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Autumn 1 Year 4

Links to prior learning/ objectives:	Resources:	Vocabulary:
Place value of 3 digit numbers Ordering and comparing numbers to 1000 Roman numerals to 12 Formal addition and subtraction with 3 digit numbers Using the inverse with 3 digit number calculations Finding the perimeter of basic shapes	Number cards, digits, place value counters, place value grids, blank number lines, 2D shapes, rulers, coins **Mastery:** (where to find some resources) • Teaching for Mastery • White Rose **New and old documents** • Mastery maths stickers • Nrich (curriculum mapping)	Digit, number, thousand, hundred, tens, ones, place value, more, less, greater than, less than, next, consecutive, integer, negative, positive, count through zero, above/below zero, estimate, represent, order, compare, round, nearest, multiple, inverse, exchange, regroup, column perimeter, measure, length, width, centimetres, metres, coins, pounds, pence, total,

Objectives and Teaching

Week 1

Barriers to ARE (misconceptions):

Understanding of 3 digit numbers and their place value, counting on and back from any number, knowledge of multiples of 10

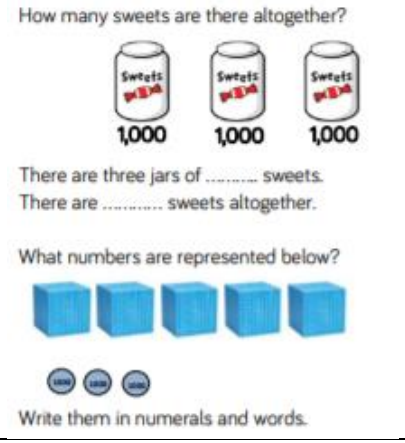
Find 1000 more or less than a given number

- To develop the skill of counting in 1000s from any given number
- To develop the skill of finding 1000 more or less than a given number

Recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones)

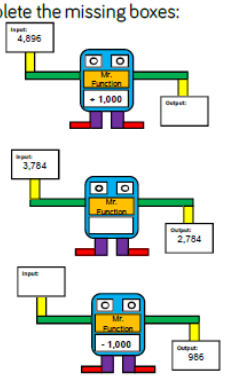
- To understand the value of each digit in a four-digit number
- To develop the skill of partitioning numbers according to place value.

Fluency



Problem Solving

Complete the missing boxes:



Reasoning

Sort these statements into **sometimes, always, never.**

- When counting in hundreds, the ones digit changes.
- The thousands column changes every time you count in thousands.
- To count in thousands, we use 4 digit numbers.

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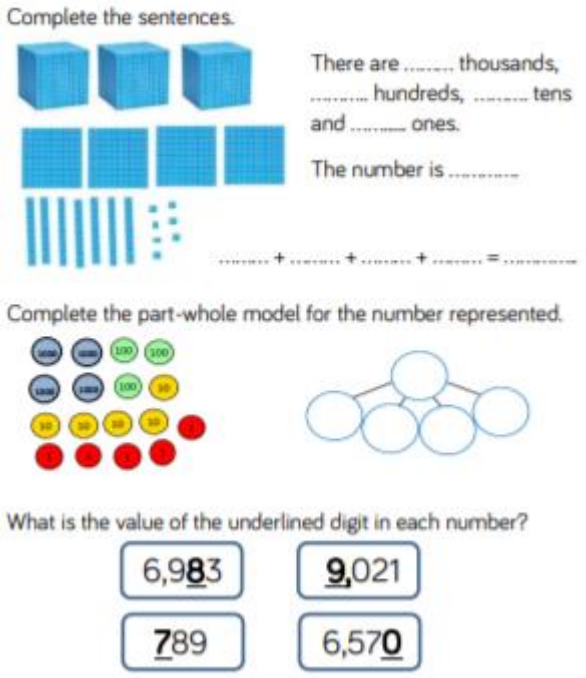

