

Autumn Scheme of Learning

Year 4

#MathsEveryoneCan

2020-21

White
Rose
Maths

New for 2020/21

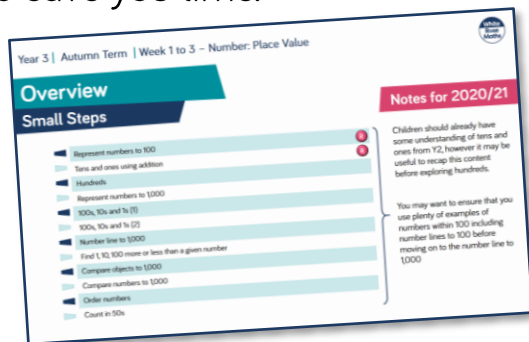
2020 will go down in history. The world has changed for all of us.

We want to do as much as we can to support children, teachers, parents and carers in these very uncertain times.

We have amended our schemes for 2020/21 to:

- ★ highlight key teaching points
- ★ recap essential content that children may have forgotten
- ★ flag any content that you might not have covered during the school closures period.

We hope these changes will add further value to the schemes and save you time.



Lesson-by-lesson overviews

We've always been reluctant to produce lesson-by-lesson overviews as every class is individual and has different needs. However, many of you have said that if blended learning becomes a key feature of school life next year, a weekly plan with linked content and videos could be really useful.

As always, we've listened! We've now produced a complete lesson-by-lesson overview for Y1 to Y9 that schools can use or adapt as they choose. Each lesson will be linked to a free-to-use home learning video, and for premium subscribers, a worksheet. This means that you can easily assign work to your class, whether they are working at home or in school.

Inevitably, this lesson-by-lesson structure won't suit everyone, but if it works for you, then please do make use of this resource as much as you wish.

Teaching for Mastery

These overviews are designed to support a mastery approach to teaching and learning and have been designed to support the aims and objectives of the new National Curriculum.

The overviews:

- have number at their heart. A large proportion of time is spent reinforcing number to build competency
- ensure teachers stay in the required key stage and support the ideal of depth before breadth.
- ensure students have the opportunity to stay together as they work through the schemes as a whole group
- provide plenty of opportunities to build reasoning and problem solving elements into the curriculum.

For more guidance on teaching for mastery, visit the NCETM website:

<https://www.ncetm.org.uk/resources/47230>

Concrete - Pictorial - Abstract

We believe that all children, when introduced to a new concept, should have the opportunity to build competency by taking this approach.

Concrete – children should have the opportunity to use concrete objects and manipulatives to help them understand what they are doing.

Pictorial – alongside this children should use pictorial representations. These representations can then be used to help reason and solve problems.

Abstract – both concrete and pictorial representations should support children's understanding of abstract methods.

Need some CPD to develop this approach? Visit www.whiterosemaths.com for find a course right for you.

Supporting resources

We have produced supporting resources for every small step from Year 1 to Year 11.

The worksheets are provided in three different formats:

- Write on worksheet – ideal for children to use the ready made models, images and stem sentences.
- Display version – great for schools who want to cut down on photocopying.
- PowerPoint version – one question per slide. Perfect for whole class teaching or mixing questions to make your own bespoke lesson.

For more information visit our online training and resources centre resources.whiterosemaths.com or email us directly at support@whiterosemaths.com

Roman numerals

1 Match the numbers to the Roman numerals.

1
5
10
50
100

L
C
V
X
I

3 Eva lives in this house.

What number does Eva live at?
Eva lives at number

4 Jack rolls 2 6-sided dice.

What is Jack's total score?
Alex rolls the same 2 dice and gets two different numbers.
Her score is the same as Jack's.
What numbers could Alex have rolled?

5 Write the Roman numeral in numerals and words.
a) XXXIV b) LXXI c) LXXVIII d) XCVI e) XXVIII f) XCI

Roman numerals

1 Match the numbers to the Roman numerals.

1	5	10	50	100
L	C	V	X	I

2 Write each number in Roman numerals.
a) 7 b) 12 c) 23 d) 55 e) 72 f) 89 g) 17 h) 41 i) 27

3 Eva lives in this house.
What number does Eva live at?

4 Jack rolls 2 six-sided dice.

What is Jack's total score?
Alex rolls the same 2 dice and gets two different numbers.
Her score is the same as Jack's.
What numbers could Alex have rolled?

