

Numeracy lesson plans
Primary 5,
term 3, weeks 26—30

**Measuring rainfall, temperature
and statistics**

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Introduction

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

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

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



Nneka Onuora
Executive Chairman,
Enugu State Universal
Basic Education Board

Foreword

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

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

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



Professor Uche Eze
Honourable Commissioner
for Education Enugu State

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

How

How?

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

Learning expectations

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

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

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

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

Assessment

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

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

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

Daily practice

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

Introduction

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

Main activity

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

Plenary

Finishes the lesson with different ways of reviewing learning.

Weekly page

Primary 5, numeracy lesson plans

Week 26:

Fractions

Words/phrases

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

fraction
equivalent
multiplication
division
mixed fraction
improper fraction
numerator
denominator
common denominator
mixed numbers
unlike fractions

Learning expectations

By the end of the week:

All pupils will be able to:
Identify equivalent fractions.

Most pupils will be able to:
Change improper fractions to mixed numbers.

Some pupils will be able to:
Add and subtract unlike fractions.

Assessment task

Instructions:

Ask an individual pupil to:

1

Find three equivalent fractions for the following:

$$\frac{1}{3}$$

$$\frac{1}{5}$$

2

Calculate the following fractions:

$$\frac{3}{8} + \frac{2}{4} =$$

$$\frac{6}{9} - \frac{1}{3} =$$

$$\frac{3}{6} + \frac{8}{12} =$$

$$\frac{7}{8} + \frac{15}{32} =$$

Example of a pupil's work

This pupil can:

Find equivalent fractions.

Add and subtract unlike fractions.

Solve improper fractions.

$$1 \quad \frac{1}{3} = \frac{2}{6} = \frac{4}{12}$$

$$\frac{1}{5} = \frac{2}{10} = \frac{10}{50}$$

$$2 \quad \frac{3}{8} + \frac{2}{4} = \frac{3}{8} + \frac{4}{8} = \frac{7}{8}$$

$$\frac{6}{9} - \frac{1}{3} = \frac{6}{9} - \frac{3}{9} = \frac{3}{9}$$

$$\frac{3}{6} + \frac{8}{12} = \frac{3}{6} + \frac{4}{6} = \frac{7}{6} = 1\frac{1}{6}$$

$$\frac{7}{8} + \frac{15}{32} = \frac{28}{32} + \frac{15}{32} = \frac{43}{32} = 1\frac{7}{32}$$

Week 26: Fractions

Day 1: Equivalent fractions

Learning outcomes

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

Quickly recall the 4 and 8
times tables.

Identify equivalent fractions.

Preparation

Before the lesson:

Read [How? Fraction strips](#), as shown
below, and cut **six paper strips** (the same
size) for each group.

How? Fraction strips



Tell the groups to
write '1 whole'
on one of the strips
of paper.



Fold and label the
second strip into
halves and the third
strip into quarters.



Fold and label
the next strip into
eight equal parts
(eighths).



Fold and label
the next strip
into three equal
parts (thirds).



Fold and label
the final strip into
six equal parts
(sixths).

15
minutes

Daily practice

Group task

Choose different groups to recite the 2, 4 and 8 times tables.

Ask the groups to write the 4 and 8 times tables in their exercise books.

Ask them to say what they notice about the answers, eg: the 8 times table answers are double the 4 times table answers.

Ask each group to say the 8 times table backwards and ask the other groups if they are correct.

10
minutes

How

Paper strips

Introduction

Whole class teaching

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

Ask each group to say some fractions they have learned, eg: half, quarter, eighth.

Teach **How? Fraction strips**, as shown left, using the **paper strips**.

25
minutes

Fraction strips

Main activity

Group task

Explain that equivalent fractions have the same value, even though they may look different.

Tell the groups to line up the **fraction strips** underneath each other on their desks.

Write on the chalkboard:

$$\frac{1}{2} =$$

Ask the pupils to find equivalent fractions, eg:

$$\frac{1}{2} = \frac{2}{4} = \frac{3}{6} = \frac{4}{8}$$

Repeat with other examples.

Remind the groups that: = means 'the same as', > means 'greater than' and < means 'less than'.

Say, 'three quarters is greater than a half' and write on the chalkboard:

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

Write other examples on the chalkboard, eg:

$$\frac{2}{8} \square \frac{1}{2}$$

Tell the groups to use the fraction strips to help write the correct sign between each pair of fractions in their exercise books.

10
minutes

Fraction strips

Plenary

Individual task

Ask the pupils to draw two rectangles, the same size, in their exercise books.

Tell them to divide the first rectangle into thirds and shade in 2 thirds.

Tell the pupils to divide the next rectangle into sixths and shade in the equivalent fraction.

Ask the pupils:

'What is the equivalent fraction?'

'How do you know?'

Keep the **fractions strips** carefully for the next day.

Week 26: Fractions

Day 2: Making equivalent fractions

Learning outcomes

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

Complete a multiplication
grid for the 2, 4 and 8
times tables.

Make equivalent fractions.

Preparation

Before the lesson:

Copy the [multiplication grid](#)
from today's daily practice on to
the chalkboard.

Have ready the [fraction strips](#) from
Week 26, Day 1 (yesterday).

Read [How? Equivalent fractions](#),
as shown below.

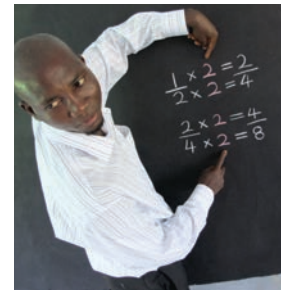
How? Equivalent fractions



Tell the groups
to find fractions
equivalent to
a half using the
fraction strips.



Ask, 'What has
happened to the
numerator and
denominator?'



Explain that the
numerator and
the denominator
have been multi-
plied by two.



Tell the groups to
find a fraction
equivalent to three
sixths using the
fraction strips.



Explain that the
numerator and
the denominator
have been divided
by three.

15 minutes | Grid

Daily practice

Group task

Ask the groups to copy the **multiplication grid** carefully in their exercise books.

Explain that they need to multiply the top row numbers by 2 to fill in the squares on the second row.

To fill in the squares on the third row they need to multiply the numbers on the top row by 4.

For the fourth row they need to multiply the top row numbers by 8.

Multiplication grid

x	4	7	9	8	5
2		14			
4					
8				64	

10 minutes

Introduction

Pair task

Remind the pupils that the top number of a fraction is the 'numerator' and the bottom number is the 'denominator'.

Write some examples of fractions on the chalkboard.

Choose some pairs to say the fractions and point to the numerator and the denominator.

Explain that we can write 1 as a fraction:

$$1 = \frac{2}{2} = \frac{3}{3} = \frac{4}{4} = \frac{5}{5}$$

Choose some groups to read the fractions, eg: 'Two halves, three thirds.'

25 minutes

How

Main activity

Group task

Teach **How? Equivalent fractions**, as shown left.

Explain that we divide to make larger fractions and we multiply to make smaller fractions.

Explain that the fraction has the same value even though the numerator and the denominator have changed.

Ask the groups to say equivalent fractions of a half by multiplying the numerator and the denominator by the same whole number and write them on the chalkboard, eg:

$$\frac{2}{4} \text{ (x2)} = \frac{4}{8} = \frac{5}{10} = \frac{6}{12}$$

Write some fractions on the chalkboard and ask the groups to write an equivalent fraction for each one in their exercise books:

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

10 minutes | Fraction strips

Plenary

Group task

Ask the groups to use the **fraction strips** to find the equivalent fraction for six eighths.

Remind the class that we can also divide to find equivalent fractions and write on the chalkboard:

$$\frac{6}{8} \div \frac{2}{2} = \frac{3}{4}$$

Week 26: Fractions

Day 3: Common denominator

Learning outcomes

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

Quickly recall the 3 and 6
times tables.

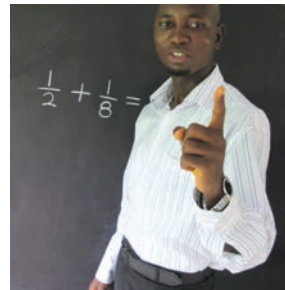
Find the common
denominator to add
unlike fractions.

Preparation

Before the lesson:

Read [How? Common denominator](#),
as shown below.

How? Common denominator



On the chalkboard,
demonstrate adding
two fractions.



Demonstrate making
them have the
same denominator.
Add them up.



Explain that
sometimes we have
to change both
denominators.



Multiply the top
and the bottom of
each fraction by
the denominator
of the other.



Repeat with other
fractions.

15
minutes

Daily practice

Group task

Choose different groups to recite the 3 and 6 times tables.

Ask the groups to write the 3 and 6 times tables in their exercise books.

Ask them to say what they notice about the answers, eg: the 6 times table answers are double the 3 times table answers.

Ask each group to say the 6 times table backwards and ask the other groups if they are correct.

10
minutes

Introduction

Pair task

Remind the class that we often need to change fractions into equivalent fractions when we are doing calculations.

