

Numeracy lesson plans
Primary 5,
term 1, weeks 6—10

Exploring shape, finding lines of symmetry and graphs

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symmetry and graphs**

Introduction

Quality education is key to the development of every society. And one essential ingredient in ensuring quality education is the teacher.

The State Ministry of Education conducted baseline surveys to assess Kano teachers, head teachers and pupil learning outcomes. The findings were discouraging, with little difference in outcomes between qualified and unqualified teachers. It was clear that, despite substantial inputs into education, most teachers were victims of a shambolic system.

Subsequently, the State Ministry of Education, the State Universal Basic Education Board (SUBEB) and the local government education authorities (LGEAs), supported by the Education Sector Support Programme in Nigeria (ESSPIN), initiated a series of school reforms.

Teaching Skills Programme (TSP) was introduced to help: primary teachers deliver competent lessons; head teachers operate effectively; and to strengthen organisational structures to enable SUBEB and LGEA to provide effective support. TSP phase 1 benefited more than 19,269 participants through cluster- and school-based training.

To consolidate these benefits, 21,000 sets of Primary 1—3 lesson plans and learning outcome benchmarks were shared with 5,728 public and Islamiyya-integrated primary schools. Now, a carefully designed series of Primary 4—6 lesson plans has been developed. These provide step-by-step guides to literacy and numeracy teachers, while ensuring that children become active learners.

We are confident that these lesson plans will strengthen children's learning abilities quickly and considerably, and will improve the quality of children proceeding to higher levels of education. They will enable teaching and learning to be more exciting, and will form an important element in all classes at the primary level.

We commend all those who have worked hard on these plans and training schemes. We thank the UK Department for International Development (DFID) for its ongoing support for education reform in Kano State through its ESSPIN programme. 'Let's make every Kano school an improving school.'

Tajudeen A Gambo
Honourable Commissioner
for Education,
Kano State

Wada Zakari
Executive Chairman,
SUBEB, Kano 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.

Weekly page

Primary 5, numeracy lesson plans

Week 6:

Algebra

Words/phrases

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

subtraction
addition
inverse
open sentence
product
factors
symbols
equation
division
multiplication

Learning expectations

By the end of the week:

All pupils will be able to:

Find the missing number in an equation.

Most pupils will be able to:

Find the value of x in an equation.

Some pupils will be able to:

Solve word problems using an equation including symbols.

Assessment task

Instructions:

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

1

Find the missing number in the following:

$$24 + x = 30$$

$$38 - x = 10$$

2

Find the value of x in the following:

$$6x + 10 = 46$$

Example of a pupil's work

This pupil can:

Find the missing number in an open sentence.

Find the value of x .

Solve an algebraic word problem.

$$24 + x = 30$$

$$30 - 24 = 6$$

$$x = 6$$

$$6x + 10 = 46$$

$$6x = 46 - 10$$

$$6x = 36$$

$$x = 36 \div 6$$

$$x = 6$$

Week 6: Algebra

Day 1: Missing numbers

Learning outcomes

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

Answer questions
from the 7 and 9 times
tables quickly.

Find the missing number
in a sum.

Preparation

Before the lesson:

Read [How? Multiplication bingo](#) from
Week 4, Day 2 and [How? Buzz game](#)
from Week 1, Day 1 (term 1, weeks 1—5).

Write the [calculations](#) from today's
main activity pair task, shown right, on
the chalkboard.

Practise [How? Finding missing numbers](#),
as shown below.

How? Finding missing numbers



Write this on the
chalkboard. Choose
a pupil to complete
the calculation.



Ask, 'What other
calculations do you
know that use
these numbers?'



Choose a pupil to
write the calculations
on the chalkboard.



Explain that addition
and subtraction are
'inverse' calculations.



Share other
examples of inverse
calculations
with the class.

10
minutes

Multiplication bingo game

15
minutes

How

30
minutes

5
minutes

Buzz game

Daily practice

Whole class teaching

Play [multiplication bingo](#) using the 9 times table.

Introduction

Pair task

Teach [How? Finding missing numbers](#), as shown left.

Write the following on the chalkboard:

$$28 + 15 =$$

$$18 + 16 =$$

Ask the pairs to complete each calculation then write an inverse calculation.

Remind the pupils that if they know an addition calculation then they can find the inverse subtraction calculation.

Main activity

Whole class teaching

Explain to the pupils that they can use their knowledge of inverse to find the missing number in a calculation.

Write the following on the chalkboard:

$$8 + \square = 10$$

Explain that to find the missing number we write the inverse calculation.
 $10 - 8 = 2$, so the missing number is 2.

Solve the following with the class:

$$12 + \square = 17$$

Ask the pupils to give other examples of inverse calculations.

Pair task

Ask the pairs to complete the following in their exercise books, writing out the inverse calculation for each one:

$$9 + \square = 14, \text{ so } 14 - 9 = 5$$

$$12 + \square = 20$$

$$8 + \square = 17$$

$$45 + \square = 50$$

$$6 + \square = 18$$

$$58 + \square = 64$$

$$60 + \square = 100$$

Plenary

Whole class teaching

Play the [buzz game](#) with the 7 and 9 times tables.

Week 6: Algebra

Day 2: Equations

Learning outcomes

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

Find factors of numbers.

Find the missing number in
an equation.

Preparation

Before the lesson:

Display a **multiplication square** on
a large piece of card in the classroom.

Write the **equations** in today's main
activity, shown right, on the chalkboard.

Read **How? Multiplication square**,
as shown below.

How? Multiplication square



Look for patterns
on the square.



Use the square for
multiplication:
 $\text{factor} \times \text{factor} =$
product.



Use the square
for division:
 $\text{product} \div \text{factor} =$
factor.



Use it to find factors
for a product.



Explain to the
pupils that multi-
plication is the
inverse of division.

10
minutes

How

Multiplication
square

10
minutes

30
minutes

10
minutes

Daily practice

Introduction

Main activity

Plenary

Whole class teaching

Explain that factors are numbers you can multiply together to get another number, and product is the answer when two or more numbers are multiplied.

Teach **How? Multiplication square**, as shown left.

Ask the pairs to find two factors that have a product of 36.

Find 20 on the multiplication square and choose some pupils to find its factors (2×10 , 10×2 , 4×5 , 5×4).

Ask the groups to find their own factors that have a product of 48 (6×8 , 4×12 , 24×2).

Whole class teaching

Remind the pupils that they have been finding missing numbers in calculations.

Explain that sometimes letters (symbols) take the place of boxes to show missing numbers, eg: x .

Write, ' $15 + x = 21$ ' on the chalkboard.

Ask the pupils to say the missing number.

Whole class teaching

Write, ' $x + 16 = 30$ ' on the chalkboard.

Tell the pupils that they are going to find the value of x .

Explain that we need to add or subtract the same number from both sides of the calculation:

$$x + 16 - 16 = 30 - 16$$

$$x + 0 = 30 - 16$$

$$x + 0 = 14$$

$$x = 14$$

Explain that '+ 16 - 16' cancel each other out to become '0'.

Repeat with $x - 8 = 24$.

Add 8 to each side:

$$x - 8 + 8 = 24 + 8$$

$$x + 0 = 32$$

$$x = 32$$

Pair task

Write the following on the chalkboard:

$$x + 16 = 30$$

$$40 - x = 18$$

$$x - 20 = 40$$

$$34 + x = 48$$

$$34 - x = 22$$

Tell the pairs to complete them in their exercise books.

Whole class teaching

Choose some pairs to explain their answers.

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

Week 6: Algebra

Day 3: Solving equations

Learning outcomes

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

Find factors of numbers.

Find the value of x .

Preparation

Before the lesson:

Display the [multiplication square](#).

Write the [equations](#) from the main activity,
shown right, on the chalkboard.

Read [How? Missing \$x\$](#) , as shown below.

How? Missing x



Remind the pupils
that symbols can
be used to represent
missing numbers.



If you are multi-
plying x it looks like
this: $4x$.



Now we know that
 $x = 4$ we can
solve the equation
 $4x + 6 =$



To find the value
of x we need to
balance each side
of the equation.



To find the value
of x we can also use
our knowledge
of inverse equations
(+ and -) (\times and \div).

10
minutes

Multiplication square

Daily practice

Whole class teaching

Look at the **multiplication square** for factors of 18 (9×2 and 2×9).

This means that 9 and 2 are 'factors of' 18.