5 Write the Roman numeral in numerals and words.
a) XXXIV b) LXXI c) LXXVIII d) XCVI e) XXVIII f) XCI

6 Each diagram should show a number in numerals, words and Roman numerals. Complete the diagrams.

a) b) c) d)

7 Complete the function machines.

a) $LXI \rightarrow +1 \rightarrow \square$ e) $LIX \rightarrow -1 \rightarrow \square$
 b) $LXI \rightarrow +10 \rightarrow \square$ f) $XIV \rightarrow -10 \rightarrow \square$
 c) $XVII \rightarrow +10 \rightarrow \square$ g) $LXXVII \rightarrow +10 \rightarrow \square$
 d) $LXXV \rightarrow -1 \rightarrow \square$

8 Complete the calculation.
 $XXX + \square = LXI + \square$
 How many other calculations can you write that give the same total?
 Compare answers with a partner.

Roman numerals

1 Match the numbers to the Roman numerals.

1
5
10
50
100

L
C
V
X
I

Meet the Characters

Children love to learn with characters and our team within the scheme will be sure to get them talking and reasoning about mathematical concepts and ideas. Who's your favourite?



Teddy



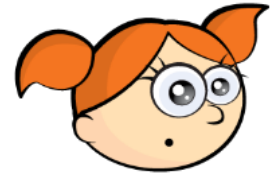
Rosie



Mo



Eva



Alex



Jack



Whitney



Amir



Dora



Tommy



Dexter



Ron



Annie

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn	Number: Place Value				Number: Addition and Subtraction			Measurement: Length and Perimeter	Number: Multiplication and Division			
Spring	Number: Multiplication and Division			Measurement: Area	Number: Fractions				Number: Decimals			Consolidation
Summer	Number: Decimals	Measurement: Money		Measurement: Time	Statistics	Geometry: Properties of Shape		Geometry: Position and Direction		Consolidation		

White

**Rose
Maths**

Autumn - Block 1

Place Value

Overview

Small Steps

Notes for 2020/21

- ▶ Represent numbers to 1,000 R
- ▶ 100s, 10s and 1s R
- ▶ Number line to 1,000 R
- ▶ Round to the nearest 10
- ▶ Round to the nearest 100
- ▶ Count in 1,000s
- ▶ 1,000s, 100s, 10s and 1s
- ▶ Partitioning
- ▶ Number line to 10,000
- ▶ Find 1, 10, 100 more or less R
- ▶ 1,000 more or less
- ▶ Compare numbers

We begin by encouraging spending time on numbers within a 1,000 to ensure they are secure on this knowledge before moving into 10,000.

Using equipment or digital manipulatives may help children increase their understanding.

Overview

Small Steps

Notes for 2020/21

- Order numbers
- Round to the nearest 1,000
- Count in 25s
- Negative numbers
- Roman numerals to 100

Work on Roman Numerals has been moved to the end of the block as we believe it is important for children to be secure with our own number system before exploring another.

Numbers to 1,000

Notes and Guidance

In this small step, children will primarily use Base 10 to become familiar with any number up to 1,000

Using Base 10 will emphasise to children that hundreds are bigger than tens and tens are bigger than ones.

Children need to see numbers with zeros in different columns, and show them with concrete and pictorial representations.

Mathematical Talk

Does it matter which order you build the number in?

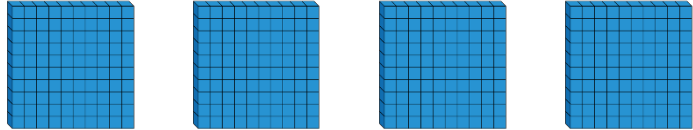
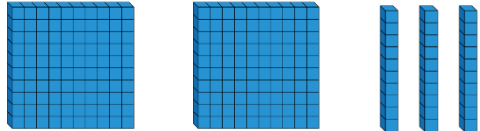
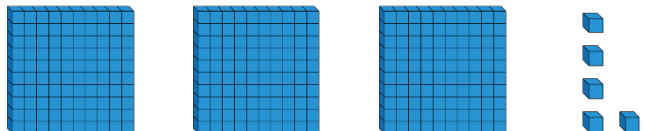
Can you have more than 9 of the same type of number e.g. 11 tens?

Can you create a part-whole model using or drawing Base 10 in each circle?

Varied Fluency

R

Write down the number represented with Base 10 in each case.

Representation				Number
				
				
				

Use Base 10 to represent the numbers.

700

120

407

999

Mo is drawing numbers. Can you complete them for him?

