Numeracy lesson plans Primary 4, term 2, weeks 11—15

Place value, tessellation and nets

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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 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.

Grade/
Type of lesson plan

Lesson
title

Weekly page

Primary 4, numeracy lesson plans

Week 11:

Place value

Words/phrases

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

Thousands
Hundreds
Tens
Units
number sequence
place value
expand
digit
negative numbers
greater than >
less than <
between
equals =
half way

Learning expectations

By the end of the week:

All pupils will be able to:
Read and write four-digit numbers.

Most pupils will be able to:
Use >, < and = correctly.
Know and use the place value of four-digit numbers correctly.

Some pupils will be able to:
Say a number that is half way between two given numbers.

Assessment task

Instructions:

1
Ask individual pupils to write down three different four-digit numbers.

2
Ask the pupils to write the correct headings (Th H T U) above the numbers.

3
Ask the pupils to write down two four-digit numbers and use < or > or = correctly.

4
Ask the pupils to solve the following:
2356 + 200 =
8647 – 300 =
5637 + 2000 =
9835 – 4000 =

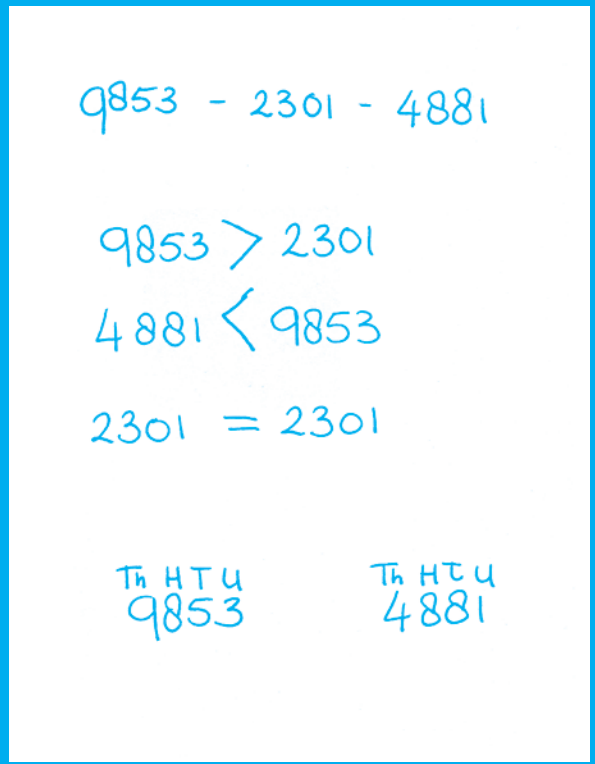
Example of a pupil's work

This pupil can:

Write a four-digit number correctly.

Line up the digits under the correct place value.

Use the < and > and = signs correctly.



Lesson title

Week 11: Place value

Day 1: Four-digit numbers

Arrow cards

Learning outcomes

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

Count on in a simple number sequence.

Read and expand four-digit numbers.

Preparation

Before the lesson:

Read How? Arrow cards, as shown below.

Make a set of arrow cards for each pair to use this week.

How? Arrow cards

Make sets of 1000—9000, 100—900, 10—90 and 1—9 arrow cards.

Arrange the cards in piles of Thousands, Hundreds, Tens and Units.

Choose some pupils to take a card from each pile.

Ask a pupil to place the cards together to make a number and say it.

Repeat five times with different cards.

15 minutes	10 minutes	25 minutes	How	Arrow cards	10 minutes	Arrow cards

Daily practice

Whole class teaching

Ask a pupil to choose a number between 1 and 9.

Tell the pupils to start at that number and count around the class, adding 3 each time. Repeat with different numbers, adding 4, 7 and 8 each time.

Write the following number sequences on the chalkboard and ask, 'What will the next number be?'

8, 13, 18, 23, ☐, ☐, ☐

13, 20, 27, 34, ☐, ☐, ☐

33, 39, 45, 51, ☐, ☐, ☐

Tell the pupils to copy and complete these sequences in their exercise books.

Introduction

Whole class teaching

Write '6782' on the chalkboard and ask the class to say the number.

Choose some pupils to say the value of each digit and write 'Th', 'H', 'T' and 'U' above the correct digit.

Write 7, 2, 9 and 8 on the chalkboard.

Ask some pupils to come and write the biggest and smallest numbers they can make with these digits.

Main activity

Pair task

Teach How? Arrow cards, as shown left.

Write '9784' on the chalkboard and ask the class to read it.

Ask each pair to make 9784 with their arrow cards.

Expand 9784 on the chalkboard:
9000 + 700 + 80 + 4.

Repeat this process with 6854 and 9888.

Write '6083' on the chalkboard and ask, 'What is the value of the Hundred?' (0).

Expand 6083.

Write '6102' on the chalkboard and ask, 'What is the value of the Ten?'(0).

Expand 6102.

Write these numbers on the chalkboard and ask the pairs to expand them in their exercise books:
7852
3479
5086
4509
4890

Plenary

Pair task

Write on the chalkboard:
5008
6070
3500

Ask the pairs to make each number using their arrow cards.

Lesson title

Week 11: Place value

Day 2: Value of the digits

0—9 number cards/
Place value chart

Learning outcomes

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

Count back in a simple number sequence.

Know the value of each digit in a four-digit number.

Preparation

Before the lesson:

Have ready a set of 0—9 number cards.

Draw the place value chart, as shown right, on the chalkboard.

Read How? Place value game, as shown below.

How? Place value game

Ask the groups to copy the place value chart into their exercise books.

Give out the cards and explain that they need to make the biggest four-digit number to win.

Tell each group to read out their numbers.

Ask each group, 'Which is the biggest number?'

Ask groups to use these to write the biggest number they can in their chart.

15 minutes	10 minutes	How	0—9 number cards	25 minutes	0—9 number cards	10 minutes

Daily practice

Whole class teaching

Tell the pupils to stand in a circle and take turns counting backwards in threes, starting at the number 74.

Write these number sequences on the chalkboard:

78, 68, 58, ☐, ☐, ☐

87, 85, 83, ☐, ☐, ☐

93, 82, 71, ☐, ☐, ☐

Ask the pairs to say what is happening in each sequence and tell them to complete the sequences in their exercise books.

Tell the pairs to make up number sequences for their partner to complete.

Introduction

Group task

Teach How? Place value game, as shown left, and play it four times.

Write the following expanded numbers on the chalkboard and ask the groups to discuss and use their number cards to make the answers:

3000 + 500 + 90 + 3 =

6000 + 50 + 2 =

7000 + 400 + 3 =

600 + 60 + 6 =

Ask the pupils to write the four-digit numbers in their exercise books.

Main activity

Whole class teaching

Ask the pupils to use their number cards to make 5243 and say the number to each other.

Tell them to change the number to 5143 and ask:

'What number is this?'

'Is it larger or smaller than the previous number?'

'What is the value of the digit that was changed?'

Make 2437 and ask:

'Which digit do we change to add 1 to this number?'

'Which digit would we change to add 100 to this number?'

Repeat with other numbers, varying the amount added.

Pair task

Write these sums on the chalkboard:

247 + 200 =

3582 + 10 =

4583 + 1000 =

5432 + 300 =

4221 + 50 =

7803 + 20 =

Ask the pairs to use their number cards to help them decide which digit needs to be changed in each sum.

Ask them to complete these sums in their exercise books.

Plenary

Pair task

Choose some pairs to say the answers to the class.

Write on the chalkboard:

4578 + ☐ = 4678

6074 + ☐ = 6174

Ask the pairs to discuss which digit needs to change and by how much.

Choose some pairs to say the missing numbers.

Place value chart

Th	H	T	U

Lesson title

Week 11: Place value

Day 3: Playing with numbers

Learning outcomes

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

Subtract single-digit numbers from two-digit numbers.

Know the value of each digit in a four-digit number.

Preparation

Before the lesson:

Have ready 0—9 number cards for each pair.

Practise How? Playing with numbers, as shown below.

0—9 number cards

How? Playing with numbers

Give groups a set of three flash cards and ask, 'How many single-digit numbers can you make?'

Ask, 'How many two-digit numbers can you make?'

Ask, 'How many three-digit numbers can you make?'

Change one of their numbers for the 0 card. Ask, 'Can you make other numbers?'

Tell the groups to write the numbers they make on the chalkboard.

15 minutes	10 minutes	How	25 minutes	0—9 number cards	10 minutes

Daily practice

Whole class teaching

Tell the groups to count down from 20 and ask, 'What is the number below 0?'

Tell the class that these are 'negative numbers' and are written –1, –2, –3, –4, and so on.

Explain that negative numbers are used to measure values and temperatures below zero.

Ask pupils to write the numbers from 0 to negative (–) 20 in their exercise books.

Introduction

Group task

Teach How? Playing with numbers, as shown left.

Ask each group to read some of the numbers they have made.

Ask the groups to add 1000 to each number and write the new numbers in their exercise books.

Choose some groups to read and write their numbers on the chalkboard.

Main activity

Pair task

Ask the pairs to make 7643 with their number cards and use them to answer the following questions:

'Which digit would we change to subtract one from this number?'