Demonstrate by putting a rule along the $x \ 9$ line on the multiplication square to show the following pattern:

$$9 \times 2 = 18, \text{ so}$$

$$18 \div 2 = 9$$

$$9 \times 3 = 27, \text{ so}$$

$$27 \div 3 = 9$$

$$9 \times 4 = 36, \text{ so}$$

$$36 \div 4 = 9$$

Remind the pupils that multiplication and division are inverse operations.

Ask the pupils to complete the following equations in their exercise books:

$$8 \times 2 = 16, \text{ so}$$

$$16 \div \square = 8$$

$$8 \times 3 = \square, \text{ so}$$

$$24 \div \square = 8$$

$$8 \times 4 = \square, \text{ so}$$

$$\square \div \square = \square$$

15
minutes

How

Introduction

Whole class teaching

Remind the pupils that they have been finding the value of symbols in calculations.

Tell them that calculations with symbols are often called 'equations'.

Teach **How? Missing x** , as shown left.

Write the following on the chalkboard:

$$x + 16 = 20$$

$$15 - x = 7$$

Choose some pupils to help you find the value of x in each equation.

25
minutes

Multiplication square

Main activity

Pair task

Ask the pairs to complete the following equations in their exercise books:

$$\text{If } x = 7, \text{ then}$$

$$3x + 9 =$$

$$\text{If } x = 9, \text{ then}$$

$$5x - 5 =$$

$$\text{If } x = 4, \text{ then}$$

$$7x + 3 =$$

$$\text{If } x = 4, \text{ then}$$

$$9x - 6 =$$

$$\text{If } x = 8, \text{ then}$$

$$3x - 6 =$$

Remind them to use the **multiplication square** if they need help.

Choose some pairs to say their answers. Ask the class if they agree. If not, ask them to explain why.

10
minutes

Clock times table game

Plenary

Whole class teaching

Play the **clock times table game**.

Week 6: Algebra

Day 4: Finding the value of x

Learning outcomes

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

Add two-digit numbers to
three-digit numbers.

Find the value of x in
an equation.

Preparation

Before the lesson:

Display the [multiplication square](#).

Write the [equations](#) from the main
activity, shown right, on the chalkboard.

Read [How? Finding \$x\$](#) , as shown below.

How? Finding x



Tell the pupils to
use their knowledge
of addition and
subtraction facts.



Remind them
to keep each side
of the equation
balanced.



Tell the pupils to
take away the
same number
from each side of
the equation.



The equation now
reads ' $5x = 30$ '.



Use the multi-
plication square
to find what
equals 30 when
multiplied by 5.

10
minutes

Daily practice

Whole class teaching

Remind the pupils that they have learned how to add numbers using the vertical method.

Ask the groups to work out the following in their exercise books:

$$282 + 86 =$$

$$351 + 92 =$$

Tell them to expand the numbers and line up the digits carefully.

Choose two groups to explain their calculations on the chalkboard.

15
minutes

Introduction

Group task

Write these equations on the chalkboard:

$$15 + x = 34$$

$$x + 10 = 36$$

$$4 + x = 18$$

$$40 + x = 72$$

$$x + 23 = 32$$

$$25 + x = 53$$

Give each group a different equation to work on to find the value of x .

Choose a group to share their answers with the class, explaining what they did.

30
minutes

How

Main activity

Whole class teaching

Remind the class that when they are finding the value of a symbol or missing number they need to balance both sides of the equation.

Teach **How? Finding x** , as shown left.

Repeat with $3x + 5 = 23$.

Multiplication square

Pair task

Write the following on the chalkboard:

$$8x + 4 = 36$$

$$9x + 6 = 60$$

$$6x + 5 = 41$$

$$5x + 7 = 47$$

Read the equations together and ask the pairs to work out the value of x in each equation in their exercise books.

Remind the pupils to use the **multiplication square** if they need to.

5
minutes

Plenary

Whole class teaching

Choose some pairs to explain their answers. Ask the class if they are correct, and if not, to explain why.

Week 6: Algebra

Day 5: Algebraic word problems

Learning outcomes

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

Subtract three-digit
numbers with renaming.

Solve word problems
using symbols.

Preparation

Before the lesson:

Write the [word problems](#) from
the main activity, shown right, on
the chalkboard.

Read [How? Subtracting three-digit
numbers](#), from Week 3, Day 4.

Read [How? Solving problems with
missing numbers](#), as shown below.

How? Solving problems with missing numbers



Ask a pupil to think
of a number (x) then
multiply it by 5.



Tell a pupil to then
add 8.



Remind the pupils
to balance
both sides of the
equation ($- 8$).



Then tell them to
multiply $5x$.



Remind the class
that they can
also use the inverse
calculation.

15
minutes

Daily practice

Whole class teaching

Remind the class that to subtract three-digit numbers they need to expand and re-name the numbers.

Write '584 – 268 =' on the chalkboard.

Choose some pupils to explain how to work out the answer.

Ask the pairs to work out the answers to the following in their exercise books:

$$973 - 628 =$$
$$890 - 557 =$$

Choose two pairs to explain their calculations to the class.

10
minutes

Introduction

Whole class teaching

Remind the pupils that when they are finding the value of a symbol or missing number in an equation they need to balance both sides of the equation.

Demonstrate:

$$4x - 10 = 18$$
$$4x - 10 + 10 = 18 + 10$$
$$4x = 28$$
$$4 \times 7 = 28$$
$$x = 7$$

Write the following on the chalkboard and ask the pupils to help you find the value of x :

$$7x + 3 = 52$$
$$6x - 4 = 32$$

25
minutes

How

Main activity

Whole class teaching

Tell the pupils that we can use equations like these to solve word problems.

Teach pupils [How? Solving problems with missing numbers](#), as shown left.

Work through the following problem with the pupils:

'If I think of a number (x), multiply it by 4 ($4x$) and then add 6, ($+ 6$) the result is 26.

What is the number?'

Write ' $4x + 6 = 26$ ' on the chalkboard.

Ask, 'How can we remove the $+ 6$?' 'If we use $- 6$ on one side what do we do to the other side to keep a balance?'

Word problems

Pair task

Ask the pupils to write the equations needed to find the missing number (x) in the following [word problems](#) in their exercise books:

'I think of a number, multiply it by 3 and then add 5. The result is 35. What is the number?'

'I think of a number, multiply it by 7 and then add 10. The result is 45. What is the number?'

10
minutes

Word problems

Plenary

Whole class teaching

Read out the [word problems](#) one at a time.

Encourage the pairs to say what they have done and why.

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

Weekly page

Primary 5,
numeracy
lesson plans

Week 7:

Shapes

Words/phrases

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

straight
horizontal
vertical
oblique
equilateral triangle
isosceles triangle
right angle triangle
scalene triangle
properties
quadrilateral
right angle
degrees (°)
parallel lines
diagonals
bisect
parallelogram
rhombus
trapezium
kite
symmetrical
acute
obtuse

Learning expectations

By the end of the week:

All pupils will be able to:

Distinguish between vertical and horizontal lines.

Most pupils will be able to:

Identify different types of triangles by their properties.

Some pupils will be able to:

Identify the properties of a quadrilateral, including its lines of symmetry.

Assessment task

Example of a pupil's work

Instructions:

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

1

Draw two different triangles and name them.

2

Draw two quadrilateral shapes and write two of their properties underneath.

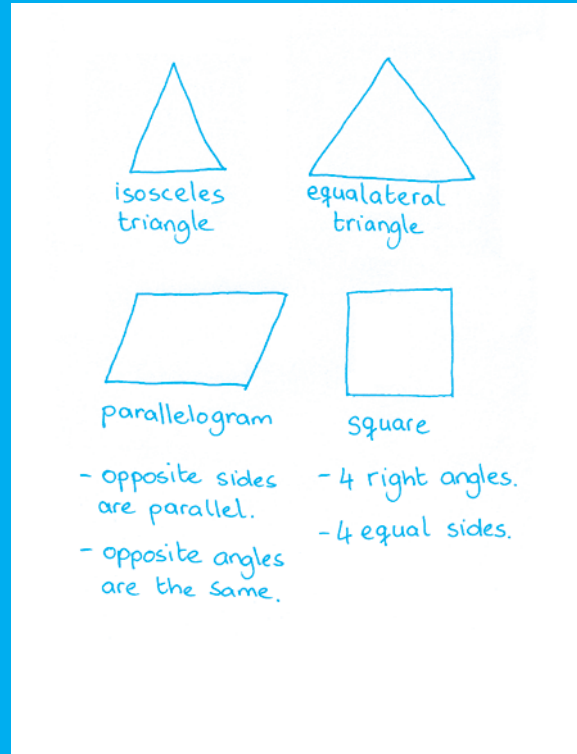
This pupil can:

Draw two different triangles.

