Numeracy lesson plans
Primary 5, term 1, weeks 6—10
Exploring shape, finding lines of symmetry and graphs

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Introduction

Good teaching can help learners achieve positive outcomes, even in difficult circumstances. But learners have little chance of making progress where the teaching is poor.

Throughout 2010 in Kaduna State, the Ministry of Education carried out baseline surveys to assess classroom teachers, headteachers and pupil learning outcomes. Sadly, the findings were alarmingly poor. It was clear that despite substantial inputs into education, the majority of teachers were themselves victims of an education system that was in a serious downward spiral.

Following this research, the State Ministry of Education, the State Universal Basic Education Board and local government education authorities, supported by the Education Sector Support Programme in Nigeria (ESSPIN), embarked on a series of reforms to strengthen schools.

To improve the teaching of basic literacy and numeracy in primary schools, Kaduna is introducing a carefully designed series of literacy and numeracy lesson plans for primary 1—5 teachers. These provide a step-by-step guide to teachers, while ensuring that teaching and learning become more exciting and children become active learners.

Alongside the lesson plans, structures and processes have been put in place so that teachers are continuously supported by the State School Improvement Team and specially-trained school support officers.

I am confident that these lesson plans will raise standards in our schools. I commend all those who have worked hard to produce these plans and train our teachers to use them, and I offer thanks to the UK Department for International Development (DFID) for its ongoing support for education reform in Kaduna State through its ESSPIN programme.

Professor Andrew Jonathan Nok
DSc, PhD, OON, FAS, NNOM
Honourable Commissioner of Education, Science and Technology, Kaduna 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

Week 6:

Primary 5, numeracy lesson plans

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.

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:
$6x + 10 = 46$

3
Solve this word problem:
I think of a number, multiply it by 4 and then add 7. The result is 23. What is the number?

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.

Daily practice	**Introduction**	**Main activity**		**Plenary**

Whole class teaching

Play multiplication bingo using the 9 times table.

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.

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:

$8 + \boxed{} = 10$

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:

$12 + \boxed{} = 17$

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:

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

$12 + \boxed{} = 20$

$8 + \boxed{} = 17$

$45 + \boxed{} = 50$

$6 + \boxed{} = 18$

$58 + \boxed{} = 64$

$60 + \boxed{} = 100$

Whole class teaching

Play the buzz game with the 7 and 9 times tables.

Week 6: Algebra

Day 2: Equations

Learning outcomes

Preparation

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

Find factors of numbers.

Find the missing number in an equation.

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: factor x factor = product.

Use the square for division: product ÷ factor = factor.

Use it to find factors for a product.

Explain to the pupils that multiplication is the inverse of division.

10 minutes | 30 minutes | 10 minutes

Daily practice

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 x 10, 10 x 2, 4 x 5, 5 x 4).

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

Introduction

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.

Main activity

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.

Plenary

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

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

Find factors of numbers.

Find the value of x.

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 multiplying 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 $-$) (x and $\div$).

| **Daily practice** | **Introduction** | **Main activity** | **Plenary** |

Daily practice

Whole class teaching

Look at the multiplication square for factors of 18 (9 x 2 and 2 x 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 x 2 = 18, so
18 ÷ 2 = 9

9 x 3 = 27, so
27 ÷ 3 = 9

9 x 4 = 36, so
36 ÷ 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 x 2 = 16, so
16 ÷ ☐ = 8

8 x 3 = ☐, so
24 ÷ ☐ = 8

8 x 4 = ☐, so
☐ ÷ ☐ = ☐

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.

Main activity

Pair task

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

If $x = 7$, then
$3x + 9 =$

If $x = 9$, then
$5x - 5 =$

If $x = 4$, then
$7x + 3 =$

If $x = 4$, then
$9x - 6 =$

If $x = 8$, 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.

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.

Daily practice	**Introduction**	**Main activity**		**Plenary**

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.

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.

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 $3x + 5 = 23$.

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.

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

Preparation

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

Subtract three-digit numbers with renaming.

Solve word problems using symbols.

Before the lesson:

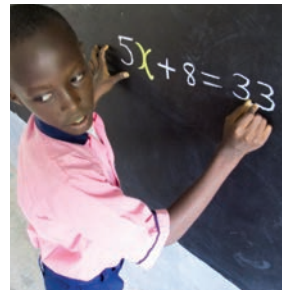Write the word problems from the main activity, shown right, on the chalkboard.

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.

