fractions of a litre:

- 1000ml = litre
- 750ml = litre
- 500ml = litre
- 250ml = litre

Main activity

Group task

Copy the **capacity chart**, shown below, on to the chalkboard and ask the groups to draw it in their exercise books.

Give each group a range of **containers** and tell them to estimate the capacity of each in cups.

Give each group some **water** and a **cup**.

Tell them to fill their containers with cups of water and measure and record the results in the chart.

Capacity chart

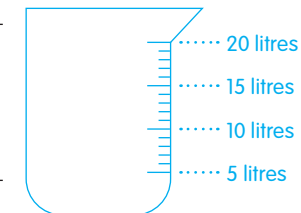
Container	Estimate	Measure
Litre bottle		
Jug		
Tin		

Plenary

Whole class teaching

Draw the **diagram**, shown below, on the chalkboard.

Diagram



Ask the class to discuss these questions:

'If the container is half full, how much water is there?'

'If it is a quarter full, how many litres would it take to fill it?'

Week 18: Capacity

Day 2: Reading scales

Learning outcomes

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

Calculate the area of
a rectangle.

Read scales on
measuring jugs.

Preparation

Before the lesson:

Copy the [reading scales](#) from
today's main activity, shown right,
on to the chalkboard.

Read [How? Reading scales](#),
as shown below.

How? Reading scales



Look at the scale
on a measuring
jug and ask a pupil
to say what the
intervals are.



Remind them
that they need to
look carefully
at each number.



Draw different
scales on the
chalkboard and
discuss.



Choose some
pupils to point
to the 500ml and
750ml marks.

15 minutes

Rectangles

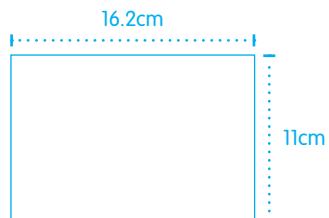
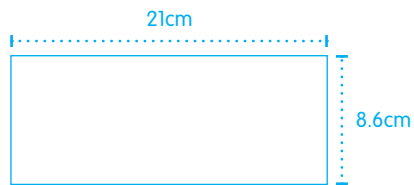
Daily practice

Whole class teaching

Draw the rectangles shown below on the chalkboard.

Ask the pupils to work out the area of the rectangles and write the answer as cm^2 .

Rectangles



15 minutes

How

Introduction

Whole class teaching

Teach **How? Reading scales**, as shown left.

20 minutes

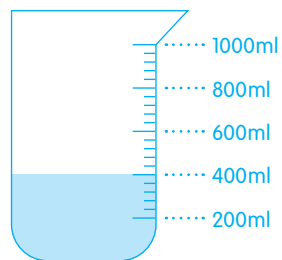
Scales

Main activity

Group task

Look at the following scale on the chalkboard.

Scale 1



Ask, 'How many millilitres of liquid are there in this jug?'

Tell the pupils to discuss the answer and remind them that they need to look carefully at the intervals.

Choose one pupil to share their answer with the whole class.

10 minutes

10 minutes

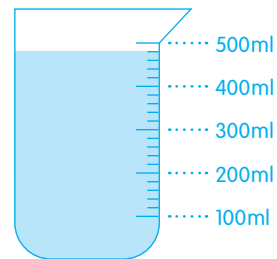
Plenary

Pair task

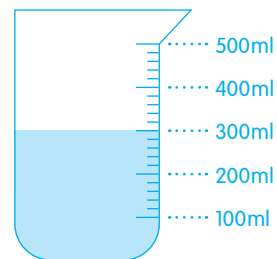
Ask the pairs to discuss what they would buy that measured 50ml, 250ml, 500ml and 5 litres.

Choose some pairs to share their answers with the whole class.

Scale 2



Scale 3



Week 18: Capacity

Day 3: Litres and millilitres

Learning outcomes

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

Calculate the area
of compound shapes.

Convert millilitres to litres
and litres to millilitres.

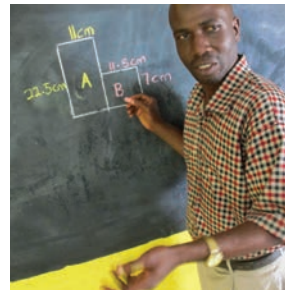
Preparation

Before the lesson:

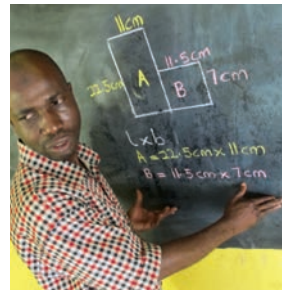
Copy the [reading scales](#) from
today's plenary, shown right, on to
the chalkboard.

Read [How? Compound shapes](#),
as shown below.