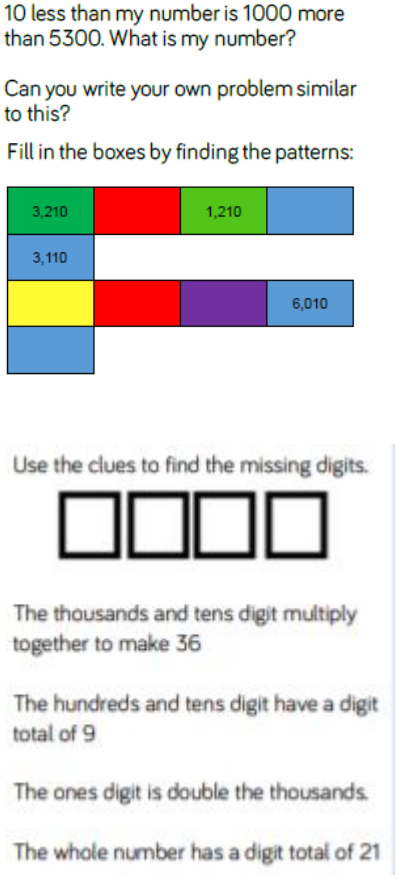

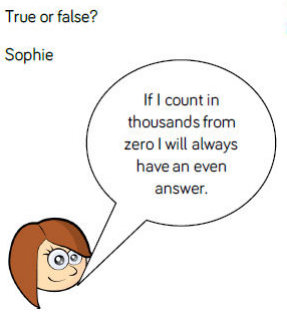

Week 2

Barriers to ARE (misconceptions):

Understanding of 3 digit numbers and their place value, counting on and back from any number, knowledge of multiples of 10

Identify, represent and estimate numbers using different representations.

- To know how to identify numbers in different representations
- To know how to represent numbers in different representations
- To know how to estimate numbers in different representations

Order and compare numbers beyond 1000

- To know how to order numbers beyond 1000
- To know how to compare numbers beyond 1000

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Fluency

Draw arrows to show where the numbers would be on the number line.

8,750

4,100

Estimate the value of each letter.

Estimate the value of A.

Problem Solving

If the number on the line is 9,200, what could the start and end numbers be? Find three different ways.

I am thinking of a number. It is greater than 3,000 but smaller than 5,000

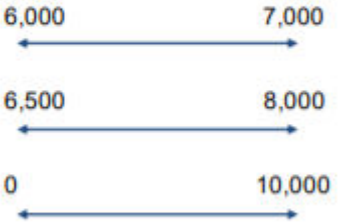
The digits add up to 15.
What could the number be?

Write down as many possibilities as you can.

The difference between the largest and smallest digit is 6- how many numbers do you now have?

Reasoning

Place 6,750 on each of the number lines



Are they in the same place? Why?

Write a sensible number story to compare each pair of numbers:

3,650 and 2,345

9,999 and 2,893

Week 3

Barriers to ARE (misconceptions):

Round any number to the nearest 10, 100 or 1000.

- To develop the skill of rounding to the nearest 10
- To develop the skill of rounding to the nearest 100
- To develop the skill of rounding to the nearest 1000

Solve number and practical problems that involve all of the above and with increasingly large positive numbers

- To develop the skill of solving problems involving place value

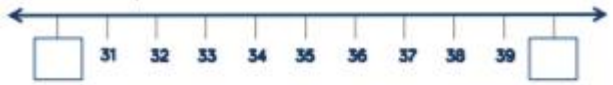
Fluency

Problem Solving

Reasoning

A number is rounded to 370
What could all the possibilities be?

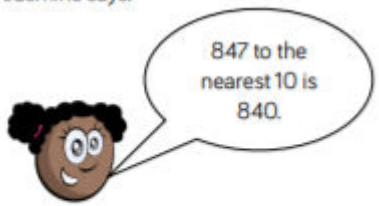
370

<table>
<tr>
<td>
Which multiples of 10 do the numbers sit between?


Say whether each number on the number line is closer to 160 or 170


Round 163, 166 and 167 to the nearest 10
Complete the table.
<table>
<tr><th>Start number</th><th>Rounded to the nearest 10</th></tr>
<tr><td>  </td><td></td></tr>
<tr><td>851</td><td></td></tr>
<tr><td>XCVIII</td><td></td></tr>
</table>
</td>
<td>
Two different two-digit numbers both round to 40 when rounded to the nearest 10
The sum of the 2 numbers is 79

What could the two numbers be?

Is there more than one possibility?
</td>
<td>
Jasmine says:


Do you agree with Jasmine?

Explain why.
</td>
</tr>
<tr>
<td><u>Week 4</u>
<u>Barriers to ARE (misconceptions):</u></td>
<td colspan="2">Read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of zero and place value.
• To know how to read and write Roman numerals to 100.
• To understand how the numeral system has changed.