Daily practice	Introduction	Main activity		Plenary

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.

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

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?'

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?'

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.

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.
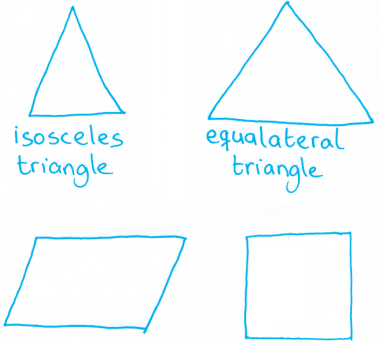
This pupil can:

Draw two different triangles.

Name two different triangles.

Draw two quadrilateral shapes.

Identify properties of two quadrilateral shapes.

isosceles triangle

equalateral triangle

parallelogram

square

– opposite sides are parallel.

– opposite angles are the same.

– 4 right angles.

– 4 equal sides.

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: 30cm ÷ 10 = 3cm.

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.

| Daily practice | Introduction | Main activity | | Plenary |

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	$\frac{10}{10}$	

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.

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.

Individual task

Draw and label the following lines on the chalkboard:
vertical
oblique
horizontal
parallel

Tell the pupils to draw the lines carefully, with a ruler, in their exercise books and label them.

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?'

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	t	h
$\frac{1}{100}$	0.1	0.01

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.

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.

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 (°).

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°) in a triangle.

Ask a pupil to look for an obtuse angle (> 90°) in a triangle.

| Daily practice | Introduction | Main activity | Plenary |

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.

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.

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.

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).
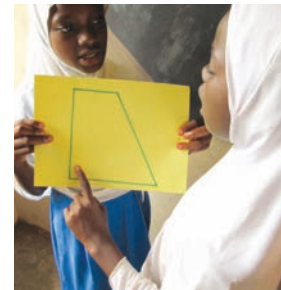
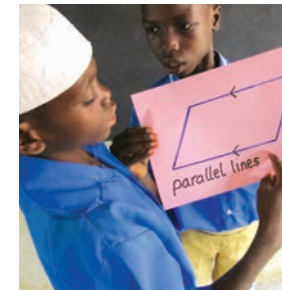Read How? Quadrilaterals, as shown below.

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.

Daily practice

Introduction

Main activity

Plenary

Pair task

Write the following numbers on the chalk-board 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.

Whole class teaching

Teach How? Quadrilaterals, as shown left.

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).

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.

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 cardboard shape.

Lay the ruler along the line and tear the paper.

Carefully fold the shape to find the lines of symmetry.

Daily practice	**Introduction**	**Main activity**	**Plenary**

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.

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.

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.
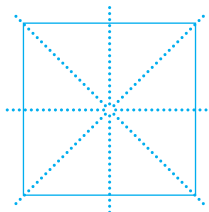
Lines of symmetry

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.

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
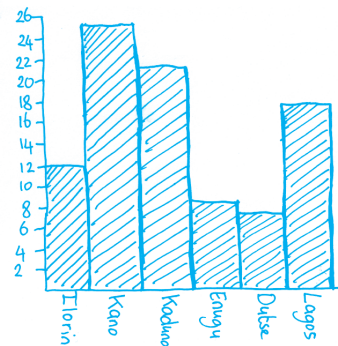Dutse 7
Lagos 18

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?'

Daily practice

Introduction

Main activity

Plenary

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

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?'

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 Yemi 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	Tunde	Yemi	Tola	Funmi
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.

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.

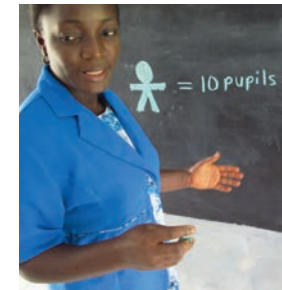## How? Putting information into a pictogram

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.

Daily practice	Introduction	Main activity	Plenary

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.

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

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.

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

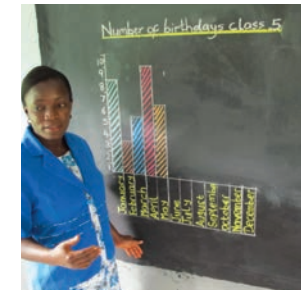Ask, 'What information does this graph show?'

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.

Daily practice	Introduction	Main activity		Plenary

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)

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.

Whole class teaching

Teach How? Vertical bar graph, as shown left.