How? Compound shapes



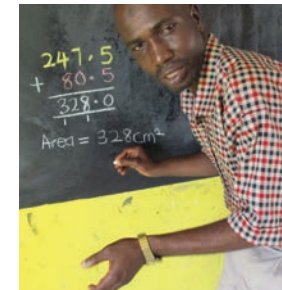
Draw rectangles
(A) and (B) on the
chalkboard and label
the sides.



Ask, 'What is the
formula to calculate
the area for each
shape?' ($l \times b$).



Invite a pupil to
calculate the
answer for each
shape (A and B).



Add the answers
together to find
the area of the
compound shape.

15 minutes

How

Shape

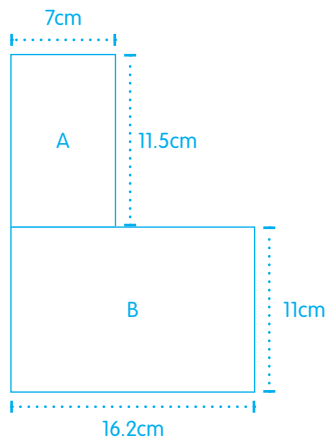
Daily practice

Whole class teaching

Teach **How? Compound shapes**, as shown left.

Ask the pupils to work out the area of the **compound shape** shown below.

Compound shape



10 minutes

Introduction

Whole class teaching

Write the following on the chalkboard:

$$\square \text{ ml} = 1 \text{ litre}$$

Tell the pupils to explain to their partner how many millilitres there are in a litre.

Write the following on the chalkboard and ask the pupils to convert them to litres or millilitres:
1250ml
6.5 litres

25 minutes

Main activity

Pair task

Ask the pairs to convert the following to litres and write the answers in their exercise books:

1600ml
2500ml
1396ml
4550ml

Ask them to convert the following to ml and write the answers in their exercise books:

1.5 litres
0.5 litre
4750 litres
 $1 \frac{1}{4}$ litres

10 minutes

Scales

Plenary

Whole class teaching

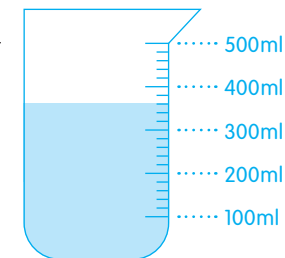
Choose some pupils to look carefully at the **scales** on the chalkboard.

Remind them to look carefully at the intervals.

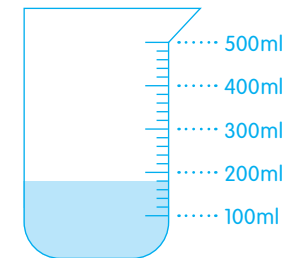
Ask, 'How many millilitres of liquid are there in this jug?'

Tell the pupils to write the answers in their exercise books.

Scale 1



Scale 2



Week 18: Capacity

Day 4: Two-step word problems

Learning outcomes

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

Draw rectangles with
the same area but sides
of different lengths.

Solve capacity word
problems.

Preparation

Before the lesson:

Copy the [word problems](#) from
today's main activity, shown right,
on to the chalkboard.

Read [How? Solving word problems](#),
as shown below.

How? Solving word problems



Read the word
problem together on
the chalkboard.



Ask the pupils,
'What do we already
know?' and underline
the key information.



Ask them, 'What
do we need to
find out?' and write
the calculation.



Remind them to
answer the question.

10
minutes

Daily practice

Group task

Ask the pupils, 'How many different rectangles can you draw with an area of 24cm^2 ?'

Tell the groups to think of the different factors of 24 and use them as the measurements, ie:

6cm x 4cm
12cm x 2cm
8cm x 3cm

Repeat, asking the groups to think of rectangles with an area of:

16cm^2
 36cm^2
 54cm^2

15
minutes

How

Introduction

Whole class teaching

Write the following word problem on the chalk-board: 'A can of drink holds 275ml. How many litres are there in 8 cans?'

Teach [How? Solving word problems](#), as shown left.

25
minutes

Word problems

Main activity

Pair task

Ask the pairs to discuss the calculations needed for the following [word problems](#).

Remind them to ask the following questions about the problem:

'What do we already know?'

'What do we need to find out?'

Ask the pupils to write the answers to the problems in their exercise books:

'Mr Okon is making his famous sauce. He adds 60ml of a secret ingredient to the 475ml he already has. How much sauce does he have altogether?'

'If a bucket holds 10 litres of water, how many litres do 15 buckets hold?'

'A small carton of juice holds 320ml. A large carton holds five times as much. How much juice does the large carton hold?'

'A car petrol tank is empty. It can hold 62 litres. If a litre of petrol costs N92, how much will it cost to fill the tank?'

10
minutes

Plenary

Whole class teaching

Choose some pairs to say their answers and explain how they completed the problem.