246

390

706

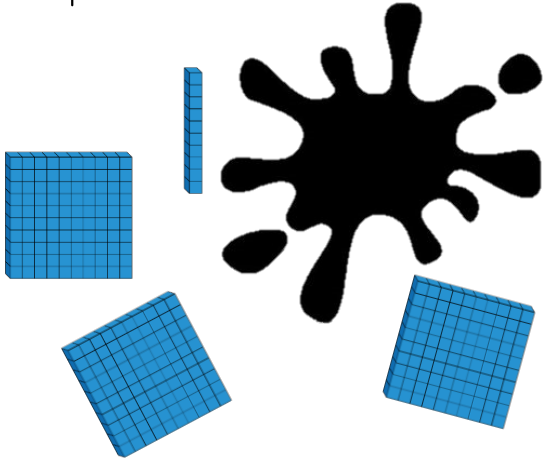


Numbers to 1,000

Reasoning and Problem Solving



Teddy has used Base 10 to represent the number 420. He has covered some of them up.



Work out the amount he has covered up.

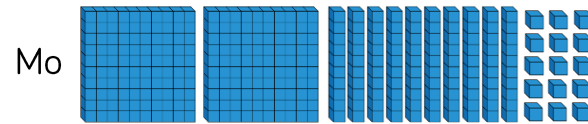
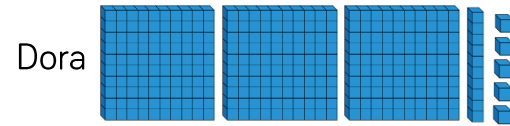
How many different ways can you make the missing amount using Base 10?

110 is the missing amount.

Possible ways:

- 1 hundred and 1 ten
- 11 tens
- 110 ones
- 10 tens and 10 ones
- 50 ones and 6 tens etc.

Which child has made the number 315?



Explain how you know.

Dora and Mo have both made the number 315, but represented it differently.

3 hundreds, 1 ten and 5 ones is the same as 2 hundreds, 10 tens and 15 ones.

100s, 10s and 1s (1)

Notes and Guidance

Children should understand that a 3-digit number is made up of 100s, 10s and 1s.

They read numbers shown in different representations on a place value grid, and write them in numerals.

They should be able to represent different 3-digit numbers in various ways such as Base 10 or numerals.

Mathematical Talk

What is the value of the number shown on the place value chart?

Why is it important to put the values into the correct column on the place value chart?

How many more are needed to complete the place value chart?

Can you make your own numbers using Base 10? Ask a friend to tell you what number you have made.

Varied Fluency

R

- What is the value of the number represented in the place value chart?

Hundreds	Tens	Ones

Write your answer in numerals and in words.

- Complete this place value chart so that it shows the number 354

Hundreds	Tens	Ones

Represent the number using a part-whole model.

- How many different ways can you make the number 452? Can you write each way in expanded form? (e.g. $400 + 50 + 2$)

Compare your answer with a partner.

100s, 10s and 1s (1)

Reasoning and Problem Solving



Hundreds	Tens	Ones

Possible answers:

I disagree because there are six hundreds, four tens and seven ones so the number is 647.

I notice that 647 and 467 have the same digits but in a different order so the digits have different values.

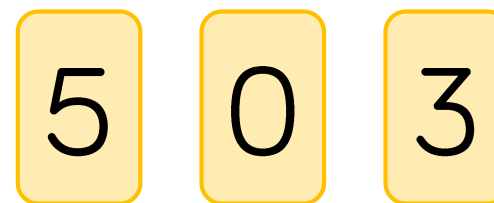
Eva



The place value grid shows the number 467

Is Eva correct? Explain your reasoning.

What do you notice about the number shown?



Using each digit card, which numbers can you make?

Use the place value grid to help.

Hundreds	Tens	Ones

Compare your answers with a partner.

The numbers that can be made are:

- 503
- 530
- 305
- 350
- (0)35
- (0)53

Number Line to 1,000

Notes and Guidance

Children estimate, work out and write numbers on a number line.

Number lines should be shown with or without start and end numbers, and with numbers already placed on it.

Children may still need Base 10 and/or place values to work with as they develop their understanding of the number line.

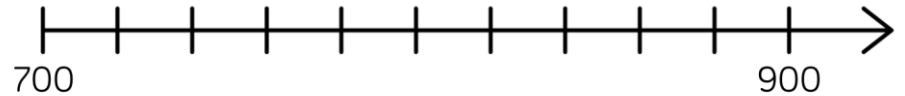
Mathematical Talk

- What is the value of each interval on the number line?
- Which side of the number line did you start from? Why?
- When estimating where a number should be placed, what facts can help you?
- Can you draw a number line where 600 is the starting number, and 650 is half way along?
- What do you know about the number that A is representing? A is more/less than _____
- What value can A definitely not be? How do you know?