Demonstrate dividing to make an equivalent fraction:

$$\frac{6}{12} \div 6 = \frac{1}{2}$$

Choose some pupils to help you demonstrate multiplying to make an equivalent fraction:

$$\frac{3}{5} = \frac{3 \times 3}{5 \times 3} = \frac{9}{15}$$

Remind the class that we divide to make larger fractions and multiply to make smaller fractions.

25
minutes

How

Main activity

Whole class teaching

Explain to the pupils: 'Fractions need to have the same denominator when we are doing calculations. This is called the "common denominator".'

Teach **How? Common denominator**, as shown left.

10
minutes

Plenary

Whole class teaching

Ask some groups to explain how they worked out the calculations on the chalkboard.

Group task

Write these calculations on the chalkboard:

$$\frac{2}{3} + \frac{4}{5} =$$

$$\frac{1}{2} + \frac{3}{7} =$$

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

Week 26: Fractions

Day 4: Adding and subtracting fractions

Learning outcomes

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

Quickly recall the 9
times table.

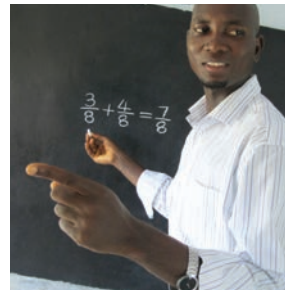
Add and subtract unlike
fractions.

Preparation

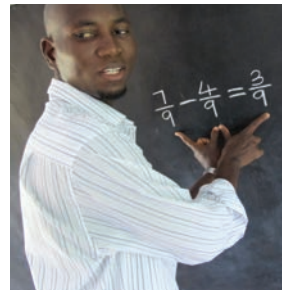
Before the lesson:

Read [How? Adding and subtracting fractions](#), as shown below.

How? Adding and subtracting fractions



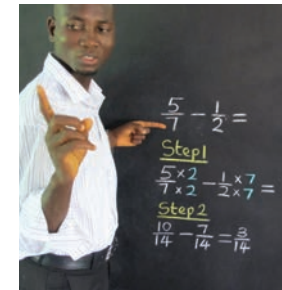
Explain that we can
add and subtract
the numerators when
the denominator
is the same.



The denominator
stays the same.



Remind the
pupils how to
find the common
denominator.



Explain that we need
to do this when
the denominators
are different.



Repeat with another
example.

15
minutes

Daily practice

Whole class teaching

Choose some pupils to help you write the 9 times table on the chalkboard.

Explain this quick method to work out the answers in the 9 times table:

$$\begin{array}{r} 2 \times 9 = 2 - 1 = 1 \\ 9 - 1 = 8 \quad 18 \end{array}$$

$$\begin{array}{r} 3 \times 9 = 3 - 1 = 2 \\ 9 - 2 = 7 \quad 27 \end{array}$$

Ask the pupils to write the 9 times table backwards in their exercise books.

10
minutes

Introduction

Group task

Write the following fractions on the chalkboard and ask the groups to find as many equivalent fractions as they can for each one:

$$\frac{3}{4}$$

$$\frac{2}{5}$$

$$\frac{4}{6}$$

Remind the groups that they can multiply or divide the numerator and denominator by the same number to find equivalent fractions.

25
minutes

How

Main activity

Whole class teaching

Teach **How? Adding and subtracting fractions**, as shown left.

Pair task

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

$$\frac{8}{9} - \frac{1}{2} =$$

$$\frac{1}{5} - \frac{3}{6} =$$

$$\frac{9}{10} - \frac{1}{3} =$$

10
minutes

Plenary

Whole class teaching

Draw five circles on the chalkboard and divide each one into 8 equal parts.

Choose some pairs to shade the following fractions of the circles:

$$\frac{1}{4} \quad \frac{3}{8} \quad \frac{1}{2} \quad \frac{1}{8} \quad \frac{3}{4}$$

Ask the pupils to say the fractions, from the biggest to the smallest.

Week 26: Fractions

Day 5: Improper fractions

Learning outcomes

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

Use times tables to
calculate division sums.

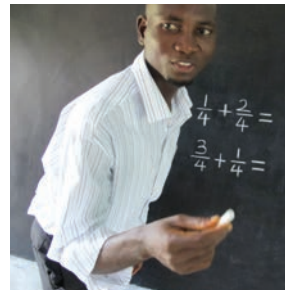
Change improper
fractions into mixed
number fractions.

Preparation

Before the lesson:

Read [How? Improper fractions](#) and
make a set of eight [flash cards](#) showing
one quarter, as shown below.

How? Improper fractions



Ask each group to
use the cards to
complete the sums
on the chalkboard.



Choose a group to
add seven cards
and write the fraction
on the chalkboard.



This is an improper
fraction as the
numerator is
greater than the
denominator.



To make a mixed
number, we need
to divide the
numerator by the
denominator.



Ask the groups to
add three quarters
and two quarters.

15
minutes

Daily practice

Group task

Choose some pupils to write the 7 times table on the chalkboard.

Write '56 ÷ 7 ='

and ask the pupils which times table will give them the answer, ie:
 $8 \times 7 = 56$

Ask, 'If I know that $9 \times 7 = 63$, what other times and division sums do I know?', ie:

$$7 \times 9 = 63$$
$$63 \div 7 = 9$$
$$63 \div 9 = 7$$

Write:

$$21 \div 7 =$$
$$49 \div 7 =$$

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

15
minutes

How

Introduction

Group task

Write these fractions on the chalkboard:

$$\frac{6}{3} \quad \frac{10}{7} \quad \frac{6}{4} \quad \frac{9}{10} \quad \frac{9}{6}$$

Ask some pupils to read them and point to the numerators and the denominators.

Explain that these are called 'improper fractions' because the numerator is greater than the denominator.

Teach **How? Improper fractions**, as shown left.

20
minutes

Main activity

Pair task

Write these improper fractions on the chalkboard:

$$\frac{5}{2} \quad \frac{23}{3} \quad \frac{34}{4} \quad \frac{45}{7}$$

Ask the pairs to write them as mixed fractions in their exercise books.

Choose some pairs to explain their answers on the chalkboard.

Individual task

Demonstrate adding fractions and changing improper fractions on the chalkboard, eg:

$$\frac{5}{8} + \frac{6}{8} = \frac{11}{8}$$
$$\text{Answer} = 1 \frac{3}{8}$$

Write the following on the chalkboard and ask the pupils to complete this sum in their exercise books:

$$\frac{6}{9} + \frac{5}{9} =$$

10
minutes

Plenary

Whole class teaching

Write on the chalkboard:

$$\frac{3}{5} + \frac{5}{6} =$$

Choose some pupils to help you solve it.

Weekly page

Primary 5, numeracy lesson plans

Week 27:

Fractions and decimals

Words/phrases

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

rounding
estimate
equivalent fractions
decimal fractions
tenths
hundredths
percentage

Learning expectations

By the end of the week:

All pupils will be able to:
Change tenths to decimal fractions.

Most pupils will be able to:
Convert a fraction to a percentage.

Some pupils will be able to:
Solve word problems involving percentages.

Assessment task

Instructions:

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

1

Change these tenths into decimal fractions:

0.10

0.45

2

Convert these fractions to percentages:

$\frac{3}{4}$

$\frac{2}{4}$

3

Solve the following word problem:
A market seller has 80 cows. He sells 40% of the cows. How many cows are left?

Example of a pupil's work

This pupil can:

Change tenths into decimal fractions.

Convert fractions into percentages.

Solve a word problem involving percentages.

1 $0.10 = \frac{1}{10}$

$0.45 = \frac{45}{100} = \frac{9}{20}$

2 $\frac{3}{4} = 0.75$

$\frac{2}{4} = 0.50$

3 80 cows = 100%

1% = 0.8

40% = $40 \times 0.8 = 32$

$80 - 32 = 48$

There are 48 cows left.

Week 27: Fractions and decimals

Day 1: Fraction problems

Learning outcomes

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

Round whole numbers
to the nearest Ten and the
nearest Hundred.

Solve problems involving
fractions.

Preparation

Before the lesson:

Read [How? Rounding](#) and draw
a [Hundred square](#) and a [rounding table](#),
as shown below, on the chalkboard.

Copy the [word problems](#) in today's main
activity on to the chalkboard.

How? Rounding



Ask some pupils to
round numbers on
the Hundred square
to the nearest Ten.



Remind the class
that numbers ending
in 5 are rounded
up to the next Ten.



Remind the class
how to round
numbers to the
nearest Hundred.



Ask the pupils to
help you to complete
the rounding table.



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

15
minutes

How

Daily practice

Whole class teaching

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

15
minutes

Introduction

Whole class teaching

Write on the chalkboard:

$$\frac{1}{5} \text{ of } 40 =$$

Ask the class the following question: 'What number will I have to divide by to find a fifth?'

Revise the link with division, eg: $40 \div 5 = 8$

Write on the chalkboard:

$$\frac{2}{3} \text{ of } 30 =$$

Explain how to find one third of 30 and multiply the answer by 2.