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.
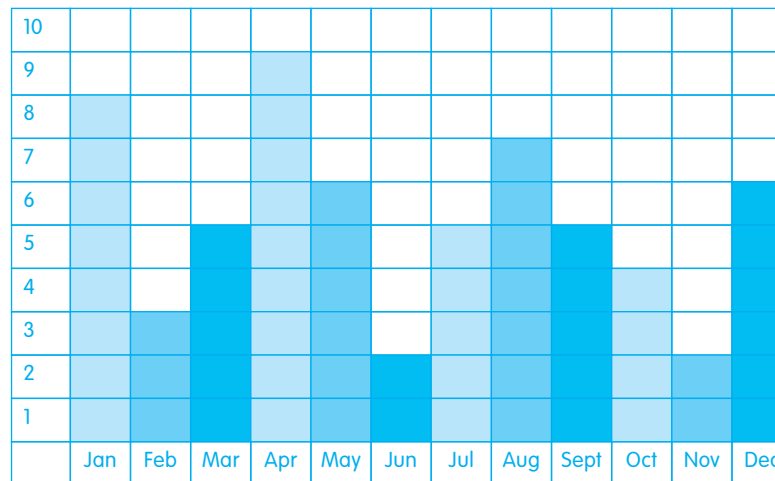
Tell them to label the horizontal and vertical axes.

Pair task

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

Number of birthdays graph

10												
9												
8												
7												
6												
5												
4												
3												
2												
1												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec

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

Ask, 'What information does this table show?'

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.

Daily practice

Introduction

Main activity

Plenary

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 =

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.

### 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
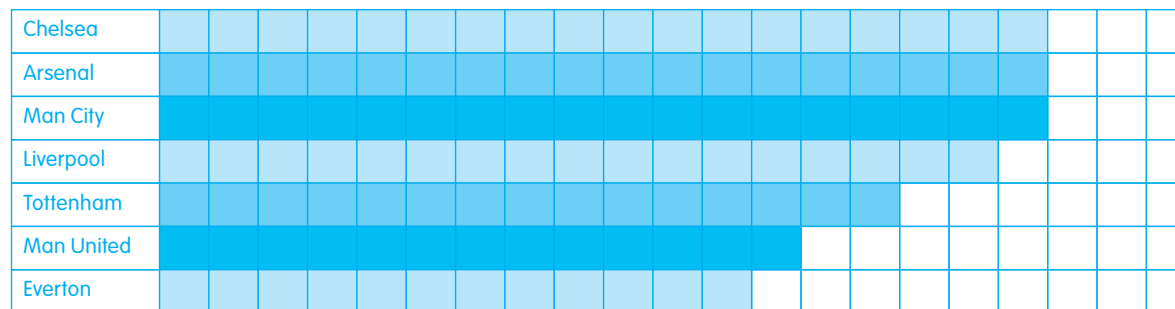
Whole class teaching

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

Week 8:
Statistics

Day 5:
Reading bar graphs

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.

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.

| **Daily practice** | **Introduction** | **Main activity** | **Plenary** |

Pair task

Write the following numbers on the chalboard:
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.

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.

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

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.

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.

236 + 153 =

```
H T U
  2 3 6
+ 1 5 3
  3 8 9
```

749 + 123 =

```
H T U
  7 4 9
+ 1 2 3
  9 7 2
    1
```

684 + 257 =

```
H T U
  6 8 4
+ 2 5 7
  9 4 1
  1 1
```

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.
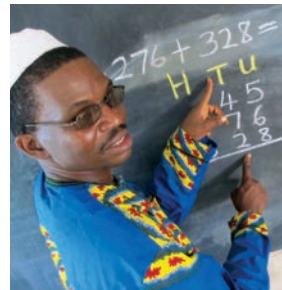
Preparation

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.

Daily practice	Introduction	Main activity		Plenary

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 x 10 = 23410
31.4 x 10 = 314

Write the following sums on the chalkboard and ask the pupils to complete them in their exercise books:
80 x 10 =
58 x 1 =
700 x 10 =
567 x 10 =

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 =

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.

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.

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 x 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 x 100 =
504 x 100 =
657.2 x 100 =
670.9 x 100 =

Choose some pairs to read their answers and ask other pairs to say if they think they are correct.

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.

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.

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.
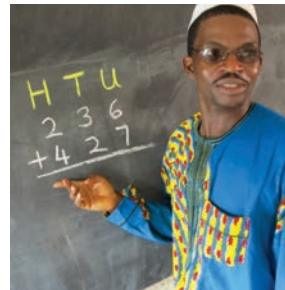
Add three-digit numbers.