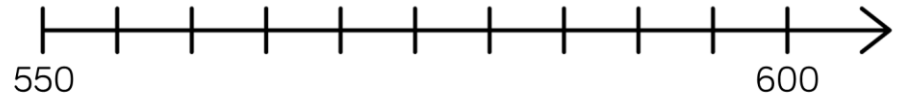
Varied Fluency



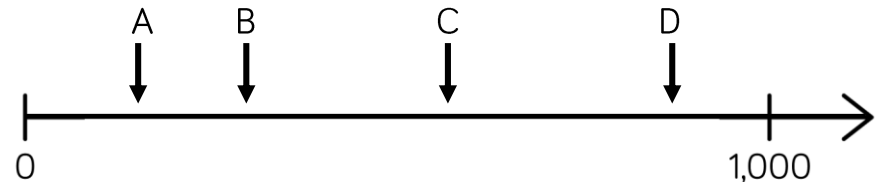
Draw an arrow to show the number 800



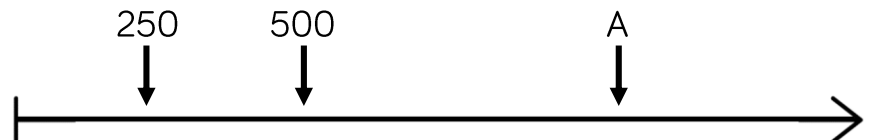
Draw an arrow to show the number 560



Which letter is closest to 250?



Estimate the value of A.

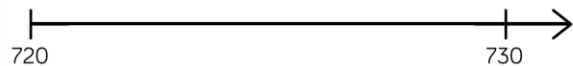
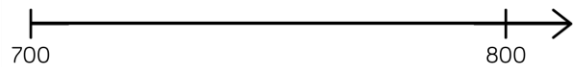
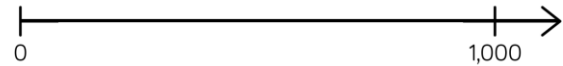


Number Line to 1,000

Reasoning and Problem Solving



Estimate where seven hundred and twenty-five will go on each of the number lines.



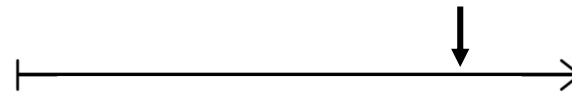
Explain why it is not in the same place on each number line.

725 is in different places because each line has different numbers at the start and end so the position of 725 changes.

All three of the number lines have different scales and therefore the difference between 725 and the starting and finishing number is different on all three number lines.

If the arrow is pointing to 780, what could the start and end numbers be?

Find three different ways and explain your reasoning.



Example answers:

Start 0 and end 1,000 because 500 would be in the middle and 780 would be further along than 500

Start 730 and end 790

Start 700 and end 800

etc.

Round to the Nearest 10

Notes and Guidance

Children start to look at the position of a 2-digit number on a number line. They then apply their understanding to 3-digit numbers, focusing on the number of ones and rounding up or not.

Children must understand the importance of 5 and the idea that although it is in the middle of 0 and 10, that by convention any number ending in 5 is always rounded up, to the nearest 10

Mathematical Talk

What is a multiple of 10?

Which multiples of 10 does ____ sit between?

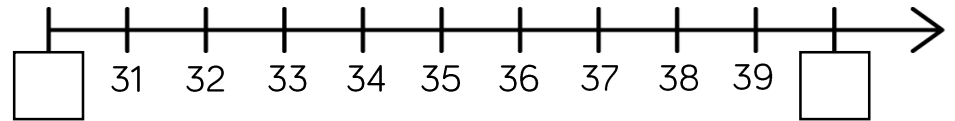
Which column do we look at when rounding to the nearest 10?

What do we do if the number in that column is a 5?

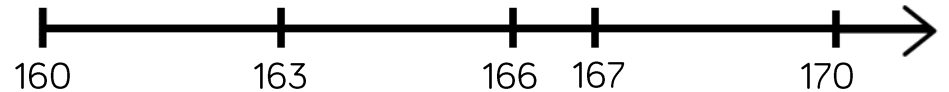
Which number is being represented? Will we round it up or not? Why?

Varied Fluency

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:

Start number	Rounded to the nearest 10
851	
XCVIII	

Round to the Nearest 10

Reasoning and Problem Solving

A whole number is rounded to 370
 What could the number be?
 Write down all the possible answers.

370

- 365
- 366
- 367
- 368
- 369
- 370
- 371
- 372
- 373
- 374

Two different two-digit numbers both round to 40 when rounded to the nearest 10

The sum of the two numbers is 79

What could the two numbers be?