Name two different triangles.

Draw two quadrilateral shapes.

Identify properties of two quadrilateral shapes.



Week 7: Shapes

Day 1: Vertical and horizontal lines

Learning outcomes

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

Write simple decimals
and fractions.

Understand vertical
and horizontal lines.

Preparation

Before the lesson:

Prepare **strips of paper** 30cm
long and have ready a real or card
ruler for each pair.

Draw the **fraction and decimal chart**,
shown right, on the chalkboard.

Read **How? Fraction strips**,
as shown below.

How? Fraction strips



Give each pair
a strip of paper
and a ruler.



Show the pupils how
to measure their
strip in 10 equal parts:
 $30\text{cm} \div 10 = 3\text{cm}$.



Tell them to fold
the strip into
10 equal parts.



Tell the pupils to
shade one part. Ask,
'What fraction have
you shaded?'



Choose some pupils
to fill in the fraction
and decimal chart on
the chalkboard.

15 minutes



Daily practice

Whole class teaching

Teach **How? Fraction strips**, as shown left.

Fraction and decimal chart

	fraction	tenths
1	$\frac{1}{10}$	0.1
2	$\frac{2}{10}$	0.2
10	$\frac{10}{10}$	

10 minutes

Rulers

Introduction

Pair task

Draw two points on the chalkboard and join them together using a **ruler**.

Explain to the class that a 'straight line' connects a distance between two points in the shortest way possible.

Ask the pairs to discuss where they can see straight lines in the classroom.

Choose some pairs to show some of the straight lines they have found.

25 minutes

Rulers

Main activity

Pair task

Remind the pupils that a 'horizontal' line is a line lying on a level surface, which goes from side to side.

Remind the pupils that a 'vertical' line goes straight up and down.

Explain that some lines are neither vertical nor horizontal. These lines slope or slant to one side and are called 'oblique'.

Tell the pairs to walk around the classroom and find examples of horizontal, vertical and oblique lines.

Ask them to share some of their examples.

10 minutes

Plenary

Pair task

Tell the pupils to draw a shape with straight lines in their exercise books.

Tell the pairs to exchange their books and ask their partner to label the lines of the shape.

Week 7: Shapes

Day 2: Triangles

Learning outcomes

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

Write fractions as decimals.

Identify different types of
triangles by their properties.

Preparation

Before the lesson:

Make a **set of triangles** for each group
(equilateral, right angle, isosceles
and scalene) and draw an example of
each triangle on the chalkboard.

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

Read **How? Properties of triangles**,
as shown below.

How? Properties of triangles



Look at different
triangles.



Look closely at this
triangle – all
the sides are the
same length.



Look closely at this
triangle – two
sides are always the
same length.



Look closely at
this triangle –
all sides are
different lengths.



Put the triangles on
top of each other.
Ask the pupils, 'How
are they different?'

10 minutes | Chart

Daily practice

Whole class teaching

Draw the **fraction and decimal chart**, shown below, on the chalkboard.

Choose some pupils to write 'eight tenths' and 'five tenths' as a fraction and a decimal in the chart:

$\frac{8}{10}$ and 0.8 and $\frac{5}{10}$ and 0.5

Ask if anyone can write 'one hundredth' as a fraction and a decimal.

Repeat with 'one tenth'.

Fraction and decimal chart

fraction	f	h
$\frac{1}{100}$	0.1	0.01

15 minutes | **How** | Triangles

Introduction

Group task

Give each group a set of **triangles**.

Ask the groups to discuss how the shapes are similar and how they are different.

Remind them that shapes with three sides are called 'triangles' and that the corners are called 'angles'.

Tell them to look carefully at the angles and sides of each triangle.

Tell them to put one triangle on top of another to see the differences.

Teach **How? Properties of triangles**, as shown left.

25 minutes | Triangles | Rulers

Main activity

Group task

Point to one of the triangles on the chalkboard and ask the pupils to hold up their matching **triangle**.

Ask, 'What can you tell me about this triangle?'

Write the name of the triangle underneath it and tell the pupils to write the name on their triangle.

Repeat with each triangle on the chalkboard.

Pair task

Point to two triangles on the chalkboard and ask, 'What is the difference between this triangle and that triangle?'

Choose some pairs to name the triangles and explain how they are different.

Give each of the pairs a **ruler** and ask them to draw and label two different types of triangles in their exercise books.

10 minutes | Triangles

Plenary

Whole class teaching

Show the class the **triangles** and choose some pupils to say their names.

Ask the pupils to tell a partner something they have learned about each type of triangle.

Week 7: Shapes

Day 3: Different types of triangles

Learning outcomes

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

Use $>$ and $<$ correctly
between decimal numbers.

Investigate the properties
of different triangles.

Preparation

Before the lesson:

Have ready a set of **triangles** for each
group (equilateral, isosceles, right angle
and scalene) and a **ruler** for each pair.

Write, 'equilateral', 'isosceles', 'right
angle' and 'scalene' on the chalkboard.

Practise **How? Investigating angles
in a triangle**, as shown below.

How? Investigating angles in a triangle



Explain that an
angle is made
when two straight
lines meet or
cross each other.



Explain that angles
are measured in
degrees ($^{\circ}$).



Ask a pupil to
look for an example
of a right angle
(90°) in a triangle.



Ask a pupil to look
for an acute angle
($< 90^{\circ}$) in a triangle.



Ask a pupil to look
for an obtuse
angle ($> 90^{\circ}$) in
a triangle.

15 minutes | Chart

Daily practice

Pair task

Draw a **place value chart** on the chalkboard and write '345.17' in it.

Choose some pupils to write the following in the chart:

78.34
560.01
200.07
0.98

Write '0.67' and '0.76' on the chart and ask, 'Is 0.67 more or less than 0.76?'

Write these pairs of numbers on the chalkboard:

0.80 0.09

0.34 0.88

0.60 0.34

Tell the pupils to use < and > to show which number is greater and which is smaller in their exercise books.

10 minutes | **How** | Triangles

Introduction

Whole class teaching

Hold up each **triangle** and ask the pupils if they can remember its name.

Write '180°' on the chalkboard and explain that the three angles of a triangle added together always equal 180°.

Remind the pupils they have looked for right angles in shapes before.

Explain that they are going to look for two new angles today 'acute' and 'obtuse'.

Teach **How? Investigating angles in a triangle**, as shown left.

25 minutes | Triangles

Main activity

Group task

Give each group a set of **triangles**.

Ask them to discuss the triangle where all the angles are the same (equilateral).

Ask them to discuss the triangle with a right angle, and point to the right angle.

Ask the groups to say two things they know about isosceles triangles.

Using their set of triangles, ask the groups to mark each of the angles.

10 minutes | Rulers

Plenary

Whole class teaching

Give each group some **rulers** and ask them to draw and label two triangles in their exercise books.

Week 7: Shapes

Day 4: Quadrilaterals

Learning outcomes

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

Identify place value in
decimal numbers.

List some of the properties
of quadrilaterals.

Preparation

Before the lesson:

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

Read **How? Quadrilaterals**,
as shown below.

How? Quadrilaterals



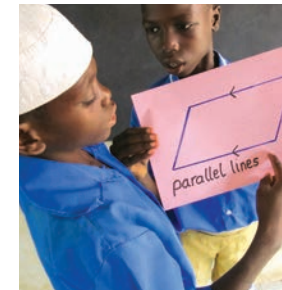
Ask the pupils to
name the shapes.



Say, 'These shapes
are all called quad-
rilaterals because
they have four sides'.
(‘quad’ means ‘four’)



Choose some
pupils to point
to any right angles
they can see
in the shapes.



Choose some
pupils to point to
any parallel lines
they can see
in the shapes.



Draw on the
diagonals. Explain
that they are
equal and ‘bisect’
(cross) each other.

15
minutes

Daily practice

Pair task

Write the following numbers on the chalkboard and choose some pupils to read them:

45.83

5.04

89.40

435.01

24.35

Ask the pairs to work out the place value of '4' in each of the numbers in their exercise books, using a place value chart.

Choose some pairs to share their answers and ask the class if they are correct.