'Which digit would we change to subtract 100 from this number?'

'What will this number be if I subtract 100?'

Repeat, varying the number subtracted, eg: 200, 20, 1000.

Write these sums on the chalkboard:
647 – 200 =
8582 – 10 =
6583 – 1000 =
5632 – 300 =
4271 – 50 =
7893 – 20 =

Ask the pairs to use their number cards to help decide which digit will change in each sum.

Ask the pairs to complete the sums in their exercise books.

Plenary

Whole class teaching

Tell the pupils that you have a four-digit number in your head.

Explain that you will give them clues to help them to guess it.

Give clues such as:
'It is 1000 more than 4692' or 'It is 100 less than 5792'.

Choose some pupils to think of a number and some clues for the class.

Lesson title

Week 11: Place value

Day 4: Finding numbers

Learning outcomes

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

Complete number sequences that cross the Hundred.

Say a number that is half way between two given numbers.

Preparation

Before the lesson:

Read How? Number lines, as shown below.

Draw the number lines in How? Number lines on the chalkboard.

How? Number lines

Draw four empty number lines on the chalkboard.

Label the ends of the first number line with 40 and 50.

Label the ends of the second number line with 100 and 200.

Label the ends of the third number line with 400 and 410.

Label the ends of the fourth number line with 1000 and 2000.

15 minutes	10 minutes	25 minutes	How	10 minutes	Guess my number game

Daily practice

Pair task

Tell the pairs that they have 3 minutes to write as many numbers as they can to continue the sequence 92, 93, 94...

Repeat with 190, 191, 192...

Remind the pupils to take care as they cross the Hundred, eg: 199, 200, 201.

Write on the chalkboard:

885, 890, 895, ☐, ☐, ☐

394, 396, 398, ☐, ☐, ☐

Ask the pairs to complete these sequences in their exercise books.

Introduction

Pair task

Write '>' on the chalkboard and remind the class that it means 'greater than'.

Write '<' and explain that it means 'less than'.

Write the following on the chalkboard:

☐ < 4953

☐ > 4953

Ask the pairs to suggest some numbers that could go in the spaces.

Write:

2300 ☐ 2030

5006 ☐ 5600

8787 ☐ 8877

Ask the pairs to copy the numbers into their exercise books, writing > or < in the spaces.

Main activity

Whole class teaching

Look at the How? Number lines on the chalkboard.

Looking at the first number line, ask:

'Which numbers do the spaces represent?'

'What are we counting in?'

'Which number is half way between 40 and 50?'

Choose a pupil to mark 45 on the line.

Repeat these questions for the other number lines, choosing some pupils to mark each half way point, ie: 150, 405 and 1500.

Group task

Ask the groups, 'Which number is half way between 610 and 620?'

Tell them to draw a number line to check the answer (615).

Write these numbers on the chalkboard:

600 and 700 =

600 and 610 =

710 and 800 =

7000 and 8000 =

Ask the groups to find the number that is half way between each pair of numbers and write the answers in their exercise books.

Tell the pupils to draw number lines to check their answers.

Plenary

Whole class teaching

Play Guess my number.

Explain that you are thinking of a number, eg: 515.

Tell the pairs to find the number by asking questions such as:

'Is it bigger than (eg: 100)?'

'Is it smaller than (eg: 600)?'

'Is it between (eg: 500 and 600)?'

Explain that they can only ask 10 questions and that you can only reply with 'yes' or 'no'.

Praise the pupils when they ask questions and encourage them to guess the answer.

Lesson title

Week 11: Place value

Day 5: Greater or less

Paper/
Arrow cards

Learning outcomes

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

Make their own number sequences.

Use the symbols >, < and = correctly.

Preparation

Before the lesson:

Have ready a piece of paper for each group.

Read How? Number sequence game, as shown below.

Have ready the arrow cards from Week 11, Day 1 (earlier this week).

How? Number sequence game

Give each group a piece of paper and ask them to make a number sequence.

Tell them to write a number sequence on it, using three-digit numbers.

Tell each group to swap their paper with another group.

Ask the groups to continue the sequence.

Ask the groups to write their sequences on the chalkboard and check that they are correct.

15 minutes	How	10 minutes	Arrow cards	25 minutes		10 minutes	Guess my number game

Daily practice

Group task

Remind the class that they have been looking at sequences.

Remind the groups that number sequences can go forwards and backwards.

Choose some pupils to help you complete these sequences on the chalkboard:

997, 998, 999, ☐, ☐, ☐

994, 996, 998, ☐, ☐, ☐

320, 315, 310, ☐, ☐, ☐

Teach How? Number sequence game, as shown left.

Introduction

Whole class teaching

Ask the pupils to make 5100 with their arrow cards.

Ask:

'What is the value of the 5 and the 1?'

'Which number is 100 more and 100 less?'

'Which number is half way between 5100 and 5200?'

Write the following on the chalkboard:
300 and 400
800 and 810

Ask the pupils to find the number that is half way between each pair of numbers.

Main activity

Whole class teaching

Choose some pupils to write two four-digit numbers on the chalkboard.

Ask the pupils to say the value of each digit in the numbers.

Write '>' and '<' on the chalkboard and ask the pupils what they mean.

Ask a pupil to write the correct sign to compare the two numbers on the chalkboard.

Choose some pupils to write two different four-digit numbers on the chalkboard and repeat this process.

Pair task

Write '=' on the chalkboard and ask some pupils to explain what it means, ie: equals, the same as.

Write these sums on the chalkboard:

600 + 50 + 2 ☐ 6520

700 + 30 + 5 ☐ 735

8000 + 200 ☐ 820

6000 + 30 ☐ 6300

7000 + 400 + 20 + 2 ☐ 7422

Ask the pairs to copy and complete the sentences, using >, < or = in their exercise books.

Plenary

Whole class teaching

Play Guess my number from Week 11, Day 4 (yesterday).

Grade/
Type of lesson plan

Lesson
title

Weekly page
Primary 4, numeracy lesson plans

Week 12:
Addition

Words/phrases

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

Tens boundary
Hundreds boundary
expand
vertical addition
two-digit numbers
three-digit numbers
addition
total
round
estimate

Learning expectations

By the end of the week:

All pupils will be able to:
Use vertical addition (with expansion) to calculate sums with three-digit numbers.

Most pupils will be able to:
Solve word problems using vertical addition of three-digit numbers, crossing the Tens and Hundred boundaries.

Some pupils will be able to:
Estimate and solve word problems with three-digit numbers.

Assessment task

Instructions:

1
Ask individual pupils to solve the following sums:
264 + 312 =
756 + 233 =

2
Ask the pupils to solve the following sums:
795 + 132 =
931 + 486 =

3
Ask the pupils to estimate the answer to the following problem:
Ali wants to buy a plastic bucket that costs N885 and a mop that costs N235. How much does he need to pay in total?

4
Ask the pupils to solve the word problem using vertical addition.

Example of a pupil's work

This pupil can:

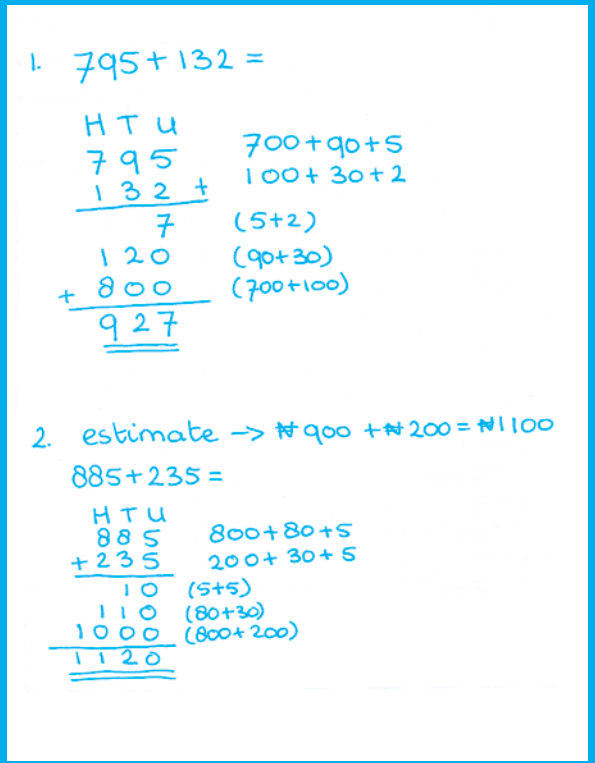
Line up the digits under the correct place value.

Expand numbers into Hundreds, Tens and Units.

Add up Hundreds, Tens, and Units crossing the Tens boundaries.

Estimate the answer of a word problem.

Solve a word problem.



Lesson title

Week 12: Addition

Day 1: Vertical addition revision

Learning outcomes

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

Add multiples of 10.

Add two-digit numbers crossing Tens boundaries.

Preparation

Before the lesson:

Read How? Crossing boundaries in two-digit sums, as shown below.

How? Crossing boundaries in two-digit sums

Set the sum out vertically and write 'T' and 'U' above the numbers.

Ask the pupils to help you expand the numbers.