Is there more than one possibility?

- $35 + 44 = 79$
- $36 + 43 = 79$
- $37 + 42 = 79$
- $38 + 41 = 79$
- $39 + 40 = 79$

Whitney says:



847 to the nearest 10 is 840

Do you agree with Whitney?

Explain why.

I don't agree with Whitney because 847 rounded to the nearest 10 is 850. I know this because ones ending in 5, 6, 7, 8 and 9 round up.

Round to the Nearest 100

Notes and Guidance

Children compare rounding to the nearest 10 (looking at the ones column) to rounding to the nearest 100 (looking at the tens column.)

Children use their knowledge of multiples of 100, to understand which two multiples of 100 a number sits between. This will help them to round 3-digit numbers to the nearest 100

Mathematical Talk

What's the same/different about rounding to the nearest 10 and nearest 100? Which column do we need to look at when rounding to the nearest 100?

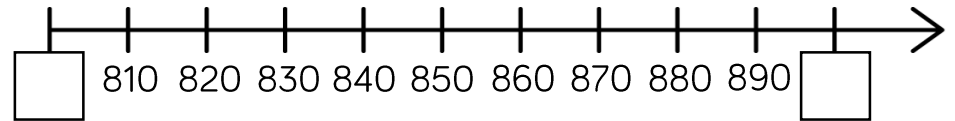
Why do numbers up to 49 round down to the nearest 100 and numbers 50 to 99 round up?

What would 49 round to, to the nearest 100?

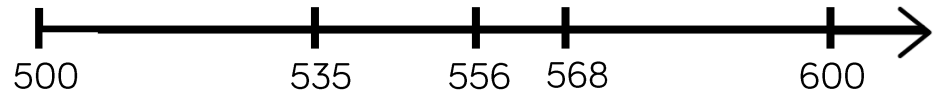
Can the answer be 0 when rounding?

Varied Fluency

- Which multiples of 100 do the numbers sit between?



- Say whether each number on the number line is closer to 500 or 600.



Round 535, 556 and 568 to the nearest 100

Use the stem sentence: ____ rounded to the nearest 100 is ____.

- Complete the table:

Start number	Rounded to the nearest 100
994	
XLV	

Round to the Nearest 100

Reasoning and Problem Solving

Always, Sometimes, Never

Explain your reasons for each statement.

- A number with a five in the tens column rounds up to the nearest hundred.
- A number with a five in the ones column rounds up to the nearest hundred.
- A number with a five in the hundreds column rounds up to the nearest hundred.

Always – a number with five in the tens column will be 50 or above so will always round up.

Sometimes – a number with five in the ones column might have 0 to 4 in the tens column (do not round up) or 5 to 9 (round up).

Sometimes – a number with five in the hundreds column will also round up or down dependent on the number in the tens column.

When a whole number is rounded to the nearest 100, the answer is 200

When the same number is rounded to the nearest 10, the answer is 250

What could the number be?

Is there more than one possibility?

Using the digit cards 0 to 9, can you make whole numbers that fit the following rules? You can only use each digit once.

1. When rounded to the nearest 10, I round to 20
2. When rounded to the nearest 10, I round to 10
3. When rounded to the nearest 100, I round to 700

245, 246, 247, 248 and 249 are all possible answers.

To 20, it could be 15 to 24

To 10, it could be 5 to 14

To 700, it could be 650 to 749

Use each digit once: 5, 24, 679 or 9, 17, 653 etc.

Count in 1,000s

Notes and Guidance

Children look at four-digit numbers for the first time. They explore what a thousand is through concrete and pictorial representations, to recognise that 1,000 is made up of ten hundreds.

They count in multiples of 1,000, representing numbers in numerals and words.

Mathematical Talk

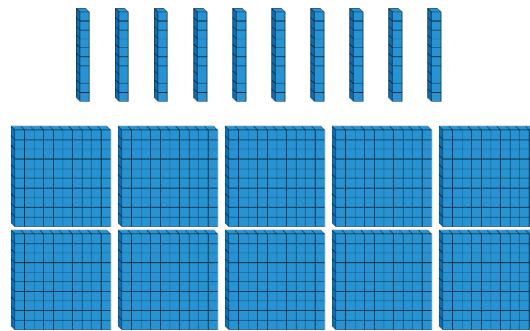
How many hundreds are there in one thousand?
 How many hundreds make ____ thousands?

How is counting in thousands similar to counting in 1s?

When counting in thousands, which is the only digit to change?

How many sweets would there be in ____ jars?