Ask the pairs to say some decimal numbers for other pairs to write on the chalkboard.

15
minutes

How

Introduction

Whole class teaching

Teach **How? Quadrilaterals**, as shown left.

20
minutes

Main activity

Whole class teaching

Draw a rectangle on the chalkboard.

Ask:

'How many angles are there?' (4)

'What are the angles?' (right angles)

'How can you describe the sides?' (opposite sides are equal and parallel).

Shape cards

Group task

Give each group a set of large **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

Plenary

Whole class teaching

Ask each group to describe the properties of one of their shapes.

Ask the class if they can add to the group's list of properties.

Discuss as many shapes as you can.

Week 7: Shapes

Day 5: Symmetry

Learning outcomes

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

Double decimal numbers
using the grid method.

Find lines of symmetry
in quadrilaterals.

Preparation

Before the lesson:

Copy the [2D shapes chart](#), shown
opposite, on to the chalkboard, leaving
out the names of the shapes.

Have ready the [2D shape cards](#) from
Week 7, Day 4 (yesterday), a [large square](#),
and a [large piece of paper](#) for each group.

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

How? Make paper shapes



Draw around the
shape on the paper.



Check the shape
you have made
against the card-
board shape.



Lay the ruler along
the line and
tear the paper.



Carefully fold the
shape to find the
lines of symmetry.

15
minutes

Daily practice

Whole class teaching

Remind the pupils that to double decimal numbers they can use the grid method.

Demonstrate on the chalkboard:
 $23.42 \times 2 =$

Write the following numbers on the chalkboard:
23.34
43.04
31.09

Ask the pairs to use the grid method to double these numbers in their exercise books.

10
minutes

How

Flash cards/
Chart/Paper

Introduction

Group task

Give each group of pupils a **2D shape card**.

Ask them to match the shape with the **2D shape chart**.

Ask them to name the shape and explain two properties of that shape.

Give each group a **large piece of paper**.

Demonstrate **How? Make paper shapes**, as shown left.

20
minutes

2D shape

Main activity

Whole class teaching

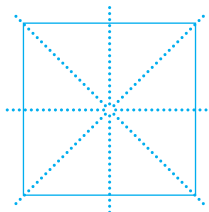
Remind the pupils that if a shape can be folded into equal parts it is 'symmetrical'.

Hold up the large **square** and fold it so that one half is completely on top of the other.

Open it and draw a line along your folding line. Repeat, folding the paper along different lines.

Explain that there are four 'lines of symmetry' in a square, as shown below.

Lines of symmetry



15
minutes

2D shapes

Plenary

Group task









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 until all the shapes have been discussed.

2D shapes chart

No	shape	name
1		square
2		rectangle
3		hexagon
4		triangle
5		parallelogram
6		trapezium
7		rhombus
8		kite

Weekly page

Primary 5, numeracy lesson plans

Week 8:

Statistics

Words/phrases

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

estimate
round
approximate
pictogram
table
key
symbol
bar graph
axes
vertical axis
horizontal axis
centimetres
scale
row
column

Learning expectations

By the end of the week:

All pupils will be able to:

Read information in a table and convert it into a pictogram.

Most pupils will be able to:

Read information in a table and convert it into a vertical or horizontal bar graph.

Some pupils will be able to:

Convert information to a scale of 1:10 or 1:100 and represent it on a bar graph.

Assessment task

Example of a pupil's work

Instructions:

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

1

Use the information below to draw a table with frequency and pictograms.

2

Draw a bar graph with the information below:

Number of official sport clubs per city

Ilorin 12

Kano 25

Kaduna 21

Enugu 8

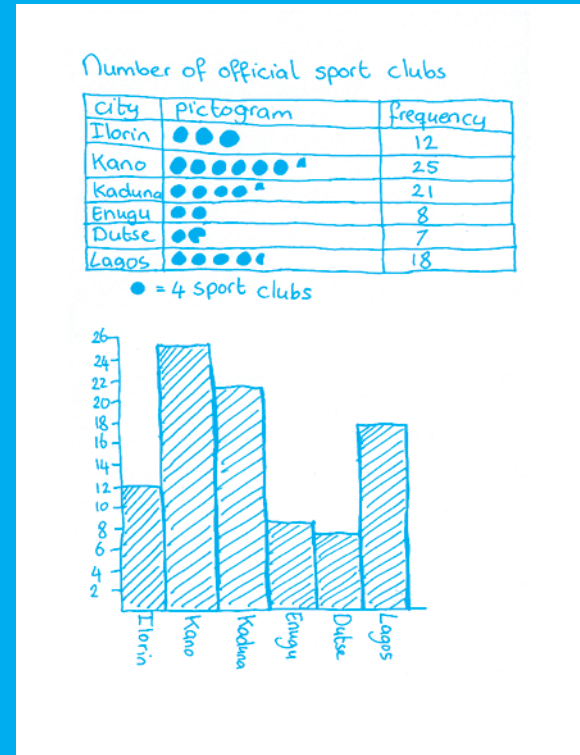
Dutse 7

Lagos 18

This pupil can:

Translate information into a pictogram table.

Draw a bar graph with the right scale.



Week 8: Statistics

Day 1: Pictograms

Learning outcomes

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

Round three-digit numbers
to the nearest Ten.

Represent information in
a simple pictogram.

Preparation

Before the lesson:

Draw a **pictogram** showing 8 bananas,
7 oranges, 4 pineapples and 5 mangoes
on the chalkboard, as shown below.

Copy the **table** from the main activity,
shown right, on to the chalkboard
and have ready a **large piece of paper**
for each pair.

Read **How? pictograms**, as shown below.

How? Pictograms



Look at the
pictogram.



Ask the pupils,
'What information
is shown?' (The
amount of fruit sold
on a stall.)



Explain that there
is not space to
show every single
fruit so each symbol
equals 10 fruits.



Ask the pupils,
'How many pine-
apples were sold?'



Ask, 'Which fruit
is the most popular?'

10
minutes

Daily practice

Whole class teaching

Remind the pupils that 'estimating' means finding a value that is close enough to the right answer (a good guess).

Remind them that 'rounding' numbers to the nearest Ten helps us to estimate.

Remind them how to round 367 to the nearest Ten (370).

Write the following numbers on the chalkboard and ask the pairs to round them to the nearest Ten in their exercise books:

628
734
518
406
718
923

10
minutes

How

Introduction

Whole class teaching

Teach **How? Pictograms**, as shown left.

Ask the pupils to answer the following the questions:

'How many pineapples and oranges are sold altogether?'

'What is the difference between the number of bananas that are sold and the number of pineapples sold?'

30
minutes

Table/
Paper

Main activity

Whole class teaching

Look at the **pupils and books table**, shown below.

Ask the pupils to discuss the information shown.

Ask, 'How many books does Yakub have?', 'Who has the most books?'

Give each pair a **piece of paper** and tell them that they are going to make a pictogram based on the **table**.

Tell the pupils to write the name of the pictogram and the key (one symbol will represent 10 books).

Pupils and books table

Pupils	Adamu	Yakub	Zainab	Alimot
Books	30	20	50	45

Pair task

Ask the pairs to draw a pictogram on their paper to represent the information in the table.

Ask the pupils to make up four questions about their pictogram.

10
minutes

Plenary

Whole class teaching

Choose some pairs to show their pictograms to the class.

Choose other pairs to ask questions about the pictograms.

Week 8: Statistics

Day 2: Making pictograms

Learning outcomes

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

Round three-digit numbers
to the nearest Hundred.

Read the information
in a table and convert it
into a pictogram.

Preparation

Before the lesson:

Have ready a set of **0—9 number
cards** for each group and a **large piece
of paper** for each pair.

Copy the **pupils in each class table**
from the introduction, shown right, on
to the chalkboard.

Read **How? Putting information
into a pictogram**, as shown below.

How? Putting information into a pictogram



Ask, 'What
information does
this table show?'



Choose a title for
your pictogram.



Decide on a symbol
you will use to
represent pupils.



Decide on the scale
each symbol will
represent. Explain
that this is a key.



Pictograms should
look like this.

15
minutes

0—9 number cards

Daily practice

Group task

Write '584' on the chalkboard and choose a pupil to round it to the nearest Hundred (600).

Tell the pupils to place the 0—9 number cards face down on their desks.

Tell them to turn over three cards and write down six three-digit numbers using those numbers in their exercise books.

Demonstrate how to order the numbers and round to the nearest Hundred.