Tell them to add up the Units and the Tens.

Tell them to add up the two answers.

Tell them to write the answer under the correct place values in the sum.

15 minutes	10 minutes	How	25 minutes	10 minutes	Guess my number game

Daily practice

Whole class teaching

Write '4 + 3 = 7' on the chalkboard and explain that this helps us to work out:
40 + 30 = 70
400 + 300 = 700
4000 + 3000 = 7000

Explain that we just need to move the digits to the left, making the number ten times bigger each time.

Ask the pupils to complete the following sums in their exercise books using the above method:
4000 + 2000 =
600 + 300 =
50 + 30 =
60 + 12 =
20 + 34 =
64 + 20 =

Introduction

Whole class teaching

Write '73 + 48 =' on the chalkboard.

Teach How? Crossing the boundaries in two-digit sums, as shown left.

Choose some pupils to help you solve 65 + 48 and 76 + 78 using this method.

Main activity

Group task

Write these word problems on the chalkboard:

'There are 85 boys and 66 girls in a school. How many pupils are there altogether?'

'Temi has 76 cattle and Ayo has 36 cattle. How many cattle are there altogether?'

'Tunde sold 68 tickets on Monday and 37 tickets on Tuesday. How many tickets has he sold?'

'Fumni picks 98 melons and Taiwo picks 37. How many melons have they picked altogether?'

Ask each group to read a problem and say the sum they need to do.

Ask the groups to solve the word problems in their exercise books.

Remind them to set the sums out vertically and expand the numbers.

Ask each group to explain one of their calculations on the chalkboard.

Plenary

Whole class teaching

Play Guess my number from Week 11, Day 4 (last week).

Choose one group to decide on a three-digit number.

Tell the other groups to ask questions and try to guess the number.

Lesson title

Week 12: Addition

Day 2: Vertical addition with three-digit numbers

Arrow cards

Learning outcomes

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

Subtract multiples of 10.

Add three-digit numbers crossing the Tens boundary.

Preparation

Before the lesson:

Have ready the arrow cards from Week 11, Day 1 (last week).

Read How? Crossing boundaries in three-digit sums, as shown below.

How? Crossing boundaries in three-digit sums

Set a three-digit sum out vertically and write 'H', 'T' and 'U' above the numbers.

Ask the pupils to help you expand the numbers.

Tell them to add up the Units, the Tens and the Hundreds.

Tell them to add up the three answers.

Tell them to write the answer under the correct place values in the sum.

15 minutes	10 minutes	Arrow cards	25 minutes	How	10 minutes

Daily practice

Whole class teaching

Write '7 – 4 = 3' on the chalkboard.

Ask some pupils to write other sums we can solve now we know this, ie:
70 – 40 =
700 – 400 =
7000 – 4000 =

Write these sums on the chalkboard:
8 – 5 =
6 – 3 =
7 – 2 =

Ask the pairs to complete the sums in their exercise books.

Tell the pairs to make up three more sums they can solve from each of the above sums.

Introduction

Whole class teaching

Write '732' and '981' on the chalkboard and ask pupils to use their arrow cards to make the numbers.

Ask them to use the arrow cards to expand each number.

Use the arrow cards to demonstrate adding
900 + 70 + 11 =

Write the following sums on the chalkboard:
800 + 160 + 28 =
500 + 240 + 32 =
300 + 320 + 5 =
400 + 280 + 6 =

Ask the pairs to solve the sums using their arrow cards.

Main activity

Whole class teaching

Write '732 + 249 =' on the chalkboard.

Teach How? Crossing boundaries in three-digit sums, as shown left.

Repeat with 568 + 427 = and 757 + 325 =, choosing some pupils to help at each stage.

Pair task

Write the following sums on the chalkboard:
365 + 429 =
468 + 325 =
738 + 132 =
448 + 340 =

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

Remind them to set the sums out vertically and expand the numbers.

Choose some pairs to explain their calculations on the chalkboard.

Plenary

Whole class teaching

Read out the following sums:
50 + 35 =
70 – 40 =
800 – 300 =
220 + 40 =
340 + 30 =
7000 – 5000 =
550 + 30 =
540 + 10 =
634 + 200 =

Choose some pairs to answer the questions orally.

Lesson title

Week 12: Addition

Day 3: Addition word problems

Counters

Learning outcomes

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

Add two-digit numbers to three-digit numbers quickly.

Solve problems using three-digit numbers.

Preparation

Before the lesson:

Have ready six counters for each pupil.

Read the instructions for How? Addition bingo game, as shown below.

Write the multiples of 2, between 110 and 150, on the chalkboard.

How? Addition bingo game

Give each pupil six counters and ask them to draw six boxes in their exercise book.

Ask the pupils to choose six numbers from the chalk-board and write one in each box.

Read the questions in the daily practice and tell the pupils to cover the answer with a counter.

The first pupil to cover all their numbers correctly shouts 'Bingo'.

Check that the correct numbers have been covered.

15 minutes	Counters	20 minutes	How	15 minutes	10 minutes

Daily practice

Whole class teaching

Play the How? Addition bingo game, as shown left, using these questions:

110 + 2 =
110 + 8 =
110 + 20 =
110 + 26 =
120 + 6 =
120 + 12 =
110 + 4 =
120 + 26 =
130 + 10 =
110 + 38 =
100 + 10 =
110 + 6 =
110 + 14 =
120 + 14 =
130 + 20 =
130 + 12 =
100 + 20 =
130 + 14 =
120 + 18 =
110 + 12 =

Introduction

Whole class teaching

Write '447 + 239 =' on the chalkboard.

Teach How? Crossing boundaries in three-digit sums, as shown in Week 12, Day 2 (yesterday).

Main activity

Group task

Write the following problems on the chalkboard and ask groups to solve them in their exercise books:

'There are 437 people in Tola's village and 413 people in Lola's village. How many people are there in both villages?'

'Find the sum of 348 and 325.'

'Yemi has 438 eggs while Femi has 344 eggs. Find the total number of eggs'.

'During an LGEA election, 348 men and 343 women voted. How many people voted in all?'

Plenary

Whole class teaching

Choose some pupils to help you solve the following sums on the chalkboard:

358 + 439 =
757 + 118 =

Lesson title

Flash cards

Week 12: Addition

Day 4: Addition crossing the Ten and Hundred

Learning outcomes

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

Round numbers to the nearest Ten.

Add three-digit numbers crossing the Tens and Hundreds boundaries.

Preparation

Before the lesson:

Write these sums on large flash cards:
150 + 12 =, 160 + 18 =, 140 + 15 =,
130 + 18 =, 500 + 150 =, 600 + 170 =,
800 + 140 =

Read How? Speedy addition, as shown below.

How? Speedy addition

Hold up each sum flash card.

Ask the groups to discuss the answer.

Tell the groups to put their hands up when they have an answer.

Ask the first group with their hands up to answer.

Give points if the answer is correct. The group with the most points wins.

15 minutes | 0—100 number line

10 minutes | How

25 minutes

10 minutes

Daily practice

Whole class teaching

Draw a 0—100 number line on the chalkboard.

Ask the pupils to use it to help them round the following numbers to the nearest Ten:
46, 67, 23, 18, 4, 77, 98, 45, 91, 36.

Remind the pupils that numbers ending in 5 are rounded up to the next Ten, eg: 25 rounds up to 30.

Remind the pupils to round down numbers less than 25, eg: 24 rounds down to 20.

Introduction

Group task

Remind the class that they can use place value to add quickly.

Write '150 + 12 =' on the chalkboard.

Ask the pupils:

'What are the units I need to add?' (0 + 2)

'What are the Tens I need to add?' (5 + 1)

'What are the Hundreds I need to add?' (1).

Repeat this process with 500 + 12 =

Play How? Speedy addition, as shown left.

Main activity

Whole class teaching

Write '376 + 258 =' on the chalkboard.

Ask a pupil to write the sum vertically.

Choose some pupils to say the value of each digit in the numbers.

Ask the pupils to help you add the Units (6 + 8), the Tens (70 + 50) and the Hundreds (300 + 500).

Tell them to add the three answers quickly, thinking about place value.

Pair task

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

```
  H T U
  4 8 3
+ 2 3 8
```

```
  H T U
  6 5 7
+ 1 8 7
```

```
  H T U
  6 9 5
+ 1 0 5
```

```
  H T U
  4 9 2
+ 3 8 9
```

```
  H T U
  7 4 8
+ 1 6 6
```

Plenary

Whole class teaching

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

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

Lesson title

Flash cards

Week 12: Addition

Day 5: Addition problems

Learning outcomes

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

Round numbers to the nearest Hundred.

Estimate and solve three-digit number problems.

Preparation

Before the lesson:

Make large Hundreds flash cards, ie: 100, 200, 300 and so on up to 1000.

Read How? Rounding game, as shown below.

Have ready this week's word/phrase flash cards for each group.

How? Rounding game

Place the flash cards spaced out on the ground.

Call out a number between 100 and 900.

Tell the pupils to run to the nearest Hundred it can be rounded to.

Repeat with other numbers. The last pupil to reach the correct number is out.