20
minutes

Word problems

Main activity

Whole class teaching

Read these **word problems** on the chalkboard:

'Lamide has 40 apples. She gives a quarter to her sister and one half to her father. She sells the remaining apples. How many apples does her sister get? How many does her father get? How many does Lamide sell?'

'There are 60 melons on a plant. Two thirds are ripe. How many are unripe?'

Ask the groups to discuss the calculations needed to solve the problems.

10
minutes

Plenary

Whole class teaching

Invite some pupils to the chalkboard to explain how they worked out their answers.

Week 27: Fractions and decimals

Day 2: Tenths

Learning outcomes

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

Round numbers to
estimate answers.

Relate fractions to single-
place decimals.

Preparation

Before the lesson:

Read [How? Decimal fractions](#) and
draw [number lines](#) divided into tenths on
the chalkboard, as shown below.

Cut a [strip of paper](#), measuring 30cm
x 5cm, for each pair.

How? Decimal fractions



Ask some pupils to
write the tenths
on the number line,
from 0—1.



Explain that 10
tenths is the same
as a whole.



Ask the pupils to say
other divisions as
improper fractions
and mixed numbers.



Remind the class
that a tenth can
also be written
as a decimal
fraction, eg: 0.1



Ask the pairs to
write some decimal
fractions on
the number line.

15
minutes

Daily practice

Pair task

Explain that rounding can help us to estimate the answer to a calculation.

Write on the chalkboard:
' $377 + 98 =$ '.

Round the numbers to the nearest Ten:
 $380 + 100$.

Explain that this gives us an estimate of 480.

Ask the pairs to round the numbers in these calculations and say their estimates:

$$\begin{aligned} 27 + 3 &= \\ 179 + 97 &= \\ 39 - 13 &= \\ 631 - 205 &= \end{aligned}$$

10
minutes

How

Introduction

Whole class teaching

Choose some pupils to write these fractions on the chalkboard:
three tenths
eight tenths
five tenths

Teach **How? Decimal fractions**, as shown left.

Remind the class that the decimal point separates the whole number and the fraction number.

The first number before the point is the Unit and the number after the point is the tenth.

25
minutes

Paper strips

Main activity

Whole class teaching

Give each pair a **strip of paper**.

Explain they are going to make a decimal strip.

Tell the pairs to divide the strip into 10 sections, 3cm apart.

Label each section with the fraction:

$$\frac{1}{10} \quad \frac{2}{10} \quad \frac{3}{10} \quad \text{up to} \quad \frac{10}{10}$$

On the other side, label each section with the decimal fraction:

$$\begin{aligned} 0.1 \\ 0.2 \\ 0.3 \\ \text{up to } 1.0 \end{aligned}$$

Pair task

Explain that some decimal fractions can be changed into equivalent fractions.

Write on the chalkboard:

$$0.6 = \frac{6}{10}$$

$$\frac{6}{10} \div \frac{2}{2} = \frac{3}{5}$$

Write the following on the chalkboard:

$$\begin{aligned} 0.8 \\ 0.4 \\ 0.9 \\ 0.5 \\ 0.7 \\ 0.2 \end{aligned}$$

Ask the pairs to write the decimals in their exercise books and write them as fractions and any equivalent fractions.

10
minutes

Decimal strips

Plenary

Whole class teaching

Tell the pairs to take their **decimal strips** outside.

Call out a number with decimals or fractions, eg: 3.6 or $3 \frac{6}{10}$

Tell the pairs to find other pairs to make that number with their decimal strips.

Week 27: Fractions and decimals

Day 3: Hundredths

Learning outcomes

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

Round numbers to one
decimal place.

Relate fractions to two-
place decimals.

Preparation

Before the lesson:

Copy the [rounding table](#),
shown in today's daily practice,
on to the chalkboard.

Read [How? Hundredths](#) and have
ready a [blank Hundred square](#), as
shown below.

How? Hundredths



Shade in one square
on the Hundred
square and ask
a pupil to write
the fraction.



Remind the class
that one hundredth
is 0.01 as a
decimal fraction.



Shade in 10 squares
and write the
fraction and the
decimal fraction.



Choose pupils to
shade in more
squares and write
the fraction and
decimal fraction.

15 minutes | Table

Daily practice

Pair task

Remind the pairs that they have been rounding numbers.

Explain that we can also round decimal numbers to the nearest tenth.

Write on the chalkboard:
'62.63 rounds to 62.60'
'578.87 rounds to 578.90'

Ask the pairs to complete the **rounding table** in their exercise books.

Rounding table

	Round to nearest tenth
67.44	
34.67	
24.19	
654.14	

15 minutes

Introduction

Whole class teaching

Say, 'three tenths', 'eight tenths', 'five tenths' and choose some pupils to write these fractions on the chalkboard.

Ask some pupils to write the decimal fraction underneath each fraction.

20 minutes

How

Main activity

Whole class teaching

Teach **How? Hundredths** as shown left.

Write the following decimal fractions on the chalkboard:

0.78
2.35
1.23
0.60
0.73

Ask the pupils to say them with you.

Make sure that they read the numbers correctly, eg: 0.78 is 'zero point seven eight', not zero point seventy eight.

Ask the pupils to write the fractions next to each decimal, eg:
 $2.35 = 2 \frac{35}{100}$

Hundred square

10 minutes

Plenary

Pair task

Ask the pairs to help you write equivalent fractions and decimal fractions for one quarter on the chalkboard, ie:

$$\frac{25}{100} = \frac{1}{4} = 0.25$$

Write the following fractions on the chalkboard:

$\frac{50}{100}$
 $\frac{25}{100}$
 $\frac{40}{100}$

Ask the pairs to discuss different ways to write each fraction.

Week 27: Fractions and decimals

Day 4: Fractions and percentages

Learning outcomes

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

Round numbers to two
decimal places.

Convert a fraction into
a percentage.

Preparation

Before the lesson:

Have ready a [blank Hundred square](#) and read [How? Percentages](#), as shown below.

How? Percentages



Shade eight squares
of the Hundred
square and explain
that eight out of
a Hundred is 8%.



Shade 15 squares
and ask, 'What
percentage
is shaded?'



Cover half of the
squares and ask,
'What percentage
is shaded?'



Cover a quarter of
the squares and ask,
'What percentage
is shaded?'



Cover three quarters
of the squares and
ask, 'What percentage
is shaded?'

15
minutes

Daily practice

Whole class teaching

Write the following decimal numbers on the chalkboard and ask the pupils to round them to the nearest tenth:

1.72
3.26
3.44
1.22
5.08

Explain that we can also round decimal numbers to the nearest whole number.

Choose some pupils to help you write the following numbers to the nearest whole:
1.72 rounds to 2
3.26
4.99

10
minutes

Introduction

Individual teaching

Write the following fractions on the chalkboard and ask the pupils to write the fraction and the decimal fraction in their exercise books.

$\frac{7}{10}$
 $\frac{4}{10}$
 $\frac{6}{100}$
 $\frac{76}{100}$

25
minutes

How

Main activity

Whole class teaching

Explain that 100% equals one whole so when we talk about percentages we mean 'out of a Hundred'.

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

Write the following test result as a percentage on the chalkboard:

Lamide:
60 out of 100 =
 $\frac{60}{100} = 60\%$

Choose some pupils to write these test results as percentages on the chalkboard:

Grace:
95 out of 100 =
Tade:
45 out of 100 =

10
minutes

Plenary

Whole class teaching

Ask the pupils to help you solve this problem on the chalkboard:
'Lydia scored 75% in a test marked out of 60. How many marks did Lydia score?'

Explain that pupils need to find a quarter of 60 first, then multiply by 3 to find three quarters.

Write on the chalkboard:

$$50\% = \frac{50}{100} = \frac{1}{2}$$
$$25\% = \frac{25}{100} = \frac{1}{4}$$

Ask the pupils:

'How can we find 50% of a number?
(Divide by 2)

'How can we find 25% of a number?'
(Divide by 4)

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

50% of 80 =
25% of 80 =
50% of 16 =
25% of 16 =

Week 27: Fractions and decimals

Day 5: Percentage word problems

Learning outcomes

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

Round decimal numbers
to estimate answers.

Solve word problems
involving percentages.

Preparation

Before the lesson:

Read [How? Percentage word problems](#)
and write the [word problems](#) on the chalk-
board, as shown below.

How? Percentage word problems



Underline the
key information
in the first word
problem.



Write the fraction
and make an
equivalent fraction
out of 100.



Change the fraction
to a percentage.



Repeat with the next
word problem.



Make an equivalent
fraction out of
100 to find the
percentage.

15
minutes

Daily practice

Pair task

Write the following decimal numbers on the chalkboard and choose some pairs to round them to the nearest whole number:

5.68

7.09

9.99

4.26

Remind the pairs that rounding can help us to estimate the answer to a calculation.

Write:

' $48.76 + 59.98 =$ '

' $75.82 - 20.23 =$ '

Ask the pairs to round the decimal numbers and calculate the estimates in their exercise books.

15
minutes

Introduction

Whole class teaching

Remind the class that percentage means 'out of a Hundred'.