Ask the pupils to round each number to the nearest Hundred and write it next to the number.

10
minutes

How

Table

Introduction

Whole class teaching

Tell the pupils to read the **pupils in each class table** on the chalkboard.

Show **How? Putting information into a pictogram**, as shown left.

Pupils in each class table

Class	1	2	3	4	5	6
Pupils	85	70	75	65	45	30

25
minutes

Paper

Main activity

Pair task

Give each pair a large **piece of paper**.

Tell the pupils to represent the information in the table in a pictogram.

Tell them to write the name of the pictogram at the top of the page.

Tell them they must decide on a symbol to represent 10 pupils.

Ask the pairs to make up some questions about their pictogram.

10
minutes

Plenary

Whole class teaching

Choose some pairs to show their pictograms to the class.

Choose some other pairs to ask questions about the pictograms.

Week 8: Statistics

Day 3: Vertical bar graphs

Learning outcomes

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

Round whole numbers
and decimals up to two
decimal places.

Represent information in
a vertical bar graph.

Preparation

Before the lesson:

Have ready a set of **0—9 number
cards** for each group.

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

Copy the **number of birthdays graph**,
shown opposite, on to the chalkboard.

Read **How? Vertical bar graph**,
as shown below.

How? Vertical bar graph



Ask, 'What
information does
this graph show?'



Give the graph
a title.



Decide on the scale
you will use,
eg: 5cm = 1 birthday.



Measure each
column and shade
them in.



The graph should
look like this.

15 minutes

0—9 number cards

Daily practice

Group task

Explain to the pupils that they are going to round decimal numbers.

Ask the groups to make a decimal number with three of their 0—9 number cards, eg: 4, 6 and 9 can be made into 4.69.

Tell them to write their decimal number in their exercise books and then round it to the nearest tenth and the nearest whole number, eg:
4.69
4.70 (nearest tenth)
5 (nearest whole number)

15 minutes

Graph

Introduction

Whole class teaching

Explain that a 'graph' is another way to show information.

Tell the class that the lines on a graph are called 'axes' (axis in the singular).

Look at the **number of birthdays graph**.

Explain that in this graph the horizontal axis shows the months and the vertical axis shows the number of birthdays.

20 minutes

How

Main activity

Whole class teaching

Teach **How? Vertical bar graph**, as shown left.

Rulers

Pair task

Tell the pairs they are going to draw the graph in their exercise books.

Tell them to use a 1cm scale for the axes with a **ruler**.

Tell them to label the horizontal and vertical axes.

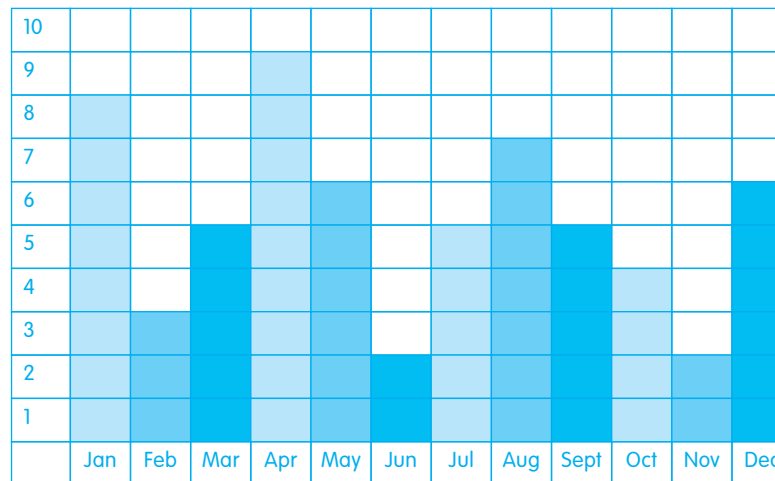
10 minutes

Plenary

Pair task

Choose some pairs to say two facts about their bar graphs.

Number of birthdays graph



Week 8: Statistics

Day 4: Horizontal bar graphs

Learning outcomes

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

Use rounding to estimate
calculations.

Make a bar graph from
a table of results.

Preparation

Before the lesson:

Copy the [English premier league table 2014](#) and [horizontal bar graph](#),
from the main activity, shown right,
on the chalkboard.

Have ready a [large piece of paper](#)
and [rulers](#) for each group.

Read [How? Horizontal bar graph](#),
as shown below.

How? Horizontal bar graph



Teams	Games won
Chelsea	12
Arsenal	9
Manchester City	7
Liverpool	5
Tottenham	3
Man United	12
Everton	12
Newcastle	12

Ask, 'What
information does
this table show?'



Teams	
Chelsea	
Arsenal	
Man City	
Liverpool	
Tottenham	
Man United	
Everton	
Newcastle	

Tell the pupils they
are going to make
a horizontal bar
graph. First, give the
graph a title.



Next, decide on the
scale you will use eg:
1cm = one goal.



Measure each row
and shade it in.



The graph should
look like this.

10
minutes

Daily practice

Whole class teaching

Explain to the pupils that they are going to estimate by rounding.

Demonstrate with $38 + 42 =$ on the chalkboard. This can be estimated as $40 + 40 = 80$.

Write the following calculations on the chalkboard and ask the pupils to round each number to the nearest Ten and write their estimate in their exercise books:

- $42 + 55 =$
- $63 - 28 =$
- $98 - 27 =$
- $83 + 47 =$
- $555 + 123 =$

10
minutes

How

Introduction

Pair task

Explain that the bars in bar charts can be drawn horizontally or vertically.

Ask the pupils to find examples of horizontal and vertical bar charts in textbooks.

Teach **How? Horizontal bar graph**, as shown left.

30
minutes

Paper/Rulers/
Table

Main activity

Group task

Give each group a **large piece of paper** and a **ruler**.

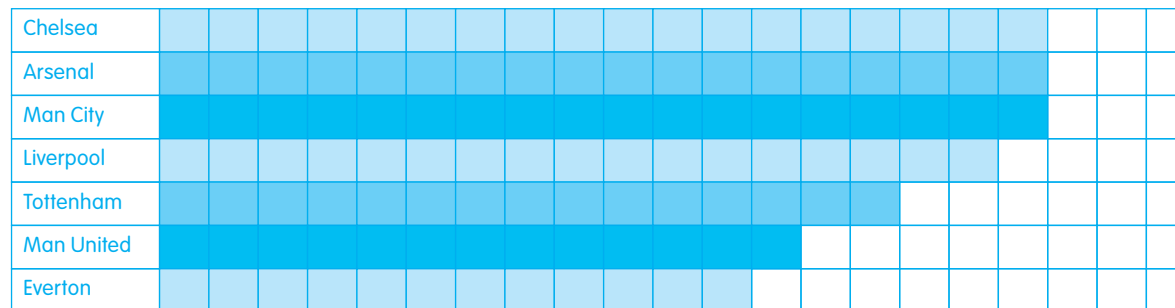
Tell them to make their own bar graphs for the results in the **English premier league table**.

Tell them to work together to draw and label the axes and take turns shading the bars.

English premier league table 2014

Team	Chelsea	Arsenal	Man City	Liverpool	Tottenham	Man United	Everton
Games	18	18	18	17	15	13	12

Horizontal bar graph



10
minutes

Plenary

Whole class teaching

Ask one or two groups to show their bar graph and say two facts about it.

Week 8: Statistics

Day 5: Reading bar graphs

Learning outcomes

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

Round numbers to
the nearest hundredth
and tenth.

Read and interpret
bar charts.

Preparation

Before the lesson:

Copy the [library table](#) from the main
activity, shown right, on to the chalkboard.

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

Read [How? Converting a table to a bar
graph](#), as shown below.

How? Converting a table to a bar graph



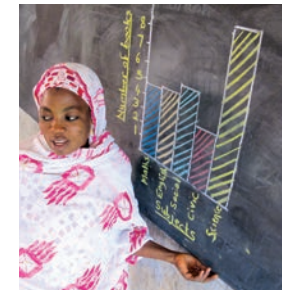
Round the numbers
on the table.



Decide on the scale
you will use.



Measure the column
and rows and
shade in the graph.



The final graph
should look like this.

10
minutes

Daily practice

Pair task

Write the following numbers on the chalkboard:

8.94
15.36
3.24
71.55

Choose some pairs to round each number to the nearest hundredth and tenth and ask the class if they are correct.

15
minutes

How

Table

Introduction

Whole class teaching

Tell the pupils that bar graphs help us to read information more quickly than a table.