Continue until one pupil remains and declare him or her the winner.

15 minutes	How	10 minutes	25 minutes	10 minutes	Flash cards

Daily practice

Whole class teaching

Ask the pupils to round the following numbers to the nearest Ten: 23, 56, 77, 99, 45, 15, 32.

Tell them that we can also round numbers to the nearest Hundred.

Explain that we round up any number that has a Tens digit of 5 or greater, and round down any number that has a Tens digit less than 5, eg:
673 rounds up to 700
246 rounds down to 200

Play How? Rounding game, as shown left.

Introduction

Pair task

Explain that when we add large numbers it is a good idea to estimate the answer first.

Write '386 + 523 =' on the chalkboard.

Ask some pupils to round each number to the nearest Hundred, ie: 400 + 500.

Add the numbers to make 900 and explain that this is an estimate.

Write the following sums and ask the pairs to estimate the answers:
463 + 230 =
788 + 113 =

Main activity

Group task

Write the following word problems on the chalkboard:

'Segun spends N455 and Kehinde spends N285. How much do they both spend altogether?'

'Damilola picks 386 mangoes and Temi picks 488 oranges. How many oranges do they pick altogether?'

'There are 785 pupils in school A and 177 in school B. How many pupils are there in total?'

'There are 389 girls and 455 boys in a school. How many pupils are there altogether?'

Read and explain the word problems.

Ask each group to work on one problem.

Ask them to write the calculation needed and then estimate the answer.

Ask each group to explain their answer to the class and ask the class if they agree.

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

Plenary

Group task

Give each group the word/phrase flash cards.

Read the words/phrases and ask the groups to hold up the matching flash cards.

Ask the pupils to explain the meaning of the words/phrases.

Grade/
Type of lesson plan

Lesson
title

Weekly page

Primary 4, numeracy lesson plans

Week 13: Subtraction

Words/phrases

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

take away
minus
subtract
less
difference
decrease
add
plus
total
sum
more
increase

Learning expectations

By the end of the week:

All pupils will be able to:
Use the vertical method (with expansion) for subtraction calculations.

Most pupils will be able to:
Use expanding and renaming in subtraction calculations.

Some pupils will be able to:
Estimate and calculate answers to subtraction word problems using renaming.

Assessment task

Instructions:

1
Ask individual pupils to solve the following sums:
564 – 218 =
743 + 419 =

2
Ask the pupils to solve the following sums:
725 – 367 =
931 – 486 =

3
Ask the pupils to estimate the answer to the following problem: Bode has saved N842 from his work. He wants to buy a gift for his mother. The gift is N375. How much does Bode have left after buying the gift?

4
Ask the pupils to solve the word problem using vertical subtraction.

Example of a pupil's work

This pupil can:

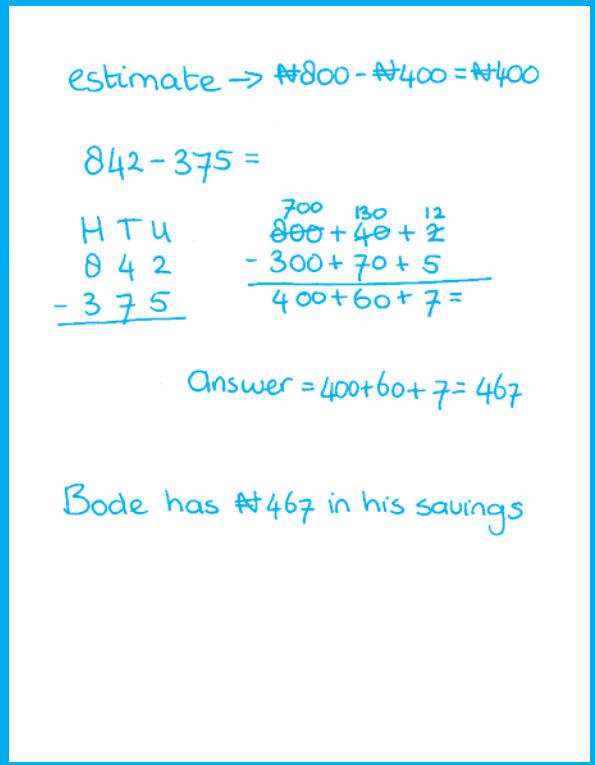
Line up the digits under the correct place value.

Expand numbers into Hundreds, Tens and Units.

Subtract using the renaming method.

Estimate the answer of a word problem.

Solve a word problem.



Lesson title

Week 13: Subtraction

Day 1: Subtraction words

Number bond cards/ Flash cards

Learning outcomes

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

Say number bonds up to 1000.

Read and understand subtraction words.

Preparation

Before the lesson:

Read How? Matching number bonds, as shown below.

Read the number bond chart, shown right, and make 0—100 and 0—1000 number bond flash cards showing Tens and Hundreds.

Have ready a set of this week's word/ phrase flash cards.

How? Matching number bonds

Shuffle all of the number bond flash cards and place them face up.

Ask a pair to take two cards that make 100.

Ask another pair to take two cards that make 1000.

Continue asking these two questions until all the cards have been taken.

Ask some pupils to write some number bonds from 0—100 and 0—1000 on the chalkboard.

15 minutes	How	Number bond chart	10 minutes	Flash cards	25 minutes	10 minutes

Daily practice

Whole class teaching

Teach How? Matching number bonds, as shown left, using the number bond chart below.

Number bond chart

100		1000	
0	100	0	1000
10	90	100	900
20	80	200	800
30	70	300	700
40	60	400	600
50	50	500	500
60	40	600	400
70	30	700	300
80	20	800	200
90	10	900	100
100	0	1000	0

Introduction

Whole class teaching

Write '+' and '–' on the chalkboard and ask the pupils to say what they mean.

Shuffle the word/phrase flash cards and show them to the pupils.

Ask them to read the cards and explain what each one means.

Flash each card and ask the pupils to put their arms up if it means 'add' and their arms out to the side if it means 'take away'.

Main activity

Whole class teaching

Write '56 – 23 =' on the chalkboard.

Set the sum out vertically, lining up the digits in their correct place value.

Ask the pupils to help you expand the numbers into Tens and Units.

Choose some pupils to subtract the Units and subtract the Tens.

Ask the pupils to add the remaining Tens and Units together.

Write the answer in the sum.

Group task

Write the following problems on the chalkboard and read and explain them to the class:

'What is 68 minus 23?'

'Find the difference between 85 and 52.'

'Subtract 25 from 38.'

'Decrease 56 by 22.'

'Take 32 away from 64.'

Ask the groups to write the vertical calculation needed for each problem in their exercise books.

Remind the pupils to write the smaller number underneath the bigger number and complete the calculations by expanding each number.

Plenary

Whole class teaching

Choose a pupil from each group to explain on the chalkboard how they worked out one of the problems.

Ask the class to say if they are correct.

Lesson title

Paper/ Flash cards

Week 13: Subtraction

Day 2: Three-digit number subtraction

Learning outcomes

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

Say number bonds for the numbers 11, 12, 13 and 14.

Solve subtraction problems involving three-digit numbers.

Preparation

Before the lesson:

Have ready a large piece of paper for each group.

Read How? Final countdown game, as shown below, and make a set of 1—10 flash cards for each group.

Have ready the word/phrase flash cards from Week 13, Day 1 (yesterday).

How? Final countdown game

Give each group the number flash cards and ask them to shuffle them.

Tell the pupils to write '99' at the top of a page in their exercise books.

Tell each pupil in the group to take turns choosing a number card.

Tell them to subtract that number from 99 and write the answer.

Give the groups five minutes to continue subtracting numbers from their answers.

15 minutes	Paper	10 minutes	How	25 minutes		10 minutes	Flash cards

Daily practice

Group task

Remind the pupils what number bonds are.

Ask the class, 'Can anyone say some number bonds for 11, 12, 13 and 14?'

Divide the class into four groups (A, B, C and D) and give each group a piece of paper.

Tell the groups to write number bonds on the paper for the following numbers:
Group A: 11
Group B: 12
Group C: 13
Group D: 14

Keep the pieces of paper for the next day.

Introduction

Group task

Teach How? Final countdown game, as shown left.

Tell the class that the pupil with the lowest score is the winner.

Ask each group to say their scores and the name of the winning pupil.

Main activity

Whole class teaching

Write '784 – 342 =' on the chalkboard.

Set the sum out vertically, lining up the digits in their correct place value.

Ask the pupils to help you expand the numbers into Hundreds, Tens and Units.

Choose some pupils to subtract the Units, the Tens and the Hundreds.

Ask them to add the remaining Hundreds, Tens and Units together to find the final answer.

Group task

Write the following problems on the chalkboard:

'What is the difference between 678 and 234?'

'There are 778 books on my bookshelves. 554 are on one shelf. How many are on the other shelf?'

'Opeyemi found 263 stones. Lamide took 152 stones away. How many stones has Opeyemi got now?'

'849 pupils went to school and 326 were there on time. How many were late?'

Ask the groups to use the vertical method to complete each problem in their exercise books.

Plenary

Whole class teaching

Flash the word/phrase flash cards and ask the pupils to put their arms up if they mean 'add' and their arms out to the side if they mean 'take away'.