Ask if the class agrees. If not, ask them to explain why.

Week 18: Capacity

Day 5: Word problems

Learning outcomes

Preparation

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

Convert millilitres to litres
and litres to millilitres.

Solve capacity word problems
involving two steps.

Before the lesson:

Copy the [word problems](#) from
today's main activity, shown right,
on to the chalkboard.

Read [How? Solving two-step word
problems](#), as shown below.

How? Solving two-step word problems



Read the word problem on the chalkboard together.



Underline the key information.



Invite a pupil to work out step one.



Invite a pupil to work out step two.



Look back through each step of the calculation together.

10
minutes

Daily practice

Pair task

Write the following on the chalkboard and ask the pairs to discuss which is more?

3.5 litres or 3200ml

750ml or $\frac{1}{2}$ litre

300ml or $\frac{1}{4}$ litre

Ask the pairs to convert the following to litres and write the answers in their exercise books:

1450ml

7400ml

Ask them to convert the following to ml and write the answers in their exercise books:

2.75 litres

0.7 litres

3350 litres

15
minutes

How

Introduction

Whole class teaching

Write the following word problem on the chalkboard: 'There are 90 pupils in Primary 1. Each pupil drinks 250ml of water during the school break. How much water did they drink in two days?'

Teach [How? Solving two-step word problems](#), as shown left.

25
minutes

Word problems

Main activity

Pair task

Ask the pairs to discuss the calculations needed for the following [word problems](#).

Tell the pupils to solve the word problems in their exercise books:

'Mrs Ojo buys a 6 litre container of cooking oil. She uses 600ml each day when cooking kosai. How much does she have left after one week?'

'Femi drinks a 330ml cup of coffee every morning. How much will he drink in one week? What is this in litres?'

'A full tank of water will fill 50 bottles. Each bottle holds 750ml. How much water does the tank hold in litres? How much water will there be in half a tank? How much water will there be in a quarter of a tank?'

10
minutes

Plenary

Whole class teaching

Choose some pairs to say their answers and explain how they completed the problem.

Ask if the class agrees. If not, ask them to explain why.

Weekly page

Primary 5, numeracy lesson plans

Week 19:

Statistics

Words/phrases

Write these words on the chalkboard and leave them there for the week.

bar chart
tally
label
title
axis
axes
data
mode
median
range
common denominator

Learning expectations

By the end of the week:

All pupils will be able to:
Draw a bar chart.

Most pupils will be able to:
Find the range and mode of a set of data.

Some pupils will be able to:
Find the range, mode and median of a set of data.

Assessment task

Instructions:

Ask individual pupils to complete these tasks in their exercise books.

1
Use the shoe size information to draw a bar graph:

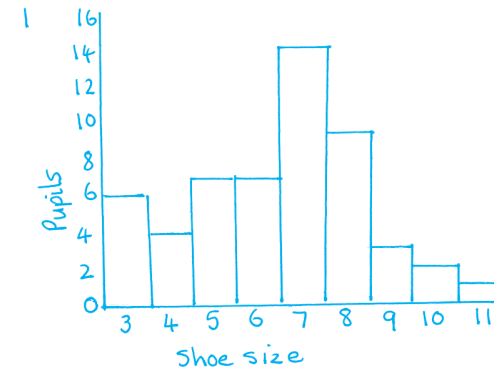
Shoe size	Number of pupils
3	6
4	4
5	7
6	7
7	14
8	9
9	3
10	2
11	1

Example of a pupil's work

This pupil can:

Use information to draw a bar graph.

Find the range, mode and median of a set of data.



2
3, 5, 6, 8, 11, 12, 13, 23, 23
Range = $23 - 3 = 20$
Mode = 23
Median = 11

Week 19: Statistics

Day 1: Bar charts

Learning outcomes

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

Find fractions of whole
numbers.

Understand information
to draw a bar chart.

Preparation

Before the lesson:

Copy the [Primary 5 test score table](#),
shown opposite, on to the chalkboard
and keep it there for the week.

Have ready an [A4 piece of paper](#)
and a [ruler](#) for each pair.

Read [How? Drawing a bar chart](#),
as shown below.

How? Drawing a bar chart



Look at the test
scores table
together and look
for the largest
group of pupils.



Ask the pupils to
think about
the intervals for
each axis.



Remind the
pupils that a bar
chart needs
a title and labels
for each axis.



Invite a pupil to add
the first piece of
information to the
bar chart.

10
minutes

Daily practice

Individual task

Remind the pupils that a fraction is part of a whole.