Teach **How? Converting a table to a bar graph**, as shown left.

Discuss what information the **library table** shows about the books in stock.

Tell the pupils that the head teacher needs to know the approximate number of books for each subject.

Explain that to find the approximate number we need to estimate and write in the table.

25
minutes

Rulers/Paper/
Table

Main activity

Pair task

Give each pair a **ruler** and a **piece of paper**. Tell them they are going to draw their own graph based on the **library table**.

Tell the pairs they need to find a scale to fit on their piece of paper.

Tell them to discuss how many cm they will need if they use a scale of 1cm = 100 and 1cm = 50.

Tell them to measure, draw and fill in the graph carefully and then shade it in.

Library table

Subject	Maths	English	Social studies	Civic education	Science
Number of books	465	479	527	383	892
Rounding estimate	470	480	530	380	890
Scale: 1cm = 100 books	4.7cm	4.8cm	5.3cm	3.8cm	8.9cm

10
minutes

Plenary

Whole class teaching

Choose some pairs to read and explain their graphs.

Ask some pupils to explain the meaning of key, pictogram, vertical axis and horizontal axis.

Weekly page

Primary 5, numeracy lesson plans

Week 9:

Addition

Words/phrases

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

digits
vertical
expand
three-digit numbers
zero
shorter method
carrying
carried over
Tens boundary
Hundreds boundary
grid method

Learning expectations

By the end of the week:

All pupils will be able to:
Add three-digit numbers using the vertical method.

Most pupils will be able to:
Use the carrying method to add three-digit numbers that cross the Tens and Hundreds boundaries.

Some pupils will be able to:
Use the short method to solve problems involving three-digit numbers.

Assessment task

Example of a pupil's work

Instructions:

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

1

Solve these calculations, using the short method:

$$236 + 153 =$$

$$749 + 123 =$$

$$684 + 257 =$$

This pupil can:

Use the short method for adding three-digit numbers.

Use the short method for adding three-digit numbers, including carrying across the Tens.

Use the short method for adding three-digit numbers, including carrying across the Hundreds.

Handwritten student work showing three addition problems solved using the short method:

$$\begin{array}{r} 236 + 153 = \\ \text{HTU} \\ 236 \\ + 153 \\ \hline 389 \end{array}$$
$$\begin{array}{r} 749 + 123 = \\ \text{HTU} \\ 749 \\ + 123 \\ \hline 972 \\ \hline 1 \end{array}$$
$$\begin{array}{r} 684 + 257 = \\ \text{HTU} \\ 684 \\ + 257 \\ \hline 941 \\ \hline 11 \end{array}$$

Week 9: Addition

Day 1: Addition with three numbers

Learning outcomes

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

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

Add three numbers using
the vertical method.

Preparation

Before the lesson:

Write the [word problem](#) from the
plenary, shown right, on the chalkboard.

Read [How? Vertical addition](#), as
shown below.

How? Vertical addition



Write the place
values. Set out
the calculation
vertically.



Remind the pupils
to write the answers
in the correct place.



Add the Units.
Add the Tens.
Add the Hundreds.



Ask the pupils
to say the numbers
clearly as
you write them.



Add the totals
together.

15
minutes

Daily practice

Whole class teaching

Ask the pupils to say the 10 times table.

Ask, 'What happens when a number is multiplied by 10?' (the digits move one place to the left, they are 10 times bigger).

Ask the pupils to help you solve these sums on the chalkboard:

$$2341 \times 10 = 23410$$
$$31.4 \times 10 = 314$$

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

$$80 \times 10 =$$
$$58 \times 1 =$$
$$700 \times 10 =$$
$$567 \times 10 =$$

10
minutes

Introduction

Whole class teaching

Write '235 + 284 =' on the chalkboard and ask the class to explain a method to calculate this (number line, expanded method, vertical method).

Write the following on the chalkboard and invite a pupil to demonstrate a method to solve it:
 $376 + 435 =$

25
minutes

How

Main activity

Whole class teaching

Tell the pupils that they can use the vertical method to add three numbers.

Demonstrate **How? Vertical addition**, as shown left.

Group task

Write the following sums on the chalkboard and ask the pupils to complete them in their exercise books using the vertical method:
 $238 + 455 + 198 =$
 $367 + 377 + 200 =$
 $555 + 296 + 81 =$

Choose one group to explain how they worked out one of the calculations on the chalkboard.

10
minutes

Word problem

Plenary

Whole class teaching

Read the **word problem** on the chalkboard:
'A salesman travelled 375km in January, 247km in February and 81km in March. How many kilometres did he travel in the three months?'

Ask the pupils, 'What calculation do I need to do to solve this problem?'

Choose some pupils to help you write the calculation and work it out using the vertical method.

Week 9: Addition

Day 2: Addition

Learning outcomes

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

Multiply two- and three-
digit decimal numbers
by 100.

Use vertical method to
add three-digit numbers.

Preparation

Before the lesson:

Write the [word problem](#) from the plenary,
shown right, on the chalkboard.

Read [How? Adding three digit numbers](#),
as shown below.

How? Adding three-digit numbers



Set the calculation
out vertically and
write the place values
above each digit.



Add the Units.



Add the Tens.



Add the Hundreds.



Add the total of
each sum.

15
minutes

Daily practice

Whole class teaching

Ask the pupils what happens when we multiply numbers by 100 (the digits move two places to the left, they are 100 times bigger).

On the chalkboard, demonstrate:
 $203.5 \times 100 = 20350$

Ask, 'What has happened to the 0.5?', 'What has happened to the 203?'

Write the following sums on the chalkboard and ask the pairs to complete them in their exercise books:

$$632 \times 100 =$$
$$504 \times 100 =$$
$$657.2 \times 100 =$$
$$670.9 \times 100 =$$

10
minutes

How

Introduction

Whole class teaching

Remind the pupils that they have been adding numbers using the vertical method.

Teach **How? Adding three-digit numbers**, as shown left.

Repeat with $764 + 135 =$

Ask some pupils to come and help you work out each step.

25
minutes

Main activity

Pair task

Write the following calculations on the chalkboard:

$$383 + 136 =$$
$$518 + 123 =$$
$$553 + 328 =$$
$$424 + 367 =$$

Ask the pairs to complete them in their exercise books using the shorter method.

10
minutes

Word problem

Plenary

Whole class teaching

Read the **word problem** on the chalkboard: 'A baker sold 360 loaves of bread in July, 350 loaves in August and 275 loaves in September. How many loaves of bread did he sell in the three months?'

Ask the pupils, 'What calculation do I need to do to solve this problem?'

Choose some pupils to help you write the calculation and work it out using the vertical method for addition.

Week 9: Addition

Day 3: Carrying across the Tens

Learning outcomes

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

Multiply numbers ending
in zero.

Add three-digit numbers.

Preparation

Before the lesson:

Write the [word problem](#) from the
plenary, shown right, on the chalkboard.

Read [How? A shorter method for addition](#)
from Week 9, Day 2 (yesterday).

Read [How? Carrying across the Tens
method](#), as shown below.

How? Carrying across the Tens method



Write the calculation
vertically using
place value.



Expand the numbers.



Add the Units.
Say, '13 is one Ten
and three Units so
we carry the Ten
into the Tens column.'



Add the Tens.
Add the Hundreds.



Add the totals
together to find
the answer.

10
minutes

Daily practice

Whole class teaching

Remind the pupils that when multiplying by 10 a number will become 10 times bigger.

Explain that when multiplying two Ten numbers they will become 100 times bigger.

Write '70 x 30 =' on the chalkboard.

Remind the pupils to use what they know about multiplication patterns:

$$\begin{aligned}7 \times 3 &= 21 \\7 \times 30 &= 210 \\70 \times 3 &= 210 \\70 \times 30 &= 2100\end{aligned}$$

10
minutes

How

Introduction

Whole class teaching

Explain to the pupils that you are going to teach them a shorter method called 'carrying'.

Demonstrate **How?**
Carrying across the Tens method, as shown left.

Write '438 + 216 =' on the chalkboard.

Choose a pupil to help you calculate the answer using the short method.

30
minutes

Main activity

Pair task

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

$$\begin{aligned}135 + 227 &= \\646 + 136 &= \\508 + 143 &= \\657 + 24 &= \\309 + 409 &= \end{aligned}$$

Remind the pupils to use the carrying across the Tens method.