Choose some pairs to help you solve the following problem on the chalkboard: 'What is 20% of N150?'

Explain that the pupils need to find 10%, then multiply the answer by 2 to find 20%.

Write 'What is 30% of N600?' and ask the pairs to solve the problem in their exercise books.

20
minutes

How

Main activity

Pair task

Teach **How? Percentage word problems**, as shown left.

Read and explain the following:

$$\frac{45}{100}$$
$$\frac{65}{100}$$
$$\frac{6}{10}$$

Ask the pairs to write the answers in their exercise books.

10
minutes

Plenary

Whole class teaching

Ask some pupils to help you to solve this problem on the chalkboard:

'Funmi wanted to buy a new hat. It cost N1500. The shopkeeper said she would give Funmi a discount of 10%. How much would the hat cost?'

Remind the pupils that they need to find 10% of N1500, then subtract that from N1500.

Weekly page

Primary 5, numeracy lesson plans

Week 28:

Recording temperatures

Words/phrases

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

bar chart
tally
temperature
thermometer
degrees
Celsius
line graphs
vertical
horizontal
plot
scale
mode
median
range

Learning expectations

By the end of the week:

All pupils will be able to:

Read temperatures on a thermometer.

Most pupils will be able to:

Answer questions about a temperature line graph.

Some pupils will be able to:

Obtain information from a climate graph.

Assessment task

Instructions:

Ask an individual pupil to:

1
Mention different data that can be written on a horizontal axis and a vertical axis.

2
Look at Lola's temperature chart and answer the following questions:

'What is measured on the vertical axis?'

'What is measured on the horizontal axis?'

'When did Lola's temperature drop?'

Example of a pupil's work

This pupil can:

Read a line graph and answer questions about it.

1 Time, volume, capacity

2 On the vertical axis we measure temperature.

On the horizontal axis we measure time.

Lola's temperature dropped at 6 am on the second day.

Week 28: Recording temperatures

Day 1: Recording data

Learning outcomes

Preparation

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

Before the lesson:

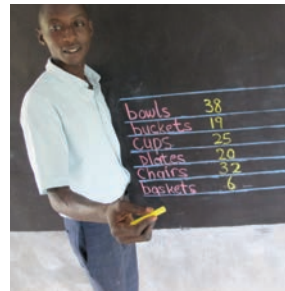
Say appropriate units to
measure objects.

Read [How? Bar chart](#), as shown below.

Interpret bar and tally
charts.

Copy the [Measure table](#) in today's
daily practice on to the chalkboard.

How? Bar chart



Write the number
of objects sold in
a plastics shop
on the chalkboard.



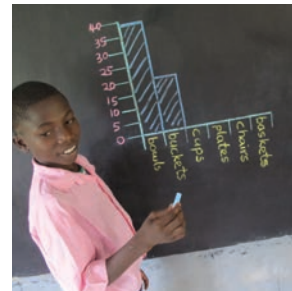
Choose some
pairs to represent
this as a tally chart.



Ask the class to
help you represent
this as a bar chart.



Remind them to
think carefully
about the scale for
the vertical axis.



Tell the pairs to
line up the bars
carefully.

15 minutes | Table

Daily practice

Pair task

Write these units of measurement on the chalkboard:

kg g
l ml
km m

Ask the pupils:

'Which unit is used to measure medicine?'

'Which unit is used to weigh a goat?'

Ask the pairs to complete the **table** below.

Measure table

1kg	___g
___l	1000 ml
1km	___m

15 minutes | How

Introduction

Whole class teaching

Explain to the class, 'Data means information. Interpreting data means working out what the information is telling you.'

Ask the pupils to say some of the ways they have learned to represent data, eg: tally charts, pictograms, bar charts.

Teach **How? Bar chart**, as shown left.

20 minutes

Main activity

Pair task

Rub off the number of objects sold in the plastic shop but leave the tally and bar charts on the chalkboard.

Choose some pairs to explain the 'range' and the 'median'. (The range is the difference between the biggest and the smallest numbers. The median is the middle value.)

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

'How many cups and plates were sold?'

'Which object sold the most?'

'Which object sold the least?'

'How many more chairs were sold than baskets?'

'How many objects were sold altogether?'

Remind the pairs to look carefully at the tally and bar charts to find the answers.

10 minutes

Plenary

Whole class teaching

Ask the pupils to say what other data could be represented in a bar chart, eg: favourite foods, test results.

Explain that amounts of rainfall are measured in bar charts so that scientists can see changes in the climate.

Ask the pupils:

'What units of measurement are used for rain?' (ml)

'What do you think will be on the horizontal axis of a bar chart about rainfall?' (eg: months of the year)

Week 28: Recording temperatures

Day 2: Thermometer

Learning outcomes

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

Say the value of the units
used to measure length.

Estimate and read
temperatures with
a thermometer.

Preparation

Before the lesson:

Place a **thermometer** in the classroom.

Have ready very cold **water**
and warm **water** in **thermos flasks**
and two **cups**.

Read **How? Reading thermometers**,
as shown below.

How? Reading thermometers



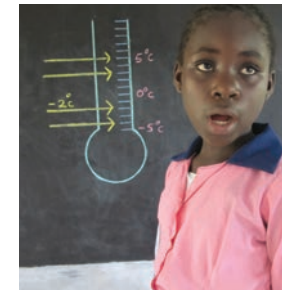
Tell the pupils to
look carefully at the
scale on the thermo-
meter and read
the temperature.



Explain that at
zero degrees water
freezes and it
is very cold.



Choose some pupils
to point to 15°C,
-5°C, 8°C, 24°C
and -12°C.



Ask some pupils
to read temperatures
on another thermo-
meter diagram.



Choose some
pupils to shade in
the liquid for each
temperature.

15 minutes

Daily practice

Pair task

Write on the chalkboard:

- mm = 1cm
- cm = 1m
- m = 1km
- cm = 1km

Choose some pairs to write in the answers and ask the class to say if they are correct.

Write: 'A mat is 60cm wide and 200cm long. What is the area of the mat?'

Ask the pairs to calculate the answer in their exercise books.

Remind the pairs that we find the area by multiplying the width by the length.

15 minutes

Thermometer/
Water/Cups

Introduction

Whole class teaching

Explain to the pupils, 'Temperature means how hot or cold something is.'

Show the [thermometer](#) to the class and say:

'A thermometer measures the temperature.'

'The liquid inside the thermometer expands and rises as it gets hotter, and shrinks and lowers as it gets cooler.'

Put the thermometer in the [cup of cold water](#) and let the class watch the thermometer liquid fall.

Put the thermometer in the [cup of hot water](#) and let the class watch the liquid rise.

20 minutes

How

Chart/
Thermometer

Main activity

Whole class teaching

Write '°C' on the chalkboard and explain that temperature is measured in degrees Celsius.

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

Draw the [temperature chart](#), as shown below, on the chalkboard and ask the groups to copy it into their exercise books.

Temperature chart

Temperature	Estimate	Measure
classroom		
outside		
water		
under the teacher's arm		

Group task

Ask the groups to write in their estimates for each temperature.

Choose some pupils to check the estimates with the [thermometer](#).

Each time, leave the thermometer for 2 minutes before reading the next temperature to allow the liquid to settle.

10 minutes

Thermometer

Plenary

Whole class teaching

Take the groups outside and ask them to say where they think the temperature will be the coolest, eg: in the shade of a tree, and where it will be the hottest.

Check their answers with the [thermometer](#).

Week 28: Recording temperatures

Day 3: Line graphs

Learning outcomes

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

Say grams as fractions
and decimal fractions of
a kilogram.

Read a line graph.

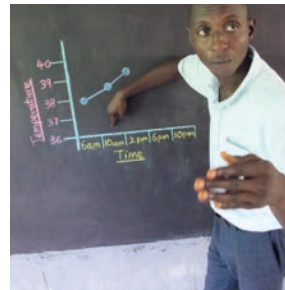
Preparation

Before the lesson:

Have ready the [thermometer](#) from
Week 28, Day 2 (yesterday).

Read [How? Reading a line graph](#)
and draw [Lola's body temperature graph](#)
from today's main activity on to
the chalkboard, as shown below.

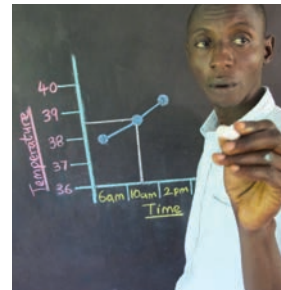
How? Reading a line graph



To find Lola's
temperature at
10am, find the
10am mark along
the bottom axis.



With your finger,
follow the line up-
wards until you
reach the graph line.



Now, follow the
line left until
you reach the
vertical axis.



Read the temperature
off the graph,
ie: 38.5°C

15 minutes

Daily practice

Whole class teaching

Ask the class the following questions:

'How many grams are in a kilogram?'

'How many grams are in half a kilogram?'

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

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

Remind the class that we can write grams as decimal fractions of a kilogram.

Say some grams for pupils to write as decimal fractions of a kilogram on the chalkboard, eg: 6704g = 6.704kg

15 minutes

Introduction

Whole class teaching

Remind the pupils that they found the temperature under your arm yesterday.