Write the following on the chalkboard and ask the pupils to write the answers in their exercise books:

$$\frac{1}{2} \text{ of } 20 =$$

$$\frac{1}{2} \text{ of } 46 =$$

$$\frac{1}{4} \text{ of } 20 =$$

$$\frac{3}{4} \text{ of } 20 =$$

$$\frac{3}{4} \text{ of } 40 =$$

Choose some pupils to share their answers with the class.

15
minutes

How

Introduction

Pair task

Ask the pairs to discuss the following questions:

'Name three different ways of recording number information.' (eg: pictogram, table, bar chart, graph, tally)

'What is a bar chart?'

'What kinds of information can be recorded in a bar chart?'

Teach **How? Drawing a bar chart**, as shown left.

25
minutes

Paper/
Rulers

Main activity

Pair task

Give each pair a **piece of paper** and a **ruler**.

Ask the pupils to work in pairs to finish adding the test score information to their own bar chart.

Remind the pairs that a bar chart needs a title, labels on the axes, a key and a scale.

Primary 5 test scores

Scores	Number of pupils
100	2
90	5
80	8
70	8
60	11
50	19
40	5

10
minutes

Bar charts

Plenary

Whole class teaching

Tell the pupils to put their bar charts on the table and invite the class to walk around and see how other pairs made their bar charts.

Keep the **bar charts** to work with tomorrow.

Week 19: Statistics

Day 2: Collecting data

Learning outcomes

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

Find fractions of whole numbers.

Draw a bar chart.

Preparation

Before the lesson:

Have ready the pupils' **bar charts** from Week 19, Day 1 (yesterday).

Have ready a **large piece of paper** and a **ruler** for each pair.

Read **How? Collecting data**, as shown below.

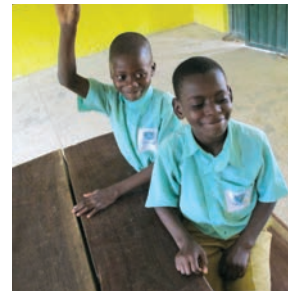
How? Collecting data



Remind the pupils that a tally chart is a quick way to gather information.



Ask, 'What is your favourite wild animal?' Write their ideas on the chalkboard.



Ask them to put up their hand if their favourite animal is an elephant.



Invite a pupil to record the answer on the tally chart.



Look at the information and ask, 'What can you tell me about this information?'

10
minutes

Daily practice

Pair task

Remind the pupils to divide the numerator by the denominator to find a whole number from a fraction.

Explain how to find one fifth of 30:

$$\frac{30}{5} = \text{numerator} \\ \quad \quad \quad = \text{denominator}$$

$$30 \div 5 = 6$$

$$\frac{1}{5} \text{ of } 30 = 6$$

15
minutes

How

Bar charts

Introduction

Whole class teaching

Ask the pupils to look at their **bar charts** from yesterday.

Ask the following questions:

'How many pupils are there in that class?'

'What is the highest score in the class?'

'What is the most common score in the class?'

Teach **How? Collecting data**, as shown left.

30
minutes

Main activity

Group task

Explain to the pupils that they will collect data from their group and make a bar chart with the information.

Tell them to ask each other, 'How many people live in your home?' and collect the information in a tally chart.

Tell the pupils they will then draw a bar chart to represent the information they have collected.

5
minutes

Plenary

Whole class teaching

Choose some groups to show their bar charts and explain how they made them.

Week 19: Statistics

Day 3: Mode

Learning outcomes

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

Find the fraction of
a whole number.

Find the mode of a set
of numbers.

Preparation

Before the lesson:

Have ready the [Primary 5 test scores table](#) from Week 19, Day 1.

Copy the [sets of data](#) from today's
main activity, shown opposite, on to
the chalkboard.

Read [How? Finding the mode](#),
as shown below.

How? Finding the mode



Look at the set
of numbers on the
chalkboard.



Invite a pupil to
underline the
number that occurs
most often.



The mode is
21 since it occurs
three times.



Repeat with another
set of data.

10
minutes

Daily practice

Individual task

Explain to the class that if we know that:

$$\frac{1}{6} \text{ of } 66 = 11$$

then we can work out that:

$$\frac{2}{6} \text{ of } 66 = 22$$

Write the following on the chalkboard and ask the pupils to write the answers in their exercise books:

$$\frac{1}{6} \text{ of } 60 =$$

$$\frac{2}{6} \text{ of } 36 =$$

$$\frac{3}{6} \text{ of } 24 =$$

$$\frac{4}{6} \text{ of } 72 =$$

15
minutes

How

Introduction

Whole class teaching

Explain to the class that the 'mode' is the number that occurs most often in a set of data (information or numbers).

Teach **How? Finding the mode**, as shown left.

25
minutes

Table

Main activity

Whole class teaching

Look together at the test score **table** from Week 19, Day 1.

Ask, 'What is the mode?'

Choose a pupil to explain their understanding of mode.