Choose some pairs to explain how they worked out two of the calculations.

10
minutes

Word problem

Plenary

Whole class teaching

Read the **word problem** on the chalkboard:
'A science textbook has 185 pages and a mathematics textbook has 405 pages. How many pages do the two textbooks have altogether?'

Ask the pupils, 'What calculation do I need to do to solve this problem?'

Choose some pupils to help you write the calculation and work it out.

Week 9: Addition

Day 4: Carrying across the Hundreds

Learning outcomes

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

Multiply three single-
digit numbers.

Use the carrying method
to add three-digit
numbers that cross the
Hundreds boundary.

Preparation

Before the lesson:

Write the [word problem](#) from the
plenary, shown right, on the chalkboard.

Read [How? Carrying across the Tens
method](#) from Week 9, Day 3 (yesterday).

Make a set of 11 [blank cards](#) for groups.

Read [How? Multiplication card game](#),
as shown below.

How? Multiplication card game



Group the pupils
into threes and
give each group 11
blank cards.



Tell them to write
the numbers 1—9
and two multi-
plication symbols
(x) on the cards.



Tell the groups to
shuffle their cards.



Tell the pupils to turn
over a card each.



Tell the pupils to use
the multiplication
cards to multiply their
numbers.

15
minutes

How



Daily practice

Whole class teaching

Write '3 x 5 x 6 =' on the chalkboard and ask if anyone can work out the answer.

Explain that they need to multiply two of the numbers first:

$$(3 \times 5) \times 6 =$$
$$15 \times 6 =$$

Demonstrate solving this using the grid method.

Tell the pupils to use their times table knowledge.

Demonstrate [How? Multiplication card game](#), as shown left.

10
minutes

Introduction

Whole class teaching

Remind the pupils that they have learned a new method for adding three-digit numbers called 'carrying'.

Ask them to help you calculate $709 + 235 =$ on the chalkboard.

Remind them to explain what they are doing.

Repeat with $655 + 238 =$

25
minutes

Main activity

Whole class teaching

Remind the pupils that in solving these calculations they have carried over the Tens boundary.

Tell them that they can also use this method to carry over the Hundreds boundary.

Demonstrate with the following calculation:
 $135 + 273 =$

Pair task

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

$$646 + 192 =$$

$$588 + 180 =$$

$$677 + 80 =$$

$$399 + 490 =$$

Remind the pupils to use the carrying method.

Choose some pairs to explain how they worked out two of the calculations.

10
minutes

Word problem

Plenary

Whole class teaching

Read the [word problem](#) on the chalkboard:
'In a school there are 360 boys and 255 girls. How many pupils are there altogether?'

Ask the pupils, 'What calculation do I need to do to solve this problem?'

Choose some pupils to help you write the calculation and work it out using the carrying method.

Week 9: Addition

Day 5: Adding three- digit numbers

Learning outcomes

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

Multiply three single-
digit numbers.

Use the carrying method
to add three-digit numbers
that cross the Tens and
Hundreds boundaries.

Preparation

Before the lesson:

Write the [word problems](#) from
the main activity, shown right, on
the chalkboard.

Read [How? Shorter methods
for adding three-digit numbers](#),
as shown below.

How? Shorter methods for adding three- digit numbers



Write the sum
vertically using
place value.



Expand the numbers.



Add the Units.
Add the Tens.
Add the Hundreds.



With 12, carry the 10
into the Tens column.
With 160, carry
the 100 into the
Hundreds column.



Add the totals
together to find the
answer.

15
minutes

Daily practice

Whole class teaching

Write ' $2 \times 4 \times 3 =$ ' on the chalkboard.

Ask the pupils to help you work this out:

$$(2 \times 4) \times 3 =$$
$$8 \times 3 = 24$$

Remind the pupils that with larger numbers they can use the grid method.

Ask the pairs to choose any three numbers from 1—6 and multiply them, eg: $3 \times 4 \times 6 =$

Choose some pairs to show how they worked out their sums on the chalkboard.

10
minutes

How

Introduction

Whole class teaching

Remind the class that they have learned to carry numbers that cross the Tens and the Hundreds boundary.

Explain that in some calculations they will need to carry numbers across both boundaries.

Demonstrate **How? Shorter methods for adding three-digit numbers**, as shown left.

Repeat with $785 + 166 =$

When the pupils are confident, they can omit the expanding numbers step.

25
minutes

Word problem

Main activity

Pair task

Read and explain the following **word problems** on the chalkboard:

'Adamu sold 288 yams in January and 375 yams in February.

How many yams did he sell altogether?'

'Lami reads 387 pages in May and 429 pages in June. How many pages does she read altogether?'

'Talatu travels 187km one day and 296km the next day. How many kilometres does she travel altogether?'

'Zakira invites 198 guests to the party and Idris invites 276 guests. How many guests are invited altogether?'

10
minutes

Plenary

Whole class teaching

Choose two pairs to demonstrate how they worked out two of the word problems on the chalkboard.

Weekly page

Primary 5, numeracy lesson plans

Week 10:

Subtraction

Words/phrases

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

division
divide
share
groups
sets
expand
rename
hundred thousand
subtract
minus
difference
take away
less
place value
digit

Learning expectations

By the end of the week:

All pupils will be able to:
Begin to subtract
two-digit numbers with
renaming.

Most pupils will be able to:
Use the short method
of subtraction.

Some pupils will be able to:
Use the short method
of subtraction to solve
word problems.

Assessment task

Example of a pupil's work

Instructions:

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

1

Solve these calculations using the short method for subtraction:

$$521 - 372 =$$

$$802 - 542 =$$

2

Solve this word problem:

340 people went to a naming ceremony. 160 were male. How many were female?

This pupil can:

Use the short method of subtraction.

Use the short method for subtraction to solve word problems.

$$521 - 372 =$$

$$\begin{array}{r} \text{HTU} \\ 4821 \\ - 372 \\ \hline 149 \end{array}$$

$$521 - 372 = 149$$

$$340 - 160 =$$

$$\begin{array}{r} \text{HTU} \\ 2340 \\ - 160 \\ \hline 180 \end{array}$$

There were 180 female guests at the naming ceremony

Week 10: Subtraction

Day 1: Renaming three- digit numbers

Learning outcomes

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

Use times tables to solve
division sums.

Rename three-digit
numbers.

Preparation

Before the lesson:

Read the instructions for the [Titanic game](#) from Week 4, Day 3.

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

Read [How? Renaming Tens and Hundreds](#),
as shown below.

How? Renaming Tens and Hundreds



Give the groups
the 0—9 number
cards and ask them
to make three-
digit numbers.



Tell the pupils
to record the
numbers in their
exercise books.



Tell them to expand
each number, then
rename the Ten
and the Hundred.



Ask them to set their
work out like this.



Help the pupils to
expand and rename
numbers in their
exercise books.

10
minutes

Daily practice

Whole class teaching

Write the division sign (\div) on the chalkboard and ask the pupils to say what it means, ie: divide, share, get into groups, make sets of.

Write ' $30 \div 6 =$ ' on the chalkboard and ask the pupils how they can work it out.

Remind them to use their times tables and inverse sums:
 $6 \times 5 = 30$, so
 $30 \div 6 = 5$

Write the following division calculations on the chalkboard and discuss how to work them out:
 $42 \div 6 =$
 $27 \div 3 =$
 $35 \div 7 =$

10
minutes

Introduction

Whole class teaching

Write '781' on the chalkboard and ask the pupils to help you expand it.

Ask the class if they can remember how to rename the Tens digit, eg:
 $700 + 80 + 1$ is the same as
 $700 + 70 + 11$

Ask the pupils to help you expand and rename the Tens digit in the following numbers:
674
982
560

30
minutes

Main activity

Whole class teaching

Explain that it is also possible to rename the Hundreds digit.

Demonstrate on the chalkboard with 643:
 $643 = 600 + 40 + 3$
rename the Ten:
 $600 + 30 + 13$
rename the Hundred:
 $500 + 130 + 13$

Repeat with:
 $581 = 500 + 80 + 1$
 $500 + 70 + 11$
 $400 + 170 + 11$

How

10
minutes

Titanic game

Plenary

Whole class teaching

Play the [Titanic game](#).

When the pupils become practised at this game they could take turns to give the instructions.

Week 10: Subtraction

Day 2: Renaming the Tens digit

Learning outcomes

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

Read whole numbers
up to 999999.

Subtract three-digit
numbers, renaming the
Hundreds.