Count backwards through zero to include negative numbers.
• To develop the skill of counting backwards through zero</td>
</tr>
</table>

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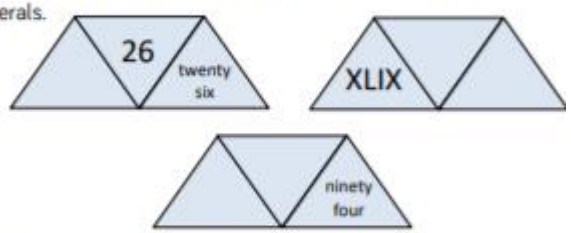
Fluency

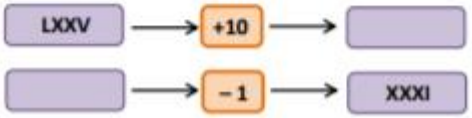
Lollipop stick activity.
The teacher shouts out a number and the children make it with lollipop sticks.
Children could also do this in pairs or groups, and for a bit of fun they could test the teacher!

Each diagram shows a number in numerals, words and roman numerals.

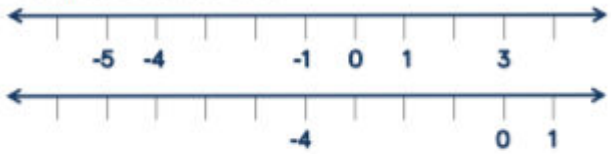


Complete the diagrams.

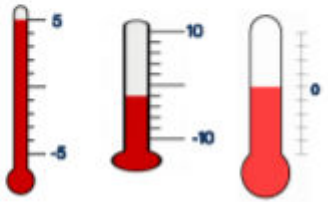
Complete the function machines.



Complete the number lines.



Fill in the temperatures on the different thermometers.



Problem Solving

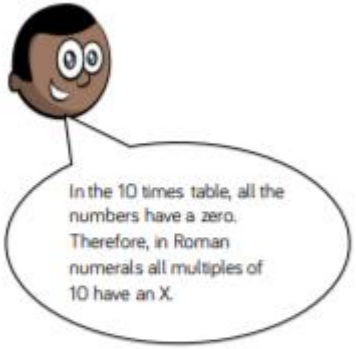
Solve the following calculation:

XIV + XXXVI = ☐

How many other calculations, using Roman numerals, can you write to get the same total?

Reasoning

Bobby says:



Research and give examples to prove whether or not Bobby is correct

Can you spot the mistake in these number sequences?

a) 2, 0, 0, -2, -4

b) 1, -2, -4, -6, -8

c) 5, 0, -5, -15, -25

Explain how you found the mistake and convince me you are correct.

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Week 5

Barriers to ARE (misconceptions):

Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate

- To develop the skill of adding 1s, 10s, 100s and 1000s.
- To add numbers with up to 4 digits using column addition. (this will need more than one lesson)
- To subtract numbers with up to 4 digits using column subtraction. (this will need more than one lesson)
- To develop the skill of using the most efficient methods to calculate 4-digit numbers.

Estimate and use inverse operations to check answers to a calculation.

- To know how to estimate to check my answers
- To know how to use the inverse to check my answers

Fluency

Add the place value counters together.

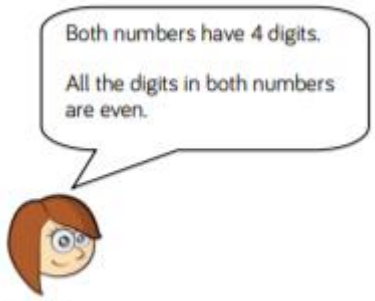
Can you write this as a calculation? (3,242 + 2,213)
Now complete the question 3,242 + 213 in the same way.
What is the same and what's different?
Look at how the place value columns are lined up in the new question.
How is our answer different? Why?

Complete the missing numbers.

$$\begin{array}{r} 4\square6\square \\ +25\square1 \\ \hline \square789 \end{array}$$

Problem Solving

Tamsin adds 2 numbers together that total 4,444

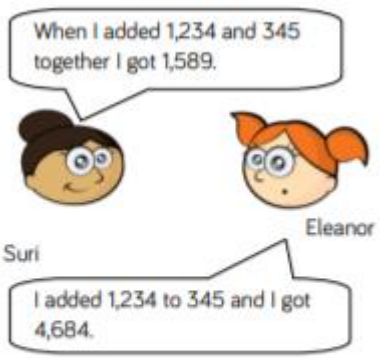


What could the numbers be? Prove it.
How many possibilities are there?