Lesson title

Week 13: Subtraction

Day 3: Renaming

Number bond papers/ Paper

Learning outcomes

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

Say number bonds for the numbers 15, 16, 17 and 18.

Subtract Tens and Units using renaming.

Preparation

Before the lesson:

Have ready the number bond papers from Week 13, Day 2 (yesterday) and find a large piece of paper for each group.

Read How? Renaming, as shown below.

How? Renaming

Set this sum out on the chalkboard: 83 – 27.

7 units cannot be taken away from 3 units so we 'rename', eg: 83 = 70 + 13.

Explain that we can now subtract 7 from 13 and 20 from 70.

To complete the calculation add the Tens and Units together.

15 minutes	Number bond papers/ Paper	10 minutes	25 minutes	How	10 minutes

Daily practice

Group task

Display the number bond papers from Week 13, Day 2 (yesterday).

Ask each group to read out their number bonds and ask the class to say if they can say any more.

Divide the class into the same groups as Day 2 (yesterday) and give out the pieces of paper.

Tell the groups to write down number bonds for the following numbers:
Group A: 15
Group B: 16
Group C: 17
Group D: 18

Keep the pieces of paper for the next day.

Introduction

Whole class teaching

Ask some pupils to help you expand 67 on the chalkboard, ie: 60 + 7.

Tell the class that we sometimes need to expand numbers and 'rename' them.

Ask some pupils to help you as you demonstrate on the chalkboard:
67 = 60 + 7 = 50 + 17
50 = 50 + 0 = 40 + 10
93 = 90 + 3 = 80 + 13

Write the following numbers on the chalkboard for the pupils to expand and rename in their exercise books:
98
45
34
70
69

Main activity

Whole class teaching

Teach How? Renaming, as shown left.

Ask the pupils to help you solve the following sums using this method:
74 – 26 =
90 – 56 =
43 – 28 =
61 – 56 =

Pair task

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

```
  T U
  8 3
– 6 7

  T U
  7 0
– 4 7

  T U
  9 2
– 4 7

  T U
  6 3
– 4 7

  T U
  7 5
– 3 7
```

Plenary

Whole class teaching

Choose some pairs to explain their calculations on the chalkboard.

Lesson title

Week 13: Subtraction

Day 4: Subtraction problems with renaming

Learning outcomes

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

Use number bonds to subtract mentally.

Solve subtraction problems using renaming.

Preparation

Before the lesson:

Read How? Number bond subtraction, as shown below.

How? Number bond subtraction

Display all the number bond papers made this week.

Ask the pupils to add any bonds that are missing.

Call out the sums in the daily practice.

Ask some pupils to point to the number bond that will help to solve each sum.

Choose pupils to say the answers without using paper and pencil.

15 minutes	How	10 minutes	25 minutes	10 minutes

Daily practice

Whole class teaching

Write the following sums on the chalkboard:

11 – 9 =
13 – 8 =
12 – 8 =
15 – 6 =
15 – 8 =
11 – 8 =
14 – 6 =
14 – 8 =
17 – 8 =
18 – 9 =
18 – 6 =
16 – 8 =
15 – 7 =
14 – 5 =
13 – 5 =

Teach How? Number bond subtraction, as shown left.

Introduction

Pair task

Remind the pupils that they need to rename Tens and Units when they are subtracting some numbers.

Choose some pupils to help you expand and re-name 54 on the chalkboard:
54 = 50 + 4 = 40 + 14

Ask each pupil to write four Tens and Units numbers for their partner to expand and rename in their exercise books.

Choose some pairs to write one of their numbers on the chalkboard and expand and rename it.

Main activity

Whole class teaching

Demonstrate how to calculate 76 – 58 on the chalkboard, asking the pupils to help you at each step:

```
   T  U
   7  6
–  5  8
```

Step 1:

```
   70 + 6
–  50 + 8
```

Step 2:

```
   60 + 16
–  50 + 8
   10  + 8 = 18
```

Remind the pupils to write the answer in the sum:
10 + 8 = 18
78 – 58 = 18

Pair task

Ask some pupils to say some words that mean 'take away' and write them on the chalkboard, eg: 'minus', 'subtract', 'difference'.

Write the following problems on the chalkboard:

'Subtract 37 from 82.'

'Find the difference between 73 and 55.'

'What is 63 minus 37?'

'Decrease 64 by 27.'

Ask the pairs to say the calculations needed for each problem.

Tell the pairs to complete the problems in their exercise books.

Plenary

Whole class teaching

Choose some pairs to come and explain their calculations on the chalkboard.

Lesson title

Flash cards

Week 13: Subtraction

Day 5: Estimating

Learning outcomes

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

Use number bonds to subtract quickly.

Estimate and solve subtraction word problems.

Preparation

Before the lesson:

Write the word problems in the main activity on flash cards so that each group has a different card.

Read How? Word problems, as shown below.

Have ready this week's word/phrase flash cards.

How? Word problems

Give each group a word problem.

Ask them to write the calculation needed.

Ask the groups to estimate an answer.

Ask them to calculate the answer, expanding and renaming the Tens and Units.

Ask the groups to swap the word problems and repeat the process.

15 minutes	10 minutes	25 minutes How	10 minutes Flash cards

Daily practice

Group task

Demonstrate on the chalkboard how to order the number bonds for 11 and write a subtraction sum, ie:

11, 0
11 – 0 = 11

10, 1
11 – 10 = 1

9, 2
11 – 9 = 2

8, 3
11 – 8 = 3

Give each group a different number from 12—15.

Ask them to write the number bonds for their number, in order, in their exercise books.

Ask the pupils to write a subtraction sum next to each bond.

Introduction

Whole class teaching

Remind the class that they have learned how to estimate answers using rounding.

Write '83 – 57 =' on the chalkboard.

Ask some pupils to round each number to the nearest Ten, ie:
80 – 60 =

Subtract the numbers to make 20 and explain that this is an estimate.

Write the following sums and ask the pairs to estimate the answers in their exercise books:
63 – 38 =
76 – 58 =
85 – 37 =
92 – 65 =

Main activity

Group task

Teach How? Word problems, as shown left, using the following problems:

'There are 95 pages in a book. Taiwo has read 38. How many pages has she got left to read?'

'There are 82 birds in two trees. There are 27 birds in one of the trees. How many birds are in the other tree?'

'I had 52 sweets in a box. I ate 37. How many are left?'

'There are 84 pens in the desk. The teacher takes 48. How many are left?'

Plenary

Whole class teaching

Shuffle the word/phrase cards and ask the class to read them and explain what each one means.

Flash each card and ask the pupils to put their arms up if it means 'add' and their arms out to the side if it means 'take away'.

Grade/
Type of lesson plan

Lesson
title

Weekly page
Primary 4, numeracy lesson plans

Week 14:
Shape investigations

Words/phrases

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

equal
straight
right angles
parallel
line of symmetry
oblong
pentagon
hexagon
heptagon
octagon
regular
irregular

Learning expectations

By the end of the week:

All pupils will be able to:
Identify some regular and irregular polygons.

Most pupils will be able to:
Know the properties of some regular polygons.

Some pupils will be able to:
Draw lines of symmetry on regular polygons.

Decimal number cards: 1 set of 100—900

5	0	0

1 set of 10—90

4	0

1 set of 0—9

7

1 set of .1—.9

.2

Assessment task

Instructions:

1
Ask individual pupils to draw two different regular polygons in their exercise book.

2
Ask the pupils to name the polygons.

3
Ask them to draw an irregular polygon in their exercise book.

4
Ask the pupils to explain the properties of the different polygons to you and write them next to the shapes.

5
Ask the pupils to draw the lines of symmetry on the polygons.

Example of a pupil's work

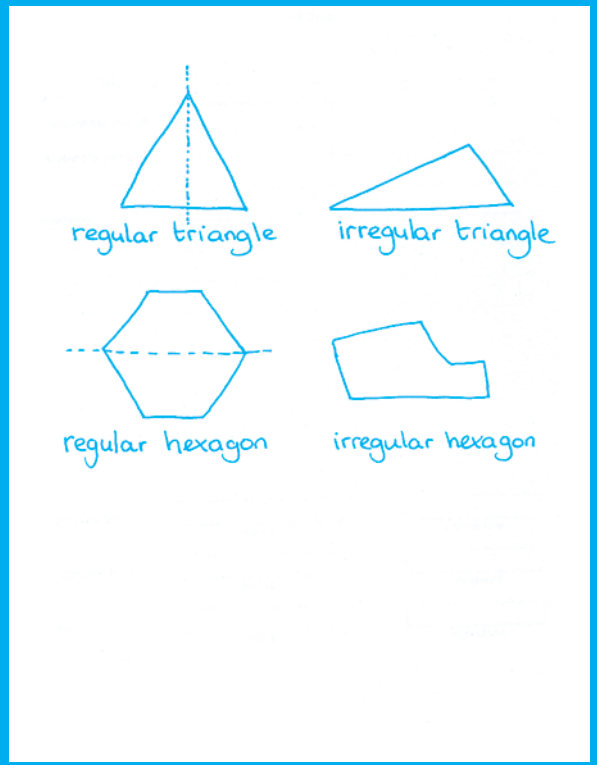
This pupil can:

Draw a regular polygon.