Say to the pupils:

'This is called body temperature.'

'Normal body temperature is 37°C.'

Explain, 'A line graph is used to plot a set of data over an amount of time.'

20 minutes

How

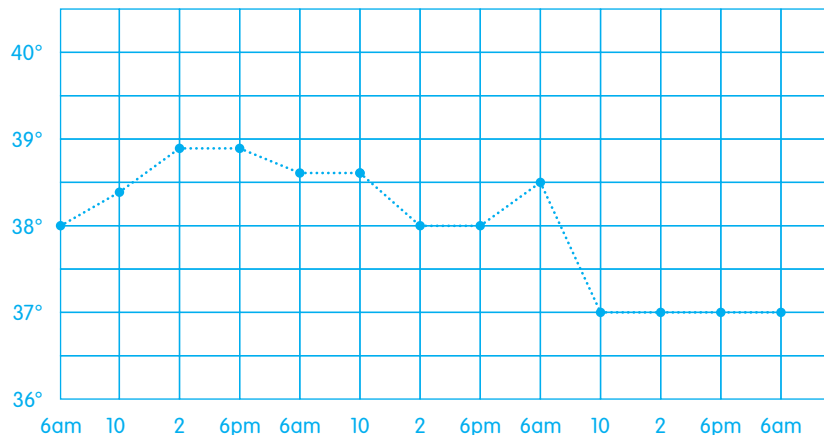
Main activity

Pair task

Tell the pupils to look at Lola's body temperature graph and explain that this graph plots Lola's temperature over three days.

Teach [How? Reading a line graph](#), as shown left.

Lola's body temperature graph



Ask pairs to discuss the following questions:

'What was Lola's temperature at 2pm?'

'What was her highest temperature?'

10 minutes

Plenary

Whole class teaching

Ask some pairs:

'What happens at zero degrees Celsius?'

'What do you think happens at 100 degrees Celsius?' (Water boils)

Week 28: Recording temperatures

Day 4: A temperature line graph

Learning outcomes

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

Answer questions about
units of temperature.

Answer questions
about a temperature
line graph.

Preparation

Before the lesson:

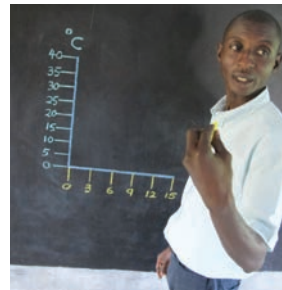
Copy the [Daily temperatures for Abuja table](#) on to a large piece of paper or card.

Read [How? A temperature line graph](#), as shown below.

How? A temperature line graph



Explain that the
vertical axis must
start below 15°
and end above 38°.



Write the times
at regular
intervals along the
horizontal axis.



Choose some pupils
to help you plot
the temperatures.



Put a dot where the
line from the time
meets the line from
the temperature.



Join the dots and
explain that this
line is called the
'temperature curve'.

10
minutes

Daily practice

Pair task

Ask the pairs to discuss the answers to these questions:

'What units are used to measure temperature?'

'What temperature is freezing point?'

'What is the average body temperature?' (37°C)

'What temperature is boiling point?' (100°C)

20
minutes

How

Table

Introduction

Whole class teaching

Read the [Daily temperatures for Abuja table](#) and explain that the temperature in Abuja was recorded every three hours.

Say to the pupils, 'We are going to represent this information as a temperature line graph.'

Draw the vertical and horizontal axes on the chalkboard.

Teach [How? A temperature line graph](#), as shown left.

Daily temperatures for Abuja table

Time hours	00	03	06	09	12	15	18	21	24
Temp °C	18	15	18	24	38	34	26	23	20

20
minutes

Graph

Main activity

Group task

Tell the groups to look at the [temperature line graph](#) and ask:

'When is the hottest time of the day?'

'Why is it hot at this time?' (The sun is high in the sky)

'When is the coolest time?'

'Why is it cool at this time?' (It is night time)

10
minutes

Graph

Plenary

Whole class teaching

Choose some groups to say their answers and reasons to the class and ask the class to say if they agree.

Say some times and ask some pupils to point to the temperatures for those times on the [temperature line graph](#).

Write these questions on the chalkboard:

'When is a good time to walk to the market?'

'When is the sun starting to go down?'

Ask the groups to write the answers in their exercise books.

Encourage them to give a reason for their answers, eg:
'9.00 is a good time to walk to the market because it is still cool.'

Week 28: Recording temperatures

Day 5: Climate graph

Learning outcomes

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

Say the value of the units
for measuring time.

Obtain information
from a climate graph.

Preparation

Before the lesson:

Draw the [Lagos climate table](#), as shown
opposite, on a [large piece of paper](#).

Write the [questions](#) from today's main
activity on the chalkboard.

Read [How? Climate graph](#), as shown
below, and find a [large piece of paper](#)
to draw on and a [ruler](#).

How? Climate graph



Draw a horizontal
line on the paper
with the ruler,
marking months at
regular intervals.



Choose a scale for
rainfall. Write it on
a vertical line on
the right-hand side.



Choose pupils to
draw and shade in
the bars carefully.



Choose a scale for
temperature.
Write it on a vertical
line on the left-
hand side.



Ask pupils to plot
the temperatures.
Join the dots to
make the temper-
ature curve.

15
minutes

Daily practice

Pair task

Write the following on the chalkboard and choose some pairs to fill in the missing numbers:

- seconds = 1 minute
- minutes = 1 hour
- hours = 1 day
- days = 1 week
- weeks = 1 year

Ask the pupils:

- 'Which months have 30 days?'
- 'Which have 31 days?'
- 'How many days are there in February?'

15
minutes

Table

Introduction

Pair task

Tell the pupils that the **Lagos climate table**, as shown below, shows the average amount of rainfall measured in millimetres that Lagos gets each month. It also shows the average temperature for each month measured in degrees Celsius.

Ask the pairs to say the ranges for the temperatures and the rainfall and discuss what they notice, ie: a larger range for the rainfall.

Lagos climate table

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Rain mm	10	40	85	150	200	320	240	120	160	125	40	15
Temp °C	27	29	29	28	27	26	25	25	26	26	27	27

20
minutes

How

Main activity

Whole class teaching

Say to the pupils:

'A climate graph is a bar chart with a line graph.'

'The temperature is shown on the line graph and the rainfall on the bar chart.'

Teach **How? Climate graph**, as shown left.

Questions/
Graph

Group task

Read the following **questions** on the chalkboard and ask the groups to find the answers by looking at the **graph** on the chalkboard:

- 'Which months are the hottest?'
- 'What is the temperature in the driest month?'
- 'Which month is the wettest?'
- 'What is the weather like in June?'

10
minutes

Graph

Plenary

Whole class teaching

Ask different groups to explain their answers to the class using the **climate graph**.

Ask the class to say what they notice about the temperature as the weather gets a lot wetter, ie: it cools slightly.

Keep the climate graph for the following week.

Weekly page

Primary 5, numeracy lesson plans

Week 29:

Climate graphs

Words/phrases

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

climate graph
negative numbers
temperature curve
range
moisture
Atlantic Ocean
annual rainfall
equator
mode
total
horizontal axis
vertical axis

Learning expectations

By the end of the week:

All pupils will be able to:
Obtain information from a climate graph.

Most pupils will be able to:
Draw a climate graph.

Some pupils will be able to:
Compare climate graphs from different countries and say how they are different.

Assessment task

Instructions:

Ask an individual pupil to:

1

Explain when temperatures during the day are high and when they are low.

2

Explain activities they can do when the temperature is high or low.

3

Look at the climate table for London, shown on Day 3, and ask the following questions:

'When is the temperature the warmest?'

'When does London have the most rainfall?'

Example of a pupil's work

This pupil can:

Explain different temperatures at different times of the day.

Explain activities they can do when the temperature is cool.

Find information in a climate table.

1 Temperatures are low during the night and early morning.

Temperatures are high during the day, mainly at 1:00 pm.

2 6 am = working at the house or at the farm.

10 am = learning at school.

5 pm = sports activities.

11 pm = sleeping.

3 The most rainfall is in November

The highest temperature is in July.

Week 29: Climate graphs

Day 1: Maiduguri climate graph

Learning outcomes

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

Solve temperature
problems involving negative
numbers.

Draw a climate graph.

Preparation

Before the lesson:

Have ready the [Lagos climate graph](#)
and the [thermometer](#) from Week 28.

Draw the [Maiduguri climate
table](#) and read [How? Climate graph](#),
as shown below.

Find some [large pieces of paper](#)
and [rulers](#), enough for the class graph
and for each group.

How? Climate graph



Draw a horizontal
line on the paper
with the ruler,
marking months at
regular intervals.



Write the rainfall
scale on the right-
hand side.



Choose some
pupils to draw
and shade in
the bars carefully.



Write the temperature
scale on the left-
hand side of the
graph.



Ask some pupils
to plot the temper-
atures. Join the
dots to make the
temperature curve.