Reasoning

Two children completed the following calculation:

1,234 + 345



Both of the children have made a mistake in their calculations.

Calculate the actual answer to the question.

What mistakes did they make?

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Here is a number.

Subtract 4,345.
What is your answer?
Can you subtract 5 from 3?
What do you have to do?
You exchange a 10 – what does your number become that you are subtracting from?

Complete the calculation.
What do we do?
Where do we exchange from?
Why do we exchange from there?

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  4578
- 3643
------
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Find the difference between 6,528 and 469 using column subtraction.

Three Primary Schools join together to go on a school visit to The Deep in Hull. 1,235 people go on the trip. There are 1,179 children and 27 teachers. The rest are parents.

How many parents are there?

What do you need to do first?

Which operation do you use?

Find the missing numbers that could go into the boxes.

Give reasons for your answers.

□ - 1, 345 = 4□6

What is the greatest number which could go in the first box?
What is the smallest?
How many possible answers could you have?
What is the pattern between the numbers?

Week 6

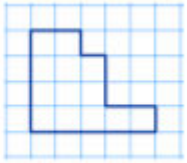
Barriers to ARE (misconceptions):

Measure and calculate the perimeter of a rectilinear figure (including squares) in centimeters and meters

- To understand what perimeter is
- To know how to find the perimeter of a shape on a grid
- To know how to measure perimeter in cm and m
- To know how to calculate perimeter of a rectangle

Fluency

Work out the perimeter of the shape.
Can you draw a different shape with :
a) the same perimeter
b) a perimeter which is 5cm longer
c) a perimeter which is double/half the length of this one.



Problem Solving

Which of these shapes has the longest perimeter?

Explore other letters which could be drawn as rectilinear shapes.

Put them in order of shortest to longest perimeter.

Can you make a word?

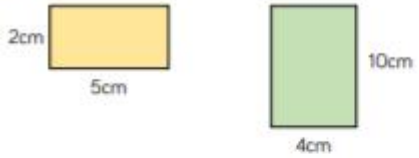
Reasoning

Always, sometimes, never.

When all the sides of a rectangle are odd numbers, the perimeter is even.

Prove it.

Work out the perimeter of the rectangles.



Work out the perimeter of the square.

The perimeter of the rectangle is 36m. What is the length of the longest side?

You have 10 paving stones to design a patio. The stones are one metre square.

The stones must be joined to each other so that at least one edge is joined corner to corner.

Use squared paper to show which design would give the longest perimeter and which would give the shortest.

Week 7

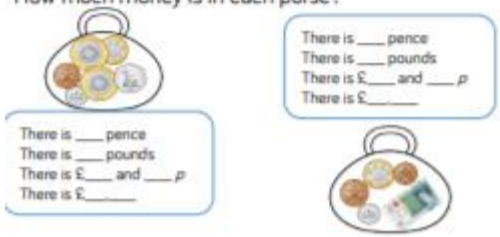
Barriers to ARE (misconceptions):

Estimate, compare and calculate different measures, including money in pounds and pence.

- To understand the relationship between pounds and pence.
- To know how to order amounts of money.
- To know how to estimate amounts of money.
- To know how to calculate money totals and change.

Fluency

How much money is in each purse?



Problem Solving

Jamal has these digits cards.

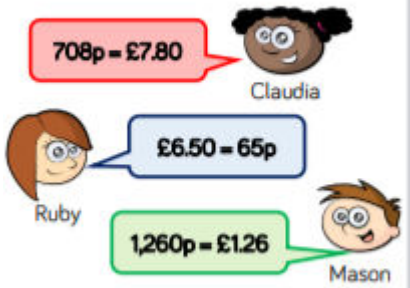
He makes a total that is more than three pounds but less than six pounds.

How many prices can he make?

Can you order your prices in ascending or descending order?

Reasoning

Some children are converting pence in to pounds.



Can you spot their mistakes?

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Complete the part whole models to show how many pounds and pence there are.

Convert these amounts to pounds and pence:

357p 307p 57p 370p

Jenny has these coins:

She picks three coins at a time.
Decide whether the statements will be always, sometimes or never true.

- She can make a total which ends in 2
- She can make an odd amount
- She can make an amount greater than £6
- She can make a total which is a multiple of 5

Can you think of your own always, sometimes, never statements?