Data sets

Pair task

Look together at the **sets of data** on the chalkboard and ask the pairs to find the mode of each.

Tell them to write the answers in their exercise books:

Set 1
3, 6, 2, 4, 3, 5, 2, 8, 2, 5

Set 2
18, 15, 14, 15, 12, 18, 13, 15

Set 3
32°, 65°, 83°, 33°, 65°, 47°

Set 4
20, 56, 12, 20, 34, 23, 17

Set 5
37kg, 32kg, 35kg, 35kg,
30kg, 40kg

10
minutes

Plenary

Whole class teaching

Go through the answers together as a class.

Choose some pupils to explain to the class how they worked out their answers.

Week 19: Statistics

Day 4: Range

Learning outcomes

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

Add simple fractions
with the same denominator.

Find the range of a set
of numbers.

Preparation

Before the lesson:

Copy the [data sets](#) from today's
main activity, shown opposite, on to
the chalkboard.

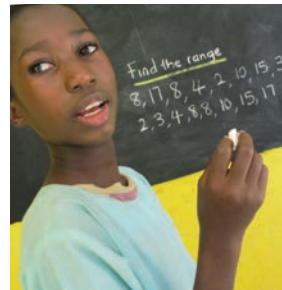
Have ready the [Primary 5 test scores
table](#) from Week 19, Day 1.

Read [How? Finding the range](#),
as shown below.

How? Finding the range



Look at the set
of data on the
chalkboard.



Ask a pupil to
arrange all the
numbers in
numerical order.



Ask a pupil to
underline the
smallest number.



Ask a pupil to
underline the
greatest number.



Explain that the
difference between
the smallest and
the greatest number
is the range.

15
minutes

Daily practice

Individual task

Ask the pupils to work out the following mentally:

What is $\frac{2}{3}$ of 9?

What is $\frac{1}{5}$ of 25?

Explain that adding fractions that have the same denominator is simple, that the 'common denominator' stays the same and we add the numerators together.

Write the following on the chalkboard and ask the pupils to work them out:

$$\frac{3}{10} + \frac{1}{10} =$$

$$\frac{4}{12} + \frac{6}{12} =$$

10
minutes

How

Introduction

Whole class teaching

Remind the pupils that yesterday they were looking at the mode of a set of data.

Teach [How? Finding the range](#), as shown left.

25
minutes

Table

Main activity

Whole class teaching

Look together at the [Primary 5 test scores table](#).

Ask, 'What is the range?'

Choose a pupil to explain their understanding of range.

Data sets

Pair task

Look together at the [sets of data](#) on the chalkboard and ask the pairs to find the range of each.

Tell them to write the answers in their exercise books:

Set 1
9, 17, 8, 23, 7, 2, 12

Set 2
48, 37, 23, 54, 32, 28

Set 3
12°, 35°, 3°, 53°, 32°, 65°

Set 4
21, 66, 12, 40, 38, 26, 17

Set 5
17kg, 32kg, 49kg, 35kg, 30kg, 70kg

10
minutes

Plenary

Whole class teaching

Go through the answers together as a class.

Choose some pupils to explain to the class how they worked out their answers.

Week 19: Statistics

Day 5: Range, mode and median

Learning outcomes

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

Subtract simple fractions
with the same denominator.

Find the range, mode
and median of a set of
numbers.

Preparation

Before the lesson:

Copy the [sets of data](#) from
today's main activity, shown opposite,
on to the chalkboard.

Read [How? Finding the median](#),
as shown below.

How? Finding the median



Look together at
the set of data
on the chalkboard.



Ask a pupil to
arrange all the
numbers in
numerical order.



Ask a pupil to underline the number
in the middle.
Explain that this is
the median.



Repeat with another
set of data.

10
minutes

Daily practice

Individual task

Explain that subtracting fractions that have the same denominator is simple, that the common denominator stays the same and we subtract the numerators.

Write the following on the chalkboard and ask the pupils to work them out:

$$\frac{5}{6} - \frac{1}{6} =$$

$$\frac{4}{8} - \frac{2}{8} =$$

$$\frac{7}{12} - \frac{3}{12} =$$

$$\frac{3}{9} - \frac{2}{9} =$$

15
minutes

How

Introduction

Whole class teaching

Remind the pupils that they have been looking at data this week and have been finding the mode and the range.

Explain that they are now going to find the 'median'.

Teach [How? Finding the median](#), as shown left.

30
minutes

Data sets

Main activity

Pair task

Look together at the [sets of data](#) on the chalkboard and ask the pupils to find the range, mode and median of each.

Ask the pupils to set out their answers in the following way, eg:
Data set
13, 18, 13, 14, 16, 21, 19
Range = 8 (21 – 13 = 8)
Mode = 13
Median = 16

5
minutes

Plenary

Whole class teaching

Go through the answers together as a class.