Draw an irregular polygon.

Write the names of the polygons.

Draw lines of symmetry on the polygons.



Lesson title

Week 14: Shape investigations

Day 1: Properties of 2D shapes

Large ruler/Decimal number cards/ Arrow cards/Large 2D shapes

Learning outcomes

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

Recognise place value in decimal numbers.

Know the properties of two-dimensional (2D) shapes.

Preparation

Before the lesson:

Read How? Shape properties, as shown below, and find a large ruler.

Have ready the arrow cards from Week 11, Day 1, and make a set of decimal number cards for each group, as shown on the Weekly page.

Make a set of large 2D shapes (square, rectangle, triangle, pentagon, hexagon).

How? Shape properties

Draw a square on the chalkboard and ask the class to name the shape.

Choose a pupil to measure the sides.

Revise parallel lines with the class and mark the parallel lines on the square.

Choose some pupils to mark the right angles with a small square.

Choose some pupils to draw on the lines of symmetry.

15 minutes	Arrow cards/ Decimal number cards	10 minutes	How	2D shapes	25 minutes	2D shapes	10 minutes

Daily practice

Whole class teaching

Ask a pupil to use the arrow cards to make 33.

Ask the class, 'What is 10 times smaller than a Unit?' (a tenth).

Tell the pupils that we can write fractions in another way, as a 'decimal number'.

Explain that in decimal numbers, 0.1 is one tenth, 0.2 is two tenths and so on.

Tell the pupils that we use a 'decimal point' to separate the Units from the tenths, so 1.1 means one Unit and one tenth.

Ask the pupils to make these numbers using the decimal number cards: 24.1, 36.8, 42.6, 53.7 and 97.2

Introduction

Whole class teaching

Show the class the 2D shapes and ask the pupils to name them.

Remind the pupils that we describe shapes by their 'properties'.

Hold up a square and say, 'This is a square because it has four straight sides and all the sides are equal.'

Teach How? Shape properties, as shown left.

Main activity

Whole class teaching

Hold up the square and the rectangle.

Ask, 'How are these two shapes different?'

Explain that a square is a special rectangle because it has equal sides and angles.

Explain that rectangles with two sides equal are called 'oblongs'.

Hold up each 2D shape and ask the pupils to say some of their properties.

Group task

Give each group a different 2D shape but tell them not to let the other groups see it.

Tell the groups to draw the shape in their exercise books and mark on any right angles, parallel lines and lines of symmetry.

Ask them to discuss other properties of their shape, such as the number of sides and equal sides.

Ask each group to say the properties of their shape and ask the other groups to try to name it.

If there is time, swap the shapes and repeat.

Plenary

Whole class teaching

Ask the class questions about 2D shapes, eg:

'Which shape has five sides?'

'Which shapes have parallel lines?'

'Which shape has no right angles?' (rhombus)

Lesson title

Week 14: Shape investigations

Day 2: 2D shapes and 3D shapes

Flash cards/3D shapes/ 2D shapes

Learning outcomes

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

Change fractions to decimals.

Describe 2D and 3D shapes.

Preparation

Before the lesson:

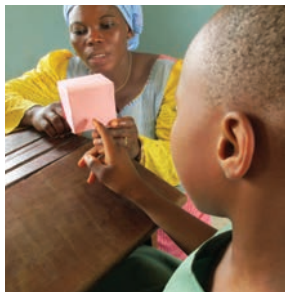
Have ready the first five word/phrase flash cards for this week.

Read How? 3D shapes, as shown below, and make a cube, cuboid, triangular prism and a square-based pyramid.

Make a set of 2D shapes for each group: a square, an oblong and an equilateral triangle.

How? 3D shapes

Hold up the 3D and 2D shapes and ask, 'How are these shapes different?'



Ask some pupils to point to and name the 2D shapes on the cube.

Ask some pupils to point to and name the 2D shapes on the cuboid.

Ask some pupils to point to and name the 2D shapes on the triangular prism.

Show the pupils the square-based pyramid and discuss its properties.

15 minutes	Decimal number cards	10 minutes	How	Flash cards	25 minutes	3D shapes	2D shapes	10 minutes	3D shapes

Daily practice

Whole class teaching

Remind the class that one tenth can be written as a decimal: 0.1

Write these fractions on the chalkboard:

$\frac{1}{10}$ $\frac{3}{10}$ $\frac{5}{10}$ $\frac{8}{10}$ $\frac{2}{10}$ $\frac{6}{10}$

Choose some pupils to write the fractions as decimals:
0.1
0.3

Write '451.2' on the chalkboard and ask the class to use their decimal number cards to expand it:
400 + 50 + 1 + 0.2

Ask the pairs to expand 75.4 using their decimal number cards.

Introduction

Whole class teaching

Ask, 'What words do we use to describe shapes?'

Flash the first five word/phrase flash cards and ask the pupils to read and explain them.

Teach How? 3D shapes, as shown left.

Main activity

Whole class teaching

Hold up the 3D shapes and ask the pupils to help you write the shapes' names on the chalkboard.

Remind the class that 2D shapes on 3D shapes are called 'faces'.

Hold up the square and ask, 'What 3D shape could this be a face of?' (cube, cuboid, square-based pyramid)

Hold up the triangle and ask, 'What 3D shape could this be a face of?' (triangular prism, square-based pyramid)

Hold up the oblong and ask, 'What 3D shape could this be a face of?' (triangular prism, cuboid)

Group task

Give each group a set of 2D shapes.

Choose some pupils to write the names of the shapes on the chalkboard.

Ask them to copy the shapes and name them in their exercise books.

Tell them to write next to each shape the 3D shapes that it could be a face of.

Plenary

Group task

Give each group a different 3D shape.

Ask them to describe its properties to the class, eg: its number of faces, edges, sides, 2D shapes.

Lesson title

Chart/2D shapes/ Ruler

Week 14: Shape investigations

Day 3: Polygons

Learning outcomes

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

Recognise place value to two decimal places.

Identify and name different regular and irregular polygons.

Preparation

Before the lesson:

Copy the decimal chart in the daily practice on to the chalkboard.

Have ready the 2D shapes and the ruler from Week 14, Day 1 (earlier this week).

Read How? Polygons, as shown below.

Make sure this week's words/phrases are on the chalkboard.

How? Polygons

Choose some pupils to draw some polygons on the chalkboard.

Draw some four-sided shapes with curved sides or open ends.

Ask some pupils to explain why they are not polygons.

Draw a regular and an irregular six-sided shape.

Ask some pupils to measure the shapes and say how they are different.

15 minutes	Chart	10 minutes	2D shapes	25 minutes	How	10 minutes

Daily practice

Whole class teaching

Ask a pupil to write one tenth as a decimal (0.1) on the chalkboard.

Explain that place value gets 10 times bigger as we move left and 10 times smaller as we move right.

Explain that hundredths are 10 times smaller than tenths.

Look at the decimal chart and ask pupils questions about the value of the digits, eg: 'What is the value of 3 here?'

Decimal chart

	T	U	.	t	h
30.01	3	0	.	0	1
48.08	4	8	.	0	8
67.45	6	7	.	4	5

Introduction

Group task

Hold up different 2D shapes and ask the pupils to say the names.

Ask the groups to write the names of five 2D shapes in their exercise books.

Tell them to cross out a shape when you describe something about that shape, eg:

The shape has three corners and three sides.

The shape has four sides and no right angles.

When a group has crossed out all the shapes tell them to shout, 'Bingo!'.

Main activity

Whole class teaching

Remind the class that a polygon is a closed 2D shape with straight sides.

Teach How? Polygons, as shown left.

Explain that when all the sides are of equal length it is called a 'regular polygon' and when they are different lengths it is called an 'irregular polygon'.

Ask the pupils another name for six-sided polygons (hexagons).

Group task

Ask, 'What do we call a five-sided polygon?' (a pentagon).

Draw a seven-sided polygon and explain that it is called a 'heptagon'.

Draw an eight-sided polygon and explain that it is called an 'octagon'.

Ask the groups to draw some irregular polygons with five, six, seven and eight sides in their exercise books.

Tell them to label their polygons using some of the words/phrases on the chalkboard.

Plenary

Whole class teaching

Ask different pupils to describe a hexagon, a heptagon and an octagon.

Choose some pupils to draw a regular hexagon on the chalkboard.

Ask the class:

'Is a square a regular polygon?'

'Is an oblong a regular polygon?'

Lesson title

Week 14: Shape investigations

Day 4: Measuring polygons

Card shapes/Paper/ Rulers

Learning outcomes

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

Expand numbers to one decimal places.

Measure polygons carefully.

Preparation

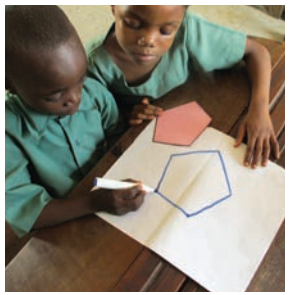
Before the lesson:

Make a set of large regular and irregular card shapes: pentagons, hexagons, heptagons and octagons for each group.