Varied Fluency



____ tens make ____ hundred.

____ hundreds make ____ thousand.



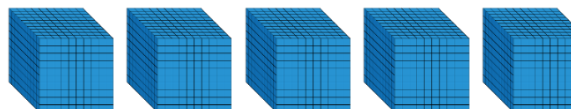
How many sweets are there altogether?



There are three jars of ____ sweets.
 There are ____ sweets altogether.



What numbers are represented below?



Count in 1,000s

Reasoning and Problem Solving

Always, Sometimes, Never

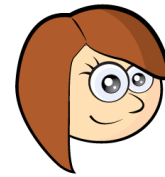
- When counting in hundreds, the ones digit changes.
- The thousands column changes every time you count in thousands.
- To count in thousands, we use 4-digit numbers.

Never, when counting in hundreds, the ones digit always stays the same.

Always, the thousands column changes every time you count in thousands.

Sometimes, to count in thousands, we use 4-digit numbers.

Rosie says,



If I count in thousands from zero, I will always have an even answer.

True or false?
Explain how you know.

True, because they all end in zero, which are multiples of 10 and multiples of 10 are even.

1,000s, 100s, 10s and 1s

Notes and Guidance

Children represent numbers to 9,999, using concrete resources on a place value grid. They understand that a four-digit number is made up of 1,000s, 100s, 10s and 1s.

Moving on from Base 10 blocks, children start to partition by using place value counters and digits.

Mathematical Talk

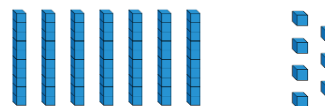
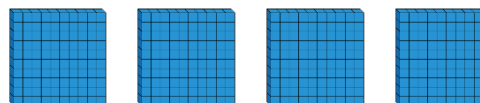
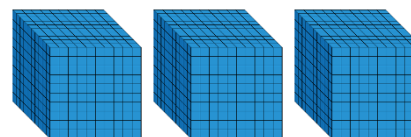
Can you represent the number on a place value grid?
How many thousands/hundreds/tens/ones are there?

How do you know you have formed the number correctly? What could you use to help you?

How is the value of zero represented on a place value grid or in a number?

Varied Fluency

Complete the sentences.

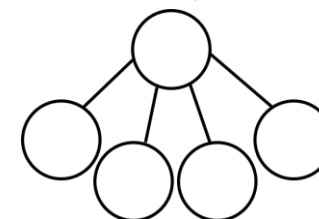
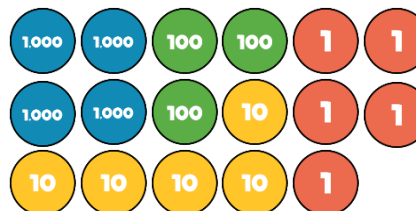


There are _____ thousands,
_____ hundreds, _____
tens and _____ ones.

The number is _____.

___ + ___ + ___ + ___ = ___

Complete the part-whole model for the number represented.



What is the value of the underlined digit in each number?

6,983

9,021

789

6,570

Represent each of the numbers on a place value grid.

1,000s, 100s, 10s and 1s

Reasoning and Problem Solving

Create four 4-digit numbers to fit the following rules:

- The tens digit is 3
- The hundreds digit is two more than the ones digit
- The four digits have a total of 12

Possible answers:

3,432
5,331
1,533
7,230

Use the clues to find the missing digits.



The thousands and tens digit multiply together to make 36

The hundreds and tens digit have a digit total of 9

The ones digit is double the thousands digit.

The whole number has a digit total of 21

4,098

Partitioning

Notes and Guidance

Children explore how numbers can be partitioned in more than one way.

They need to understand that, for example, $5000 + 300 + 20 + 9$ is equal to $4000 + 1300 + 10 + 19$

This is crucial to later work on adding and subtracting 4-digit numbers and children explore this explicitly.

Mathematical Talk

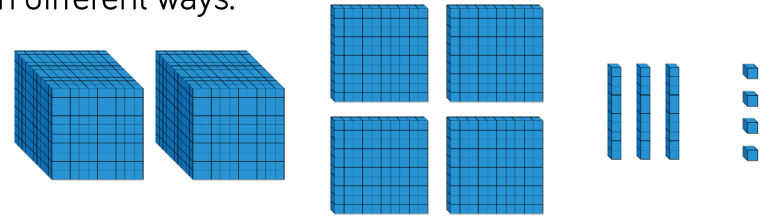
What number is being represented?

If we have 10 hundreds, can we exchange them for something?