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.

Daily practice

Introduction

Main activity

Plenary

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:
7 x 3 = 21
7 x 30 = 210
70 x 3 = 210
70 x 30 = 2100

Write the following on the chalkboard and choose pupils to calculate the answers:
40 x 30
60 x 40
80 x 200

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.

Pair task

Write the following calculations on the chalkboard and ask the pairs to complete them in their exercise books:
135 + 227 =
646 + 136 =
508 + 143 =
657 + 24 =
309 + 409 =

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

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

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

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.

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.

Daily practice	Introduction	Main activity		Plenary

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 x 5) x 6 =
      15 x 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.

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 =

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.

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.

Daily practice

Introduction

Main activity

Plenary

Whole class teaching

Write '2 x 4 x 3 =' on the chalkboard.

Ask the pupils to help you work this out:
(2 x 4) x 3 =
   8 x 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 x 4 x 6 =

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

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.

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?'

Ask the pupils to discuss the calculations required for each problem.

Tell the pairs to complete the calculations in their exercise books using the shorter methods for adding three-digit numbers.

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.

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 =

$$
\begin{array}{r}
H\ T\ u \\
4\ \overset{1}{5}\ \overset{1}{2}\ 1 \\
-\ 3\ 7\ 2 \\
\hline
1\ 4\ 9
\end{array}
$$

521 - 372 = 149

340 - 160 =

$$
\begin{array}{r}
H\ T\ u \\
{}^{2}3\ 4\ 0 \\
-\ 1\ 6\ 0 \\
\hline
1\ 8\ 0
\end{array}
$$

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.

Daily practice

Introduction

Main activity

Plenary

Whole class teaching

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

Write '30 ÷ 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 x 5 = 30, so
30 ÷ 6 = 5

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

Whole class teaching

Write '781' on the chalk-board 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

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

Group task

Teach How? Renaming Tens and Hundreds, as shown left.

Ask each group to explain how they expanded and renamed one of their numbers.

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

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.

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.

Daily practice | Introduction | Main activity | | Plenary

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.

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

Whole class teaching

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

Demonstrate the following calculation on the chalkboard:

$$
\begin{array}{l}
\text{H T U} \\
\ 8\ 3\ 1\ \ (800 + 30 + 1) \\
=\ (700 + 120 + 11) \\
-\ 5\ 2\ 7\ \ (500 + 20 + 7) \\
=\ (500 + 20 + 7)
\end{array}
$$

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.

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

Preparation

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.

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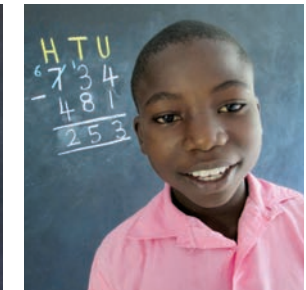
Explain again with a different sum, asking the pupils to help.

| **Daily practice** | **Introduction** | **Main activity** | **Plenary** |

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:
600000 ÷ 10 =
60000 ÷ 10 =
6000 ÷ 10 =
600 ÷ 10 =
60 ÷ 10 =

Choose some pupils to read each answer.

Repeat the process with:
700000 ÷ 100 =
70000 ÷ 10 =
7000 ÷ 10 =
700 ÷ 10 =
70 ÷ 10 =

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.

Pair task

Ask the pupils to complete the following sub-traction calculations in their exercise books:
542 – 238 =
736 – 319 =
860 – 447 =
673 – 466 =
810 – 406 =

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.

Daily practice	Introduction	Main activity	Plenary

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.

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 =

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.

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

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.

Daily practice

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.

Introduction

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:

$$
\begin{array}{ccc}
H & T & U \\
7 & 8 & 0 \\
- \; 5 & 5 & 9 \\
\hline
\end{array}
$$

$$
\begin{array}{ccc}
H & T & U \\
8 & 3 & 3 \\
- \; 6 & 2 & 9 \\
\hline
\end{array}
$$

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.

Main activity

Pair task

Choose some pupils to read and explain the following word problems:

'Taiwo has picked 347 oranges. Lamide has picked 271 oranges. How many more oranges has Taiwo 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.

Plenary

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.

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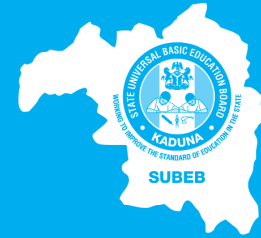
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