Read How? Measuring, as shown below.

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

How? Measuring



Ask a pupil to draw around a regular pentagon carefully.

Remind the pupils how to measure accurately with a ruler.

Ask some pupils to measure the sides of the pentagon and write on the measurements.

Draw an irregular hexagon on the chalkboard for pupils to measure.

Ask the pupils what they can say about the shapes.

15 minutes	10 minutes	25 minutes	How	Card shapes/Paper/ Rulers	10 minutes	Card shapes

Daily practice

Whole class teaching

Choose some pupils to write one tenth as a decimal on the chalkboard (0.1).

Choose some pupils to write one hundredth as a decimal on the chalkboard (0.01).

Write on the chalkboard:
653.4

Ask the class to help you expand it:
600 + 50 + 3 + 0.4

Write the following numbers for the pairs to expand in their exercise books:
361.7
453.2

Introduction

Whole class teaching

Choose some pupils to draw an oblong and a square on the chalkboard.

Ask the following questions:

'Which of these shapes is a regular polygon? Why?'

'What is a heptagon?'

'What is the least number of sides a polygon can have?' (three)

'What makes a polygon regular?' (equal sides and equal angles)

Main activity

Group task

Read and explain the final five words/phrases on the chalkboard.

Teach How? Measuring, as shown left.

Give each group a set of large regular and irregular card shapes.

Give them a large piece of paper and ask them to draw carefully round each shape.

Give each group a ruler and ask them to measure the sides of each shape and write on the measurements.

Ask the groups to label each shape 'regular' or 'irregular'.

Ask each group to describe one of their shapes and ask the others to say if they agree.

Keep their pieces of paper for the next day.

Plenary

Group task

Ask the following questions and tell the groups to answer them by holding up the correct large card shape:

'What has got five equal sides?'

'Hold up an irregular polygon with six sides.'

'Hold up a regular polygon with eight sides.'

Lesson title

Week 14: Shape investigations

Day 5: Investigating polygons

Number cards/
Paper shapes

Learning outcomes

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

Use the symbols > and < between decimal numbers.

Say some properties of regular and irregular polygons.

Preparation

Before the lesson:

Have ready the sets of decimal number cards from Week 14, Day 1 (earlier this week) and make a set of number cards for the hundredths (0.01—0.09) and < and >.

Read How? Decimal numbers, as shown below.

Cut out the paper shapes the groups made on Week 14, Day 4 (yesterday).

How? Decimal numbers

Give each group two Tens, Units and tenths decimal cards and < and > cards.

Ask the groups to make two numbers with the cards.

Ask them to put the correct < or > sign between the numbers.

Ask the groups to write their sums on the chalkboard.

Choose other groups to read them and say if they are correct.

15 minutes	How	10 minutes	25 minutes	Paper shapes	10 minutes

Daily practice

Whole class teaching

Write '>' and '<' on the chalkboard and ask the class what they mean.

Ask, 'Is 0.20 bigger or smaller than 0.08?'

Teach How? Decimal numbers, as shown left.

Introduction

Whole class teaching

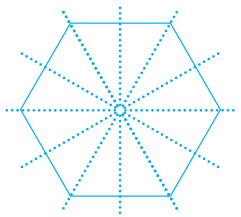
Teach How? Shape properties from Week 14, Day 1 (earlier this week).

Repeat this process, drawing a regular hexagon instead of a square. (there are no right angles)

Ask, 'How can we check the lines of symmetry?' (with a mirror or by folding)

Demonstrate folding with one of the paper hexagons, as shown below:

Folding a hexagon



Main activity

Group task

Give each group two different paper shapes that they made on Week 14, Day 4 (yesterday).

Ask them to mark on any right angles, parallel lines and lines of symmetry that they can see.

Ask each group to hold up their shapes and describe what they have found.

Whole class teaching

Ask the class to look at all the shapes and answer the following questions:

'Can irregular polygons have right angles, lines of symmetry and parallel lines?' (yes)

'What are the main differences between regular and irregular polygons?' (regular polygons have equal sides and angles)

'Is the number of lines of symmetry in a regular polygon equal to the number of sides of the polygon?' (yes)

Ask the groups to prove the last answer is true by counting the lines of symmetry on their regular polygons.

Plenary

Whole class teaching

Hold up some of the regular polygons and ask, 'What is this shape called?', 'What are its properties?'

Grade/
Type of lesson plan

Lesson
title

Weekly page
Primary 4, numeracy lesson plans

Week 15:
Tessellation and nets

Words/phrases

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

tenths
hundredths
tessellation
pattern
semi-regular tessellation
polygon
faces
vertices
cube
cuboid
square-based pyramid
triangular prism
net

Learning expectations

By the end of the week:

All pupils will be able to:
Make a simple tessellated pattern.

Most pupils will be able to:
Identify a 3D shape from a net.

Some pupils will be able to:
Make a net for a cube using a square template.

Assessment task

Instructions:

1
Ask individual pupils to draw two regular polygons that are used in a tessellated pattern.

2
Ask the pupils to draw a small tessellated pattern with the polygons chosen.

3
Ask the pupils to draw the net of a cube.

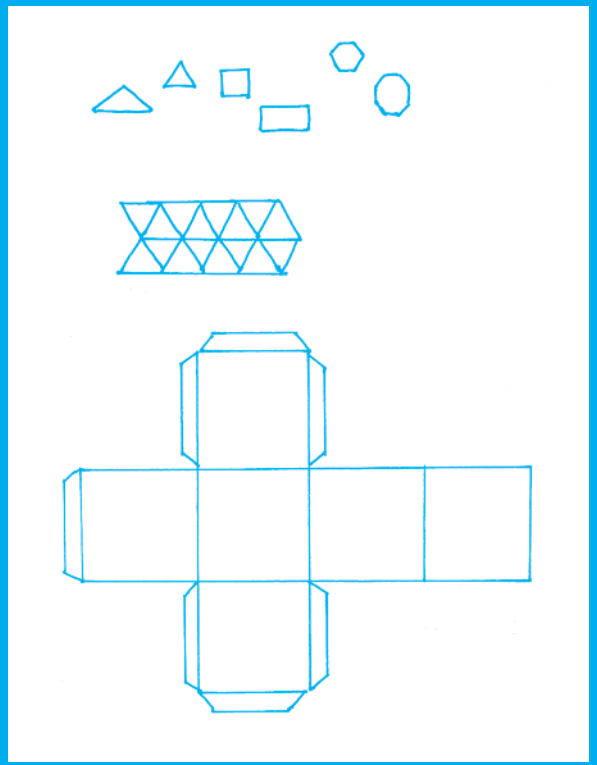
Example of a pupil's work

This pupil can:

Identify polygons used in tessellation.

Design and draw a tessellated pattern.

Draw the net of a cube.



Lesson title

Week 15: Tessellation and nets

Day 1: Tessellation

Place value grid/2D shapes/ Paper

Learning outcomes

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

Multiply whole numbers by 10 and describe what happens.

Identify shapes that can tessellate.

Preparation

Before the lesson:

Draw the place value grid, shown right, on the chalkboard and keep it there for the week.

Have ready a card oblong, equilateral triangle and circle and a large piece of paper for each group.

Read How? Tessellation, as shown below.

How? Tessellation

Draw a tile pattern on the chalkboard with triangles. Make sure there are no gaps.

Ask some pupils to help you draw a square tile pattern with no gaps.

Tell the groups to draw round the oblong and try to make a tile pattern.

Tell them to draw round the triangle and try to make a tile pattern.

Tell them to draw round the circle and try to make a tile pattern.

15 minutes	Place value grid	10 minutes	How	25 minutes	2D shapes/ Paper	10 minutes

Daily practice

Whole class teaching

Ask the class to help you write the 10 times table on the chalkboard.

Ask, 'What happens when we multiply by 10?'

Choose a pupil to write 36 in the place value grid on the chalkboard.

Ask them to multiply it by 10 and write the answer underneath in the grid.

Ask, 'What has happened to the place value of the 3 Tens and 6 Units?'

Place value grid

Th	H	T	U	.	t	h

Tell the pupils to multiply the following numbers by 10 in their exercise books: 345, 67, 203, 4, 88, 16, 10.

Introduction

Whole class teaching

Teach How? Tessellation, photos 1 and 2.

Explain that fitting shapes together in a pattern with no spaces in between is called 'tessellation'.

Ask the class, 'Where have you seen tessellations?' (floor tiles, brick walls)

Main activity

Group task

Give each group a card circle, oblong and triangle.

Ask the groups to say the name of the shapes and some of their properties.

Give each group a large piece of paper.

Teach How? Tessellation, photos 3, 4 and 5.

Plenary

Whole class teaching

Ask each group to show the class their tile patterns.

Ask the class, 'Which shapes tessellate?', 'Which shapes fit together with no gaps?'

Discuss why circles do not tessellate.

Lesson title

Week 15: Tessellation and nets

Day 2: Tessellation investigations

Place value grid/2D shapes/ Paper

Learning outcomes

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

Multiply decimal numbers by 10 and describe what happens.