Choose some pupils to explain to the class how they worked out their answers.

Grade/
Type of lesson plan

Lesson
title

Weekly page

**Primary 5,
numeracy
lesson plans**

Week 20:

Weight

Words/phrases

Write these words on the chalkboard and leave them there for the week.

weight
mass
estimate
lightest
heaviest
kilogram (kg)
gram (g)
scale

Learning expectations

By the end of the week:

All pupils will be able to:
Read simple dial scales.

Most pupils will be able to:
Convert grams to kilograms and kilograms to grams.

Some pupils will be able to:
Read a range of scales accurately.

Assessment task

Instructions:

Ask individual pupils to complete these tasks in their exercise books.

1

Convert the following measurements from grams to kilograms:
350g
1050g

2

Convert the following measurements from kilograms to grams:
2.5kg
12kg

3

Show the following dial to the pupils and ask them to say the weight that it shows.



4

Show the following scale line to the pupils and ask them where 500g would go.



Example of a pupil's work

This pupil can:

Convert units of measure for weight, grams to kilograms and kilograms to grams.

Understand where 500g is on a 0kg to 1kg number line.

Read a scale accurately.

$$\begin{aligned} 1 \quad 350g &= 0.35kg \\ 1050g &= 1.05kg \end{aligned}$$

$$\begin{aligned} 2 \quad 2.5kg &= 2500g \\ 12kg &= 12000g \end{aligned}$$

$$3 \quad 10kg$$



Week 20: Weight

Day 1: Estimate weights

Learning outcomes

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

Multiply whole numbers
by 10, 100 and 1000.

Estimate and measure the
weight of an object.

Preparation

Before the lesson:

Have ready some kitchen **weighing
scales** and **objects of different weights**
for each group, eg: yam, carrot, cup.

Copy the **estimating weight table** from
today's main activity, shown opposite, on
to the chalkboard.

Read **How? Estimating weight**,
as shown below.

How? Estimating weight



Look at a range
of objects and
ask, 'Which
is the heaviest?'



Ask, 'Which
is the lightest?'



Draw a scale on
the chalkboard and
explain that it is
a scale for measuring
0kg to 1kg.



Ask, 'What is the
middle division?'



Choose some pupils
to estimate and
record where their
objects will go.

15 minutes

Daily practice

Whole class teaching

Write the following on the chalkboard:

$$3 \times 10 = 30$$

$$3 \times 100 =$$

$$3 \times 1000 =$$

Remind the pupils that when we multiply by 10 the numbers move one place to the left.

When we multiply by 100 the numbers move two places to the left.

When we multiply by 1000 the numbers move three places to the left.

Ask the pupils to multiply the following numbers by 10, 100 and 1000 in their exercise books:

56
79
231
463

15 minutes

How

Objects

Introduction

Whole class teaching

Give each group a range of different **objects**.

Teach **How? Estimating weight**, as shown left.

25 minutes

Table/Objects/
Scales

Scale line

Main activity

Group task

Tell the groups to copy the **estimating weight table** into their exercise books and complete the object and estimate columns based on their **objects**.

Give each group a turn to weigh their objects using the **weighing scales** and complete the weight column in their table.

Weight table

Object	Estimate	Weight

5 minutes

Plenary

Pair task

Ask the pupils to discuss their results, and to discuss the following questions:

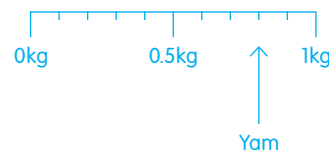
'What was the difference between the estimate and actual weight?'

'Did your estimates get better?'

Whole class teaching

Tell the groups to record the actual weight of their objects on their own **scale line**, as shown below:

Scale line



Week 20: Weight

Day 2: Estimating weight

Learning outcomes

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

Divide whole numbers
by 10, 100 and 1000.

Convert grams to kilograms
and kilograms to grams.

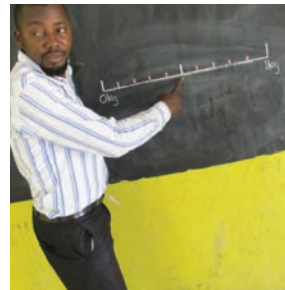
Preparation

Before the lesson:

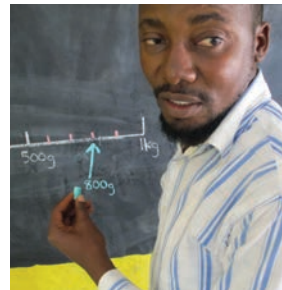
Copy the [grams and kilograms
table](#) from today's main activity, shown
right, on to the chalkboard.

Read [How? Measuring scales 1](#),
as shown below.