Preparation

Before the lesson:

Make a set of 1—6 number cards
for each group.

Make a set of subtraction quiz cards
from the introduction, shown right.

Read [How? Subtraction quiz](#), as
shown below.

How? Subtraction quiz



Give each group
a numbered
quiz card.



Give the groups
3 minutes to
read and answer
the question on
their card.



When the groups
are ready they
should give their card
to another group.



Go through the
answers with pupils.

10
minutes

1—6 number cards

Daily practice

Whole class teaching

Write '84726' on the chalkboard and ask the pupils to count the digits.

Write the place value above each digit.

Write '384672' and ask the pupils to count the digits.

Write 'HTH' above the sixth digit and explain that this is called a 'Hundred thousand'. Read the number together.

Give each group a set of 1—6 number cards and ask them to make a six-digit number with them.

Choose some groups to hold up their cards and read out the number.

10
minutes

How

Quiz cards

Introduction

Group task

Teach **How? Subtraction quiz**, as shown left, copying the following questions on to **quiz cards**:

Which two numbers have a difference of 71?
1 6 7 78

Which two numbers complete this sum?

minus = 60

Which two numbers have a difference of 3?
3 4 6 9

Which two numbers complete this sum?

subtract = 28
35 6 5 7

30
minutes

Main activity

Whole class teaching

Remind the pupils that they can expand numbers and rename digits to subtract numbers.

Demonstrate the following calculation on the chalkboard:

	H	T	U	
	8	3	1	(800 + 30 + 1)
=				(700 + 120 + 11)
-	5	2	7	(500 + 20 + 7)
=				(500 + 20 + 7)

Explain to the pupils that if it is not possible to subtract a number, they must rename the next place value digit.

Individual task

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

839 - 572 =
606 - 483 =
827 - 455 =
683 - 391 =
777 - 392 =
505 - 233 =
864 - 482 =

Remind the pupils to expand and rename the numbers if needed.

10
minutes

Plenary

Whole class teaching

Choose some pupils to come and explain their work on the chalkboard.

Week 10: Subtraction

Day 3: Shorter method for renaming the Tens

Learning outcomes

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

Divide numbers ending with
zero by 10 and 100.

Use the short method
for subtraction, renaming
the Tens digit.

Preparation

Before the lesson:

Write the [subtraction calculations](#)
from the main activity, shown right,
on the chalkboard.

Read [How? Shorter method for
subtracting three-digit numbers](#),
as shown below.

How? Shorter method for subtracting three-digit numbers



Identify what needs
renaming. Ask,
'What digits do
we have to rename
in this sum?'



Rename the Tens:
4 Tens 2 Units
becomes 3 Tens
12 Units.



There may be
more than one
renaming.



Rename the
Hundreds.



Explain again with
a different sum,
asking the pupils
to help.

15
minutes

Daily practice

Whole class teaching

Write '600000' on the chalkboard and ask the pupils to say it with you (six hundred thousand).

Ask if anyone can remember what happens to the digits in a number when it is divided by 10 (they move one place to the right).

Ask the pupils to help you solve these sums on the chalkboard:

$$\begin{aligned}600000 \div 10 &= \\60000 \div 10 &= \\6000 \div 10 &= \\600 \div 10 &= \\60 \div 10 &= \end{aligned}$$

10
minutes

How

Introduction

Whole class teaching

Choose some pupils to help you calculate $782 - 356 =$ on the chalkboard.

Ask them which digit they need to rename (the Tens because it is not possible to subtract 6 Units from 2 Units).

Explain to the pupils that you are going to teach them a shorter method to record renaming.

Remind them that they have been recording all the steps showing expanding and renaming numbers.

Teach [How? Shorter method for subtracting three-digit numbers](#), as shown left.

25
minutes

Calculations

Main activity

Pair task

Ask the pupils to complete the following [subtraction calculations](#) in their exercise books:

$$\begin{aligned}542 - 238 &= \\736 - 319 &= \\860 - 447 &= \\673 - 466 &= \\810 - 406 &= \end{aligned}$$

10
minutes

Plenary

Whole class teaching

Go through the answers together as a class.

Ask some pupils to explain to the class how they worked out some of the calculations.

Week 10: Subtraction

Day 4: Shorter method for renaming the Hundreds

Learning outcomes

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

Divide six-digit numbers
ending in zero by 10.

Use the short method
for subtraction, renaming
the Hundreds digit.

Preparation

Before the lesson:

Have ready a set of **0—5 number cards** for each group, and a **decimal point card**.

Read **How? Shorter method for subtracting three-digit numbers** from Week 10, Day 3 (yesterday).

Read **How? Dividing by 100**, as shown below.

How? Dividing by 100



Give number cards to each group and ask them to make the biggest number they can.



Write the number on the chalkboard.



Choose a pupil to say the number.



Remind the pupils what happens when we divide by 10.



Choose a pupil to write the answer on the chalkboard and say it.

15
minutes

How

Daily practice

Whole class teaching

Remind the pupils that when a number is divided by 10, the digits become one place value smaller, moving one place to the right.

Teach [How? Dividing by 100](#), as shown left.

15
minutes

Introduction

Whole class teaching

Remind the class that they have learned a shorter method to subtract.

Write ' $643 - 527 =$ ' on the chalkboard and choose some pupils to help you solve it.

Ask the pupils which digit they need to rename.

Choose some pupils to cross out the Tens digit and write in the re-named number.

Ask another pupil to carry over the Ten and write it in.

Choose some pupils to complete the sum.

Repeat with $510 - 206 =$

20
minutes

Main activity

Whole class teaching

Write these calculations on the chalkboard:

$$827 - 453 =$$

$$777 - 580 =$$

$$608 - 453 =$$

$$623 - 381 =$$

$$844 - 672 =$$

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

Explain that they will need to rename the Hundreds digit.

10
minutes

0—5 number cards/
Decimal point card

Plenary

Whole class teaching

Ask a group of six pupils to the front of the class with their [0—5 number cards](#).

Tell them to stand in a line to make a six-digit number ending in zero, holding their cards high.

Choose a pupil to say what the number will be when it is divided by Ten, and put the [decimal point number card](#) in the correct place.

Ask, 'What number do we have now?'

Repeat with different groups.

Week 10: Subtraction

Day 5: Word problems

Learning outcomes

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

Divide six-digit numbers
ending in zero by 100.

Use the shorter method
of subtraction to solve
word problems.

Preparation

Before the lesson:

Have ready a set of **0—5 number cards**
for each group.

Write the **word problems** from
the main activity, shown right, on the
chalkboard.

Read **How? Solving word problems**,
as shown below.

How? Solving word problems



Choose a pupil
to read out a word
problem.



Ask the groups
to discuss the key
information.



Ask a pupil to
underline the key
information.



Choose a pupil to
write the calculation
needed.



Ask a pupil to answer
the calculation.

15
minutes

0—5 number cards

10
minutes

How

25
minutes

Word problems

10
minutes

Daily practice

Introduction

Main activity

Plenary

Group task

Write '531240 ÷ 10 =' on the chalkboard.

Ask, 'What do we do when we divide this number by 10?'

Write '531240 ÷ 100 =' on the chalkboard.

Ask, 'What do we do when we divide by 100?'

Give each group a set of 0—5 number cards and ask them to make three six-digit numbers ending in zero.

Tell them to write the numbers in their exercise books and divide each number by 100 and write the answer.

Whole class teaching

Remind the class that they have been learning to subtract using the short method.

Write the following subtraction calculations on the chalkboard:

$$\begin{array}{r} \text{H T U} \\ 780 \\ - 559 \\ \hline \end{array}$$

$$\begin{array}{r} \text{H T U} \\ 833 \\ - 629 \\ \hline \end{array}$$

Ask the pupils to look at each calculation and say which number they will have to rename in order to subtract.

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

Pair task

Choose some pupils to read and explain the following [word problems](#):

'Talatu has picked 347 oranges. Zakari has picked 271 oranges. How many more oranges has Talatu picked?'

'560 people went to a wedding. 270 were children. How many were adults?'

Tell the pairs to complete the calculations in their exercise books, using the short method for subtraction.

Whole class teaching

Choose some pairs to explain how they worked out the problems on the chalkboard.

Ask the other pairs to check that they are correct.

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.

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These numeracy lesson plans belong to:



Kano State Government

Produced with the support of

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Education Sector
Support Programme
in Nigeria



UKaid

from the Department for
International Development