If you know ten 100s are equal to 1,000 or ten 10s are equal to 100, how can you use this to make different exchanges?

Varied Fluency

Move the Base 10 around and make exchanges to represent the number in different ways.

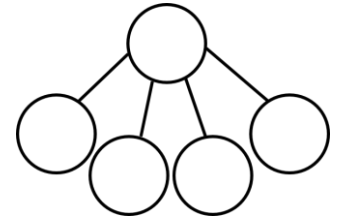
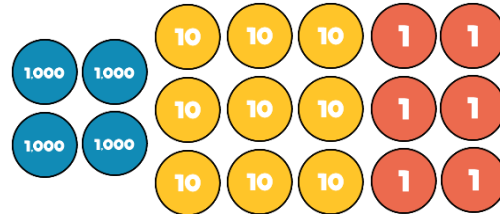


$$2000 + 400 + \boxed{} + 4$$

$$1000 + \boxed{} + \boxed{} + 14$$

$$1000 + 1300 + \boxed{} + \boxed{}$$

Represent the number in two different ways in a part-whole model.



Eva describes a number. She says, “My number has 4 thousands and 301 ones”
 What is Eva’s number?
 Can you describe Eva’s number in a different way?

Partitioning

Reasoning and Problem Solving

Which is the odd one out?

3,500

3,500 ones

2 thousands
and 15 hundreds

35 tens

35 tens is the odd one out because it does not make 3,500, it makes 350

Explain how you know.

Jack says:



My number has five thousands, three hundreds and 64 ones.

They both have the same number because 53 hundreds is equal to 5 thousands and 3 hundreds. Jack and Amir both have 5,364

My number has fifty three hundreds, 6 tens and 4 ones.

Amir says:



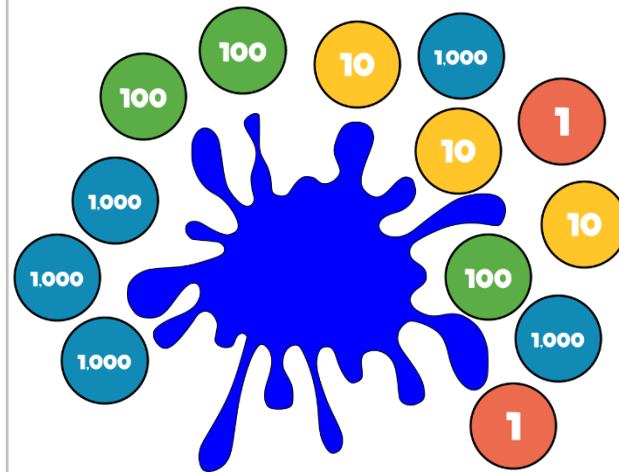
Who has the largest number?
Explain.

Some place value counters are hidden.

The total is six thousand, four hundred and thirty two.

Which place value counters could be hidden?

Think of at least three solutions.



Possible answers:

One 1,000 counter and one 100 counter.

Ten 100 counters and ten 10 counters.

Eleven 100 counters.

Number Line to 10,000

Notes and Guidance

Children estimate, label and draw numbers on a number line to 10,000

They need to understand that it is possible to count forwards or backwards, in equal steps, from both sides.

Number lines should be shown with or without start and end numbers, or with numbers already placed on it.

Mathematical Talk

Which side of the number line did you start from? Why?

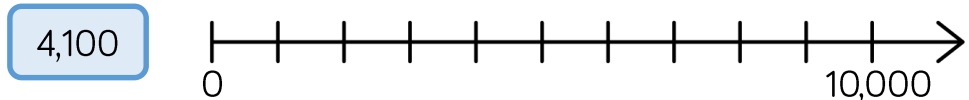
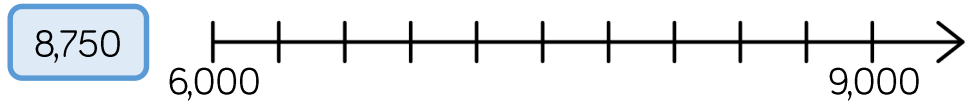
When estimating where a number should be placed, on a number line, what can help you?

Can you use your knowledge of place value to prove that you are correct?