How? Measuring scales 1



Look at the scale
on the chalk-
board and ask,
'What is the
middle division?'



Ask the pupils,
'What measurement
is this?' and 'How
did you work it out?'



Ask, 'Where would
 $\frac{1}{4}$ kg be?'



Ask, 'Where would
 $\frac{3}{4}$ kg be?'

15
minutes

Daily practice

Whole class teaching

Write the following on the chalkboard:
 $2000 \div 10 = 200$
 $2000 \div 100 =$
 $2000 \div 1000 =$

Remind the pupils that when we divide by 10 the numbers move one place to the right.

When we divide by 100 the numbers move two places to the right.

When we divide by 1000 the numbers move three places to the right.

Ask the pupils to divide the following numbers by 10, 100 and 1000 in their exercise books:
34
870
64892

15
minutes

How

Introduction

Whole class teaching

Write the following on the chalkboard, then choose some pupils to complete the answers and discuss:

0.25 kilogram =

1 kilogram = 1000 grams

$1 \frac{1}{4}$ kilogram = 1250 grams

$\frac{1}{4}$ kilogram =

Ask the the pupils to think of another way to say 500g, eg: 0.5kg, $\frac{1}{2}$ kg

Teach [How? Measuring scales 1](#), as shown left.

25
minutes

Table

Main activity

Pair task

Tell the pairs to copy the [grams and kilograms table](#) into their exercise books and complete it.

Grams and kilograms table

	Grams	Kilograms
1	1000g	
2	1400g	
3	1587g	
4	3490g	
5		$\frac{1}{10}$ kg
6		$\frac{3}{10}$ kg
7		$\frac{3}{4}$ kg
8		$\frac{1}{4}$ kg

5
minutes

Plenary

Pair task

Ask the pairs to briefly discuss the following questions:

'Which is heavier:
 $\frac{3}{4}$ kg or 700g?'

'Which is lighter:
 $\frac{1}{4}$ kg or 400g?'

'Why is 1000g less than
 $1 \frac{1}{4}$ kg?'

Choose some pairs to give their answers to the class.

Week 20: Weight

Day 3: Grams and kilograms

Learning outcomes

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

Multiply two-, three-
and four-digit numbers
by 10.

Understand, read and
write standard metric units
for weight.

Preparation

Before the lesson:

Copy the [conversion chart](#) from
today's main activity, shown opposite,
on to the chalkboard.

Read [How? Measuring scales 2](#),
as shown below.

How? Measuring scales 2



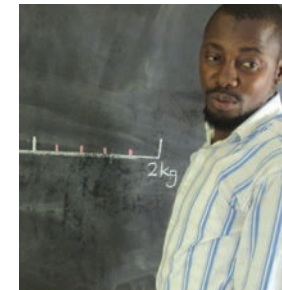
Look at the scale
on the chalkboard
and ask, 'What
is the value of each
interval?'



Confirm that each
interval is $\frac{1}{10}$ of 1kg.



Invite a pupil
to place 0.7kg on
the scale.



Explain that the range
of the scale now
represents the range
0kg to 2kg.



Invite a pupil
to place 1.2kg on
the scale.

15
minutes

Daily practice

Whole class teaching

Ask the pupils to say the 10 times table.

Ask a pupil to explain what happens when a number is multiplied by 10.

Ask the pupils to help you solve the following calculations on the chalkboard:
 $1542 \times 10 =$
 $63.7 \times 10 =$

Write the following calculations on the chalkboard and ask the pupils to complete them in their exercise books:
 $586 \times 10 =$
 $32.7 \times 10 =$
 $70.05 \times 10 =$
 $942.1 \times 10 =$

15
minutes

How

Introduction

Whole class teaching

Write '0.5kg' on the chalkboard and ask the pupils to discuss another way we could write that weight.

Remind the pupils that $\frac{1}{2}$ kg represents 0.5kg

Remind them that this is equivalent to $\frac{5}{10}$ kg and 500g

Repeat with other weights involving quarters or tenths of 1kg, eg:
0.7kg
0.25kg
0.43kg

Teach [How? Measuring scales 2](#), as shown left.

25
minutes

Chart

Main activity

Pair task

Ask the pairs to copy and complete the [conversion chart](#) in their exercise books.

Conversion chart

Kg	Kg and g	g
1.35kg	1kg 350g	1350g
1.5kg		
	1kg 800g	
		270g
0.45kg		
		2090g
0.6kg		

5
minutes

Plenary

Pair task

Choose some pairs to explain their answers.

Ask the class to say if they are correct and, if not, to explain why.

Ask the pairs to discuss the following question: 'How many grams do we have if we add $\frac{1}{4}$ kg to 500g?'

Choose some pairs to give their answers to the class.