15 minutes | Thermometer

Daily practice

Pair task

Choose a pair to take the **thermometer** outside and record the temperature.

Repeat each day this week, and keep each day's recording for Day 5.

Write these temperatures on a line on the chalkboard: -5 -4 -3 -2 -1 0 1 2 3 4 5 6

Write these questions on the chalkboard:

'The temperature rises by 9 degrees from -4°C. What is the temperature?'

'The temperature falls by 8 degrees from 5°C. What is the temperature?'

15 minutes | Graph

Introduction

Whole class teaching

Look at the **Lagos climate graph** with the pupils and ask:

'What do we write on the horizontal axis?'

'Where do we write the temperature?'

'Where do we write the amount of rainfall?'

20 minutes | **How** | Table/Paper/Rulers

Main activity

Group task

Explain that the pupils are going to make a climate graph for Maiduguri.

Read the **Maiduguri climate table**, below, with the pupils and teach **How? Climate graph**, as shown left.

Use the same scale as the climate graph for Lagos, made last week (Week 28). Give each group a **large piece of paper**.

Help the groups to draw the horizontal axis for the months with the **rulers**.

Maiduguri climate table

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Rain mm	0	0	2	10	30	80	160	220	100	15	0	0
Temp °C	22	25	29	34	33	30	28	26	27	28	25	23

10 minutes | Graph

Plenary

Whole class teaching

Ask each group to show their graph and ask the class to say if it is correct.

Ask the groups to look at the graphs and say which months are the driest and which month is the hottest in Maiduguri.

Keep the class **graph** for the next day and Day 4.

Tell the groups to write each month carefully.

Remind the groups how to draw the vertical axes and label the right-hand side 'mm' and the left-hand side '°C'.

Tell them to label the rainfall in Hundreds and the temperature in fives.

Tell the groups to look carefully at the Maiduguri climate table and draw bars for the rainfall.

Tell them to plot the temperature and put a dot where the month line meets the temperature line.

Week 29: Climate graphs

Day 2: Comparing climates

Learning outcomes

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

Solve temperature problems
involving negative numbers.

Compare two climate
graphs and say how
the climate is different
in each one.

Preparation

Before the lesson:

Have ready the [thermometer](#), [Maiduguri climate graph](#) and [table](#) from yesterday and the [Lagos climate graph](#) and [table](#) from Week 28, Day 5.

Read [How? Different climates](#) and draw a [map](#) of Africa on the chalkboard, showing Nigeria, as shown below.

How? Different climates



Point to Maiduguri.
Ask a pupil to
label the winds that
blow over it.



Explain that these
north-east winds
come from the
desert and are hot
and dry.



Point to Lagos.
Ask a pupil to
label the winds that
blow over it.



Explain that these
south-west winds
come from the ocean
and are very warm
and wet.



Notice how the
bars and temperature
curves are different
on the two graphs.

15 minutes | Thermometer

Daily practice

Pair task

Choose a pair to take the **thermometer** outside and record the temperature. Keep this for Day 5.

Ask the pairs to draw a temperature line from -10°C to 20°C in their exercise books.

Ask the pairs to answer the following questions using their temperature lines:
'Which of these temperatures is the highest?'

-4°C or -2°C
 -8°C or 4°C
 -9°C or 9°C

15 minutes | Graphs/
Table

Introduction

Pair task

Show the class the **Maiduguri climate graph** and the **climate table**.

Ask the pairs to say some of the information they show, eg: the driest months.

Ask the pupils:

'When is the dry season?'

'What happens to the temperature curve in the middle of the year?'

'Why do you think it dips? (More rain and cloud makes the air cooler)'

Choose some pairs to write the ranges for the temperature and the rainfall on the chalkboard.

20 minutes | How
Graphs

Main activity

Whole class teaching

Teach **How? Different climates**, as shown left.

Write the following questions on the chalkboard, read and explain them:

'Why is the climate hotter in Maiduguri?'

'Why is it wetter in Lagos?'

'Where is the largest rainfall range?'

'Where is the largest temperature range?'

Tell the pupils to look at the **Maiduguri** and **Lagos climate graphs** to find the answers.

Group task

Ask the groups to discuss the answers to the questions and write them in their exercise books.

Choose some groups to share their answers with the class.

Explain to the pupils:

'Maiduguri has hot dry winds blowing from the desert in the north-east, which means there are very few clouds so the sun is very strong.'

'Lagos has warm winds from the south-west, which pick up moisture from the ocean. This moisture forms heavy clouds, making Lagos wetter with less sunshine.'

10 minutes

Plenary

Group task

Ask the groups to find the modes for the temperatures and rainfall for Lagos and Maiduguri.

Ask the groups questions about the climate graphs, eg:

'Which is the wettest place in June?'

'Which is the hottest place in June?'

'Which place has the highest temperature?'

Week 29: Climate graphs

Day 3: London climate graph

Learning outcomes

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

Order negative and
positive numbers.

Read a climate graph
for London and say how
London's climate is
different from Nigeria's.

Preparation

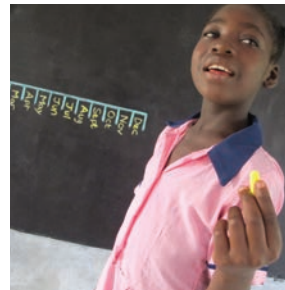
Before the lesson:

Have ready the [thermometer](#), the
[Maiduguri](#) and [Lagos climate graphs](#)
from Day 2.

Draw the [London climate table](#)
and read [How? London climate graph](#),
as shown below.

Find a [large piece of paper](#)
and a [ruler](#).

How? London climate graph



Choose some
pupils to label
the horizontal axis
on the paper.



Label the rainfall
axis.



Choose some pupils
to draw the bars
(they will be very
small).



Label the temperature
axis and choose
some pupils to plot
the temperature.



Join the dots to
make the temper-
ature curve.

15 minutes | Thermometer

Daily practice

Pair task

Choose a pair to take the **thermometer** outside and record the temperature. Keep it for Day 5.

Write each of these sets of temperatures vertically on the chalkboard:

2°C, -8°C, -1°C,
-6°C, -4°C

16°C, 18°C, -15°C, -5°C

6°C, 10°C, -10°C,
1°C, 0°C

Ask the pairs to order each set vertically, with the highest number at the top, in their exercise books.

Choose some pairs to write their answers on the chalkboard.

15 minutes | Table/ Graph

Introduction

Whole class teaching

Ask if any of the pupils know where London is.

Explain that London is a city in England and ask, 'What do you think the climate is like in London?'

Show the pupils the **London climate table** and explain that they are going to make a climate graph for London.

Teach **How? London climate graph**, as shown left.

London climate table

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Rain mm	56	39	46	45	49	50	48	53	56	60	61	58
Temp °C	4	5	7	10	13	17	19	18	16	12	7	5

20 minutes | How | Graph/ Table

Main activity

Group task

Ask the groups to look carefully at the **London climate graph** and **table** and say one thing they have noticed to the class.

Explain to the pupils:

'London is cooler than Nigeria because it is further from the Equator.'

'It rains every month because it is close to the Atlantic Ocean and the winds come from the west.'

Explain to the pupils:

'There are four seasons in England.'

'The three coldest months are the winter.'

'The three hottest months are the summer.'

'The three months before the summer are the spring.'

'The three months before the winter are the autumn.'

Ask the groups to write the seasons in their exercise books with the correct months next to each one and the temperature for each month.

10 minutes | Graphs

Plenary

Group task

Tell the groups to look at the **climate graphs** for Lagos, Maiduguri and London.

Ask them to say how the climate in London is different from the others.

Encourage them to mention the amounts of rainfall and the temperature.

Week 29: Climate graphs

Day 4: What is the climate in Kano?

Learning outcomes

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

Add and subtract negative
and positive numbers.

Obtain and compare
information from climate
graphs.

Preparation

Before the lesson:

Draw the [Kano climate table](#), as
shown opposite, on the chalkboard.

Read [How? Making a climate graph](#),
as shown below, and find some
[large pieces of paper](#) and [rulers](#), enough
for each group to have one.

Have ready the [Lagos](#) and [Maiduguri](#)
[climate graphs](#) from Day 2.

How? Making a climate graph



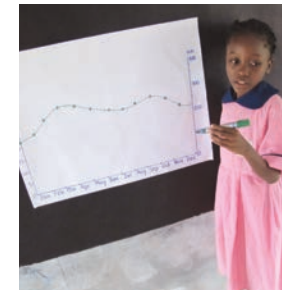
Check that the
groups write
the months at
equal intervals.



Check that the
temperature scale
goes up in fives
at regular intervals.



Check that the
rainfall scale goes
up in Hundreds at
regular intervals.



Help the pupils
to plot the temper-
atures and make
the temperature
curve line.



Check that the
bars are correct
and shaded in.

15 minutes | Thermometer

Daily practice

Pair task

Choose a pair to take the **thermometer** outside and record the temperature. Keep this for Day 5.

Ask the pairs to draw a number line from -9 to 4°C in their exercise books.