Make tessellations with two regular polygons.

Preparation

Before the lesson:

Make sure the place value grid from Week 15, Day 1 (yesterday) is on the chalkboard.

Have ready a card oblong, triangle, hexagon, octagon and three squares with sides of the same length so that they tessellate.

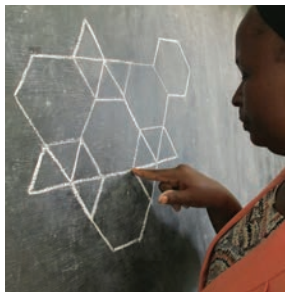
Have ready four large pieces of paper.

Read How? More tessellations, as shown below.

How? More tessellations

Use the card hexagon to make a tile pattern on the chalkboard.

Ask some pupils to help you make a tile pattern with the card hexagon and triangle.



Check that there are no gaps.

Daily practice	Introduction	Main activity		Plenary
15 minutes	10 minutes	25 minutes		10 minutes
Place value grid	How Hexagon	2D shapes/ Paper		
Whole class teaching	**Whole class teaching**	**Group task**	**Whole class teaching**	**Whole class teaching**
Ask the class what happens to the value of digits in a number when we multiply it by 10.	Ask the pupils, 'What do we call fitting shapes into a pattern with no gaps?' (tessellation).	Divide the class into four groups, A, B, C and D.	Display the tessellations. Let the pupils look at them all and check that they are correct.	Explain that 'regular tessellations' use the same regular polygon.
Write '4.78 x 10 =' on the chalkboard.	Hold up the hexagon and ask some pupils to say the name of the shape and some of its properties.	Give: Group A a card triangle and square. Group B a card octagon and square. Group C a card hexagon and triangle. Group D a card oblong and square.		Explain that 'semi-regular tessellations' use two or more types of regular polygon.
Choose a pupil to write '4.78' in the place value grid on the chalkboard.	Teach How? More tessellations, as shown left.	Give each group a piece of paper and ask them to make a tessellated pattern with their shapes.		Ask the pupils to name some regular polygons and say some of their properties.
Help them to find the answer by moving each digit one place to the left (47.8).				
Explain that the tenths have become Units and the hundredths have become tenths.				
Write the following numbers for the pupils to multiply by 10 in their exercise books: 8.63, 40.12, 56.92.				

Lesson title

3D shapes/3D chart/
Place value grid

Week 15: Tessellation and nets

Day 3: 3D shapes revision

Learning outcomes

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

Multiply whole numbers and decimal numbers by 100.

Say the properties of some 3D shapes.

Preparation

Before the lesson:

Have ready a cube, cuboid, triangular prism and a square-based pyramid.

Draw the 3D chart, shown right, on the chalkboard and make sure the place value grid is still there from yesterday.

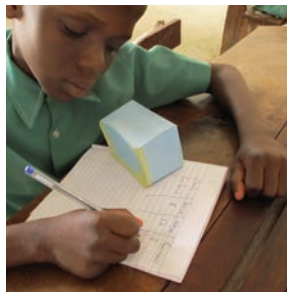
Read How? Investigating 3D shapes, as shown below.

How? Investigating 3D shapes

Give each group a different 3D shape.

Ask the groups to count the number of faces, edges and vertices (corners) on their shape.

Ask them to name the 2D shapes on the faces of their shape.



Ask the pupils to copy and complete the 3D chart in their exercise books.

15 minutes	Place value grid	10 minutes	3D shapes	20 minutes	How	3D chart	15 minutes

Daily practice

Whole class teaching

Write these sums on the chalkboard:
560.65 x 10 =
45.03 x 10 =
450.08 x 10 =

Choose some pupils to write each number in the place value grid and find the answers by moving the digits one place to the left, making the number 10 times bigger.

Ask, 'What happens when we multiply by 100?' (The digits move two place values to the left.)

Choose some pupils to solve these sums using the place value grid:
78 x 100 =
50 x 100 =
4.8 x 100 =

Introduction

Whole class teaching

Hold up each of the 3D shapes in turn and ask:

'What is this shape called?'

'How many faces has it got?'

'How many edges has it got?'

'Can you count the vertices?' (Remind the pupils that corners are called 'vertices').

Remind the class that these shapes are 'three-dimensional' (3D) shapes because they are solid.

Ask the pupils, 'What do we call flat shapes?'

Main activity

Group task

Teach How? Investigating 3D shapes, as shown left.

If there is time, let the groups swap their shapes and repeat the process.

Ask each group to read their answers about their shape.

Write their answers in the 3D chart on the chalkboard.

Ask the class which shapes have some square faces, triangle faces and oblong faces.

3D chart

Name of shape	Faces	Edges	Vertices	Names of faces

Plenary

Individual task

Let the pupils pick two regular polygons to work with.

Ask the pupils to draw their own tessellation design in their exercise book

Tell the pupils to swap their design with their partner and check that they have a closed pattern without gaps.

Lesson title

Week 15: Tessellation and nets

Day 4: Nets

Nets/
Place value grid

Learning outcomes

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

Divide numbers by 10 and describe what happens.

Identify 3D shapes from nets.

Preparation

Before the lesson:

Make large cube and triangular prism nets, as shown below.

Read How? Nets, as shown below.

Make cuboid and square-based pyramid nets for each group.

Make sure the place value grid is on the chalkboard.

How? Nets

Discuss the cube net. Ask, 'What 3D shape is made of six squares?'

Fold the net to make a cube.

Discuss the triangular prism net. Ask, 'What 3D shape has two triangles?'

Fold the net to make a triangular prism.

15 minutes	Place value grid	10 minutes	How	25 minutes	Nets	10 minutes	Nets

Daily practice

Whole class teaching

Write '328 ÷ 10 =' on the chalkboard.

Remind the pupils that ÷ means 'divide by'.

Ask the pupils, 'What happens when we divide by 10?' (The digits move one place value to the right, making it 10 times smaller)

Choose a pupil to write '328' in the correct parts of the place value grid.

Help them to find the answer by moving each digit one place to the right (32.8).

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

456 ÷ 10 =
56 ÷ 10 =
7 ÷ 10 =
4563 ÷ 10 =
305 ÷ 10 =

Introduction

Whole class teaching

Ask the pupils to name some 3D shapes.

Explain that we can use 'nets' to make 3D shapes.

Teach How? Nets, as shown left.

Main activity

Group task

Give each group a cuboid net and a square-based pyramid net.

Ask them to name and draw the faces in their exercise books.

Ask the groups to discuss what 3D shapes each net could be.

Tell them to fold the nets to make a 3D shape.

Plenary

Group task

Choose some groups to say the names of the shapes they have made.

Ask each group to say some properties about their shapes.

Display the nets in the classroom and keep them for the next day.

Lesson title

Week 15: Tessellation and nets

Day 5: Making a net

Nets/Card squares/
Paper/Scissors

Learning outcomes

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

Divide numbers by 100 and describe what happens.

Make a net for a cube.

Preparation

Before the lesson:

Have ready the nets made in Week 15, Day 4 (yesterday).

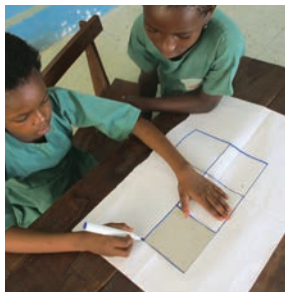
Have ready a card square and a large piece of paper for each pair.

Have ready a pair of scissors to cut some of the nets.

Read How? Making a net, as shown below.

How? Making a net

Give each pair a card square and a large piece of paper.



Ask the pairs to make a cube net by drawing round the square.

Tell them to think carefully about the position of the squares.

Ask them to cut round the net.

Ask each group to fold their net to make a cube.

15 minutes	Place value grid	10 minutes	Nets	25 minutes	How	Nets	10 minutes	Nets

Daily practice

Whole class teaching

Choose some pupils to draw a place value grid on the chalkboard and divide the following numbers by 10: 29.8, 7, 40.6, 32.7

Ask the class, 'What happens when we divide by 100?' (The digits move two place values to the right, making it 100 time smaller.)

Ask some pupils to help you solve the following sums using the place value grid:
4567 ÷ 100 =
489 ÷ 100 =
56 ÷ 100 =
3008 ÷ 100 =

Write the following numbers on the chalkboard for the pupils to divide by 100 in their exercise books:
8967, 980, 45, 5097.

Introduction

Pair task

Tell the pairs to look at the nets from Week 15, Day 4 (yesterday).

Draw a square on the chalkboard and ask the pairs to discuss what 3D shape it could be used for, eg: a pyramid, a cube.

Draw a triangle and ask which 3D shape it could be used for.

Ask the pairs to say some of their ideas and check by looking at their nets.

Main activity

Whole class teaching

Teach How? Making a net, as shown left.

Tell the pairs to think about how they will need to fold it to make a cube.

Cut out some of the nets and ask the pairs to fold them.

Plenary

Whole class teaching

Ask some pairs to show their nets to the class.

Ask, 'Which net works the best?'

Draw it on the chalkboard.

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.

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