Week 20: Weight

Day 4: Reading a weight scale

Learning outcomes

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

Divide two-, three- and four-
digit numbers by 10.

Read scales accurately.

Preparation

Before the lesson:

Copy the [scales](#) from today's
main activity, shown opposite, on to
the chalkboard.

Read [How? Reading scale dials](#),
as shown below.

How? Reading scale dials



Draw this scale on
the chalkboard
and ask, 'What
is the value of each
interval?'



Ask, 'What
weight does the
scale show?'



Draw this scale on
the chalkboard
and ask, 'What is
the value of each
interval?'



Ask, 'What
weight does the
scale show?'



Point to an interval
and ask, 'What
is the value of the
interval here?'

10
minutes

Daily practice

Whole class teaching

Write '4500 ÷ 10 =' on the chalkboard and ask a pupil to answer it.

Ask a pupil to explain what happens when a number is divided by 10.

Ask the pupils to help you solve the following calculations on the chalkboard:

$$3641 \div 10 =$$

$$73.1 \div 10 =$$

Write the following calculations on the chalkboard and ask the pupils to complete them in their exercise books:

$$837 \div 10 =$$

$$4385 \div 10 =$$

$$27.10 \div 10 =$$

$$294.5 \div 10 =$$

15
minutes

How

Introduction

Whole class teaching

Remind the pupils that they have been looking at the relationship between grams and kilograms and converting weights between the two.

Teach **How? Reading scale dials**, as shown left.

25
minutes

Scales

Main activity

Individual task

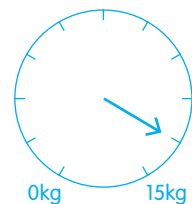
Ask the pupils to copy the **reading scales** into their exercise books.

Ask them to write the weight on each scale:

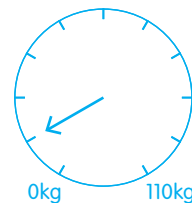
Scale 1



Scale 2



Scale 3



10
minutes

Plenary

Whole class teaching

When most of the pupils have finished, tell the pupils to exchange books with their partner.

Ask one pupil to read out the answers. If the class agrees, they should mark it with a small tick.

Week 20: Weight

Day 5: Word problems

Learning outcomes

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

Recall the 7, 8 and 9 times
tables quickly.

Find the range, mode
and median of a set of
numbers.

Preparation

Before the lesson:

Have ready some [weighing scales](#).

Copy the [questions](#) from today's
main activity, shown right, on to the
chalkboard.

Read [How? Reading weighing scales](#),
as shown below.

How? Reading weighing scales



Look at the scale
on a set of
weighing scales.



Invite a pupil to
stand on the scales.



Write the pupil's
weight to the nearest
whole kilogram
in a chart on the
chalkboard.



Invite another
pupil to stand on
the scales and
write their weight
in the chart.



Repeat with another
8 pupils and
leave the chart on
the chalkboard.

15 minutes | Game

Daily practice

Whole class teaching

Play [multiplication bingo](#) using the 7, 8 and 9 times tables.

15 minutes | How

Introduction

Whole class teaching

Teach [How? Reading bathroom scales](#), as shown left.

25 minutes | Chart

Main activity

Pair task

Look at the completed [weight chart](#) on the chalkboard and ask the pairs to answer the following questions in their exercise books:

'What is the range of weight in this class?'

'What is the mode weight of the pupils?'

'What is the median weight of the pupils?'

'What is the total weight of the pupils?'

5 minutes

Plenary

Pair task

Ask the pairs to discuss the following question: 'Lola's mother wants to make a cake. She bought 580 grams of flour, 290 grams of eggs and 580 grams of sugar. What is the total weight of the things that Lola's mother bought?'

Choose some pairs to give their answers to the class.

Credits

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

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

Special thanks go to

Honourable Commissioner of Education and Human Capital Development (MOEHCD), Alhaji Mohammed Atolagbe Raji, the Executive Chairman of the State Universal Basic Education Board (SUBEB), Alhaji (Barr) Lanre Daibu and their staff for their time and valuable input.

The Teacher Development Division School, MOEHCD, School Improvement Unit, SUBEB and the State School Improvement Team (SSIT) for their contributions.

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

This document is issued for the party which commissioned it and for specific purposes connected with the captioned project only. It should not be relied upon by any other party or used for any other purpose.

We accept no responsibility for the consequences of this document being relied upon by any other party, or being used for any other purpose, or containing any error or omission which is due to an error or omission in data supplied to us by other parties.

These materials were produced with UKaid technical assistance from DFID under ESSPIN.

Copyright © Cambridge Education Limited 2015.

This publication is not for sale

These numeracy lesson plans belong to:



Enugu State Government

Produced with the
support of

esspin

Education Sector
Support Programme
in Nigeria



UKaid

from the Department for
International Development