Write the following sums on the chalkboard:

- $-5 - 4 =$
- $-2 - 3 =$
- $5 - 7 =$
- $-3 + 7 =$
- $-2 + 5 =$

Ask the pairs to use their number lines to find the answers and write them in their exercise books.

15 minutes | Table

Introduction

Pair task

Tell the class to look at the **Kano climate table**.

Explain that they are going to use this information to make their own climate graphs for Kano.

Ask the pupils:

'What will be on the horizontal axis?'

'Where will you put the temperature scale?'

'Where will you put the rainfall scale?'

Kano climate table

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Rain mm	0	0	1	10	52	113	193	257	113	13	0	0
Temp $^{\circ}\text{C}$	22	24	28	31	30	28	26	25	26	27	25	22

20 minutes | How | Paper/ Rulers

Main activity

Whole class teaching

Ask the pupils to discuss what they think the temperature curve will look like. (It will rise slightly in the middle)

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

Teach How? **Making a climate graph**, as shown left.

Group task

Ask the groups the following questions:

'When is the dry season?'

'What happens to the temperature curve in the middle of the year?'

'Why do you think it dips?'

'Which month gets the most rainfall?'

'Which is the driest month?'

10 minutes | Graphs

Plenary

Whole class teaching

Display one of the **Kano climate graphs** with the **Lagos** and **Maiduguri climate graphs**.

Ask the pupils to say what they notice about the climate graphs.

Ask them to say which climate graphs are similar and why they think this is, eg: Maiduguri and Kano have similar climates because they are both in northern Nigeria.

Week 29: Climate graphs

Day 5: Snow in Toronto

Learning outcomes

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

Record daily temperatures
on a line graph and say
what they notice.

Discuss different climates
using a climate graph.

Preparation

Before the lesson:

Write the [temperature recordings](#)
made this week on the chalkboard.

Draw the [Toronto climate graph](#)
and the [table](#), as shown opposite
on a large piece of [paper](#).

Read [How? Reading a climate graph](#),
as shown below.

How? Reading a climate graph



Which months have
snow?



How much rain
falls in the
warmest month?



What is the weather
like in August?



What is the temper-
ature range?



What is the total
annual rainfall?

15 minutes | Recordings

Daily practice

Pair task

Ask the pupils what they notice about the [temperature recordings](#) made this week.

Ask, 'What would the temperature curve look like on a climate graph?'

Choose some pairs to help you record the temperatures on a simple line graph.

Write the days on the horizontal axis and a temperature scale on the vertical axis.

Ask the pairs to say what each temperature would be if it was 35°C less.

15 minutes | Table

Introduction

Whole class teaching

Look at the [Toronto climate table](#) with the class.

Ask the pupils:

'What do you notice about the temperatures?'

'What do you think happens to the rain at these temperatures?' (The winds are very cold, so the rain freezes and falls as snow.)

'What do you notice about the rainfall?' (It rains every month.)

Toronto climate table

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Rain mm	55	51	59	65	66	67	69	80	72	61	72	67
Temp °C	-5	-6	0	7	13	18	21	20	16	10	4	-2

20 minutes | Graph

Main activity

Whole class teaching

Ask the class to say what they think the Toronto temperature curve will look like.

Show the class the [Toronto climate graph](#).

Ask the pupils:

'How is the temperature scale different from the other climate graphs we have seen?' (It starts at minus 10.)

'How is the rainfall scale different?'

How

Group task

Discuss the questions in [How? Reading a climate graph](#), as shown left.

Explain that the 'total annual rainfall' means the amount of rain that falls in one year.

Ask the groups to write the answers to the questions in their exercise books.

10 minutes | Graph

Plenary

Whole class teaching

Tell the pupils to look at the [Toronto climate graph](#) and ask:

'When do you think the snow starts to melt?' (In March when the temperature starts to rise above zero.)

'What problem might this cause?' (Snow that has been there for three months can cause flooding as it melts.)

Weekly page

Primary 5, numeracy lesson plans

Week 30:

Revision

Words/phrases

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

analogue
digital
am
pm
vertically
addition
subtraction
multiplication
grid method
division
remainder
scales

Learning expectations

By the end of the week:

**All pupils will be
able to:**

Use the shorter methods
to add and subtract.

**Most pupils will be
able to:**

Choose and use a method
to multiply and divide.

**Some pupils will be
able to:**

Use the correct calculations
to solve two-step word
problems.

Assessment task

Instructions:

Ask an individual pupil to:

1
Solve the following sums using the vertical method:

$$456 + 352 =$$

$$675 - 342 =$$

2
Solve the following sums using any method:

$$45 \times 0.75 =$$

$$588 \div 6 =$$

3
Solve the following word problem:
Five women sell 255 oranges each. They sell each orange for N20. How many oranges did they sell altogether? How much did each of the women earn?

Example of a pupil's work

This pupil can:

Add and subtract three-digit numbers using the vertical method.

Multiply decimal numbers.

Divide large numbers.

Solve a two-step word problem.

1 $456 + 352 = 808$ $675 - 342 = 333$

$$\begin{array}{r} 456 \\ + 352 \\ \hline 808 \\ 1 \end{array}$$

$$\begin{array}{r} 675 \\ - 342 \\ \hline 333 \end{array}$$

2 $45 \times 0.75 = 33.75$

x	0.7	0.05
40	28	2
5	3.5	0.25

$$28 + 2 + 3.5 + 0.25 = \underline{33.75}$$

$$588 \div 6 = 98$$

$$\begin{array}{r} 588 \\ - 300 \quad 50 \times 6 \\ \hline 288 \\ - 240 \quad 40 \times 6 \\ \hline 48 \\ - 48 \quad 8 \times 6 \\ \hline 0 \end{array}$$

$$50 + 40 + 8 = \underline{98}$$

3 $255 \times 5 = 1275$

The women sold 1275 oranges.

$$1275 \times 20 = 25\,500$$

$$25\,500 \div 5 = 5100$$

Each woman earns ₦5100

Week 30: Revision

Day 1: Time

Learning outcomes

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

Tell the time on an
analogue clock.

Solve time problems using
a number line.

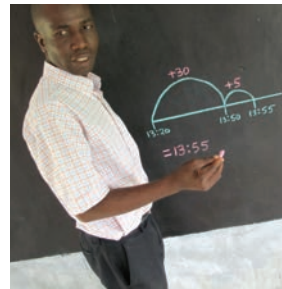
Preparation

Before the lesson:

Find a large [analogue clock](#).

Read [How? Time number lines](#)
and write the [word problems](#) on the
chalkboard, as shown below.

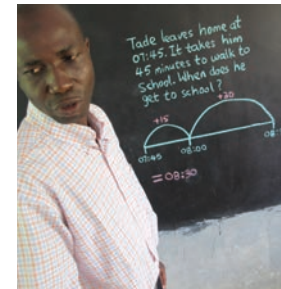
How? Time number lines



Calculate: 'If it is
13:20 now, what
will the time be in
35 minutes?'



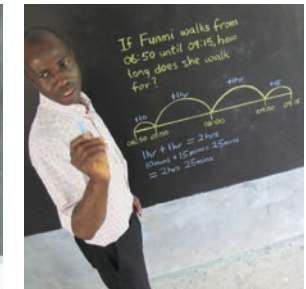
Read the problem
and draw
a number line.



Explain how to
expand the minutes
to cross the
hour boundary.



Read the problem.
Draw a number
line and mark on
the hours crossed.



Count the times
for each jump on
the number line.
Add up the times.

15 minutes | Clock

Daily practice

Whole class teaching

Hold up the large **analogue clock**.

Ask the class to say the time as you move the hands to different places on the clock.

Make quarter past 2 and explain that the clock is 20 minutes fast. Ask, 'What is the real time?'

Make 20 to 9 and explain that the clock is 25 minutes slow. Ask, 'What is the real time?'

Repeat with other fast and slow times.

Ask the pupils to explain the meaning of 'am' and 'pm'.

15 minutes

Introduction

Whole class teaching

Remind the class: 'Digital time does not break up the 24 hours of the day into two halves.'

'It does not use "am" or "pm". Instead it counts from 1 to 24.'

Ask the pupils to help you write a chart with digital times next to analogue clock times, eg:
1am = 01:00
2am = 02:00
3am = 03:00

Explain that when we reach pm times we keep counting to 24 (1pm = 13:00).

20 minutes

How | Word problems

Main activity

Whole class teaching

Remind the class that time problems can be solved using a number line.

Teach **How? Time number lines**, as shown left.

Write the following **word problems** on the chalkboard. Read and explain them:

'A bus leaves at 9:45 and arrives at 11:20. How long is the journey?'

'Tola reads for 45 minutes. He starts at 10:40. When does he finish?'

'The clock says 02:15. It is 50 minutes slow. What is the real time?'

10 minutes

Plenary

Whole class teaching

Choose some groups to draw the number lines they used for the word problems on the chalkboard.

Ask them to explain their calculations and ask the other groups if they agree.

Week 30: Revision

Day 2: Addition and subtraction

Learning outcomes

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

Convert analogue times
to digital.

Use the shorter methods
to add and subtract
three-digit numbers.

Preparation

Before the lesson:

Have ready an [analogue clock](#)
and a [digital clock](#) (eg: on a mobile phone).

Read [How? Shorter methods for
addition and subtraction](#) and
write the [calculations](#) on the chalkboard,
as shown below.

How? Shorter methods for addition and subtraction



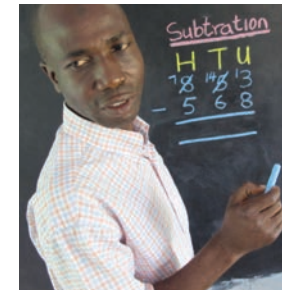
Add the units (12).
Put 2 in the U column
and carry the 10.



Add the Tens (130).
Put 3 in the T column.
Carry the 100 and
add the H column.



Look at the numbers
that are not possible
to subtract.



Remind the pupils
how to rename
the next place
value digit.



Subtract each
column.

15 minutes | Clocks

Daily practice

Pair task

Explain to the pupils:

'On the **analogue clock**, the hour is broken into two halves.'

'There are 30 minutes "past" the hour and 30 minutes "to" the hour.'

'On the **digital clock**, all the 60 minutes are counted, so 25 to 7 o'clock is 06:35 because 35 minutes have passed since 6 o'clock.'

Write some analogue times on the chalkboard and ask the pairs to convert them to digital in their exercise books, eg:
10 past 6
20 to 9

15 minutes | How

Introduction

Whole class teaching

Teach **How? Shorter methods for addition and subtraction**, as shown left.

Repeat with different calculations to ensure the pupils remember the methods.

20 minutes | Word problems

Main activity

Group task

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

'A bus travels 294km one day and 397km the next day. How many kilometres does it travel altogether?'

'There are 368 boys and 584 girls in a school. How many pupils are there altogether?'

'Samson has 585 carrots. Segun has 396 carrots. How many more carrots has Samson got?'

Ask the groups to discuss the calculations needed to complete each problem.

10 minutes

Plenary

Whole class teaching

Write this problem on the chalkboard:

'At 11am, 345 guests are at a wedding. An hour later, 276 more guests arrive. Two hours later, 250 guests leave. How many guests are there now?'

Discuss the calculations needed. Choose some pupils to help you complete them on the chalkboard.

Week 30: Revision

Day 3: Multiplication

Learning outcomes

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

Convert analogue times
to 24-hour digital times.

Solve multiplication word
problems using the
grid and vertical methods.

Preparation

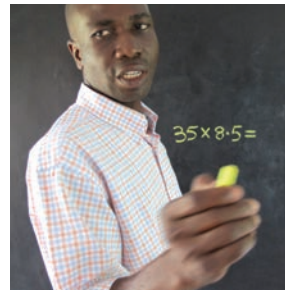
Before the lesson:

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

Have ready a [digital clock](#).

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

How? Multiplication methods



Write the calculation
on the chalkboard.



Invite some pupils
to complete the
calculation in a
multiplication grid.



Add up the amounts.



Remind the pupils
that they can also
use the vertical
method to multiply.



Set out the numbers
in the correct place
value to calculate
the answer.

10 minutes | Clock

Daily practice

Whole class teaching

Show the class a **digital clock**.

Explain, 'In digital time, midnight is the very beginning of the new day so we start counting again from zero.'

Write the following on the chalkboard:

'5 past midnight = 00:05'

Write some analogue times and choose some pairs to say and write them as digital times, eg:

10 past 6am = 06:10

25 past 7pm = 19:25

quarter past 9am = 09:15

10 to 7am = 06:50

15 minutes | How

Introduction

Whole class teaching

Write the following on the chalkboard:

'Umaru walks 8.5km every day for 35 days. How far does he walk altogether?'

Ask, 'What calculation is needed to complete this problem?' (Multiplication)

Remind the pupils that they can use the grid method and the vertical method to multiply larger numbers.

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

25 minutes | Word problems

Main activity

Group task

Ask the groups to discuss and complete the following **word problems** in their exercise books, choosing either method:

'One sack of rice weighs 6.5kg. What do 42 sacks weigh?'

'A child's meal costs N150.50. How much will 8 meals cost?'

'Lara earns N425.30 each day. How much will she earn in 7 days?'

'A sack of apples holds 32 apples. How many apples are there in 16 sacks?'

10 minutes

Plenary

Whole class teaching

Remind the pupils that 0.5 is the same as a half and 0.25 is the same as a quarter.

Choose some pupils to work out the answers to the following calculations and explain how they did them:

$$0.5 \times 8 =$$

$$0.25 \times 64 =$$

Week 30: Revision

Day 4: Division

Learning outcomes

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

Say the multiplication
fact needed to solve
a division sum.

Use repeated subtraction
to calculate division with
larger numbers.

Preparation

Before the lesson:

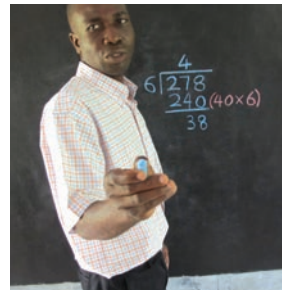
Copy the [calculations](#) from today's
main activity on to the chalkboard.

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

How? Shorter division



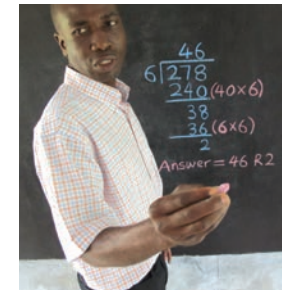
Set out the sum
shown as a short
division sum.



Demonstrate where
to write the 4
Tens from 40×6
 $= 240$.



Demonstrate
where to write
the 6 Units from
 $6 \times 6 = 36$.



Explain that 2
cannot be divided
by 6 so it is
a remainder.

10
minutes

Daily practice

Pair task

Ask the pairs questions from the times tables they have learned this year, eg:

$$7 \times 8 =$$

$$6 \times 6 =$$

$$5 \times 7 =$$

Ask, 'Which multiplication fact will help us solve 54 divided by 6?' (9×6)

Write the following sums on the chalkboard:

$$27 \div 3 =$$

$$36 \div 6 =$$

$$25 \div 5 =$$

$$18 \div 2 =$$

Choose some pairs to say which multiplication fact will help solve each sum.

15
minutes

How

Introduction

Whole class teaching

Remind the class that they can use repeated subtraction to solve division sums.

Explain that they have also learned to set sums out in the shorter division method.

Teach [How? Shorter division](#), as shown left.

25
minutes

Calculations

Main activity

Whole class teaching

Read the following [calculations](#) on the chalkboard for the groups to complete in their exercise books:

$$49 \div 7 =$$

$$182 \div 14 =$$

$$484 \div 4 =$$

$$154 \div 5 =$$

Tell them to choose any of the division methods they know to complete the calculations.

10
minutes

Plenary

Whole class teaching

Choose two groups to explain a different calculation on the chalkboard.

Ask the pupils to say some words that mean 'divide' and write them on the chalkboard, eg: share, groups of.

Week 30: Revision

Day 5: Word problems

Learning outcomes

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

Read scales on measuring
equipment.

Solve word problems with
more than one step.

Preparation

Before the lesson:

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

Read [How? Reading scales](#) and
draw some scales on the chalkboard,
as shown below.

How? Reading scales



Ask, 'What is this
scale counting in?'
Choose some
pupils to label the
divisions.



Ask, 'What is this
scale counting in?'
Choose some
pupils to label the
divisions.



Ask, 'What is this
scale counting in?'
Choose some
pupils to label the
divisions.



Point to different
divisions on the
scales and choose
some pupils to
read them.



Ask some pupils
to point to 16°C,
500g and 200ml on
the scales.

15
minutes

How



Daily practice

Whole class teaching

Ask the pupils to say what equipment is used to measure weight, temperature, capacity and length.

Remind the pupils that measuring scales use different counting systems.

Ask the pupils to count in fives, twenties and hundreds, from 0 to 200.

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

15
minutes

Introduction

Pair task

Write the following on the chalkboard:
 $+$ $-$ \times \div

Ask the pupils to say as many words as they can for each sign, eg: plus, add, more than, increase, subtract, minus.

Choose some pupils to help you complete the following calculations, using the shortest method for each:

$$485 + 267 =$$

$$385 - 147 =$$

$$36 \times 5 =$$

$$42 \div 7 =$$

25
minutes

Word problems

Main activity

Group task

Read and explain the following [word problems](#) on the chalkboard:

'Lara has 4 sacks with 48 carrots in each. Temi has 9 sacks with 24 carrots in each. Who has the most carrots? How many more carrots has he got?'

'Ayo starts work at 09:25. She works for 3 hours and 30 minutes. When does she leave work?'

'The teacher shares 480 pencils equally between 2 classes. There are 24 pupils in each class. How many pencils does each pupil get?'

5
minutes

Plenary

Whole class teaching

Praise the pupils for all the mathematics they have learned this year.

Ask the pupils to say what they have enjoyed learning about and any aspects they have found difficult.

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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