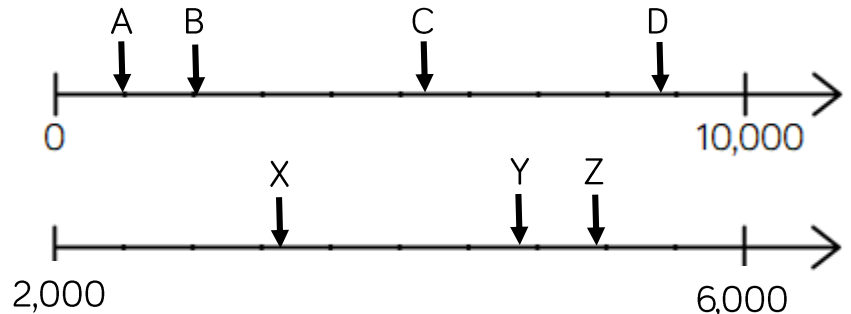
When a number line has no values at the end, what strategies could you use to help you figure out the missing value? Could there be more than one answer?

Varied Fluency

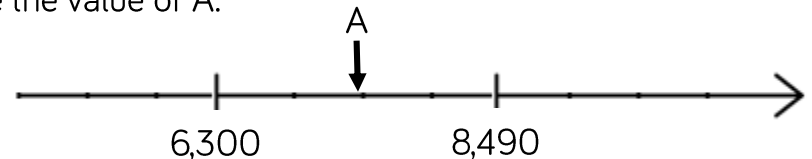
Draw arrows to show where the numbers would be on the number line.



Estimate the value of each letter.



Estimate the value of A.



Number Line to 10,000

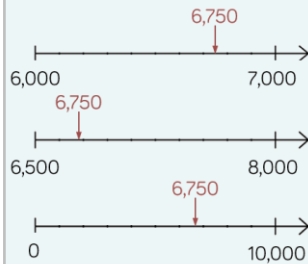
Reasoning and Problem Solving

Place 6,750 on each of the number lines.

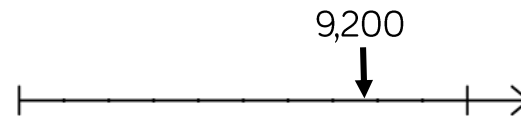


Are they in the same place on each line? Why?

No, each line has different numbers at the start and end so the position of 6,750 changes.



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



Possible answers:

- 8,400 – 9,500
- 5,000 – 10,000
- 9,120 – 9,920

1, 10, 100 More or Less

Notes and Guidance

Building on children’s learning in Year 2 where they explored finding one more/less, children now move onto finding 10 and 100 more or less than a given number.

Show children that they can represent their answer in a variety of different ways. For example, as numerals or words, or with concrete manipulatives.

Mathematical Talk

What is 10 more than/less than ____?

What is 100 more than/less than ____?

Which column changes? Can more than one column change?

What happens when I subtract 10 from 209?

Why is this more difficult?

Varied Fluency



Put the correct number in each box.

 10 less 100 less	<input style="width: 80px; height: 30px; border: 1px solid black;" type="text"/> <input style="width: 80px; height: 30px; border: 1px solid black;" type="text"/> Number	 10 more 100 more
-----------------------------	--	-----------------------------

Show ten more and ten less than the following numbers using Base 10 and place value counters.

550

724

302

Complete the table.

100 less	Number	100 more

1, 10, 100 More or Less

Reasoning and Problem Solving



10 more than my number is the same as 100 less than 320

What is my number?

Explain how you know.

Write your own similar problem to describe the original number.

The number described is 210 because 100 less than 320 is 220, which means 220 is 10 more than the original number.

I think of a number, add ten, subtract one hundred and then add one.

My answer is 256

What number did I start with?

Explain how you know.

What can you do to check?

The start number was 345 because one less than 256 is 255, one hundred more than 255 is 355 and ten less than 355 is 345
To check I can follow the steps back to get 256

A counter is missing on the place value chart.

Hundreds	Tens	Ones

What number could it have been?

Possible answers:
401
311
302

1,000 More or Less

Notes and Guidance

Children have explored finding 1, 10 and 100 more or less, in Year 3. They now extend their learning by finding 1,000 more or less than a given number.

Show children that they can represent their answer in a number of ways, for example using place value counters, Base 10 or numerals.

Mathematical Talk

What is 1,000 more than/less than a number?
Which column changes when I find 1,000 more or less?

What happens when I subtract 1,000 from 9,209?

Can you show me two different ways of showing 1,000 more/less than e.g. pictures, place value charts, equipment.

Complete this sentence: I know that 1,000 more than ____ is ____ because ... I can prove this by ____.

Varied Fluency

Fill in the missing values.

$$9,523 + 10 = \boxed{}$$

$$\boxed{} + 3,589 = 3,689$$

$$3,891 + \boxed{} = 4,891$$

Complete the table.

1,000 less	Number	1,000 more

Find 1,000 more and 1,000 less than each number.

5,000

7,500

2,359

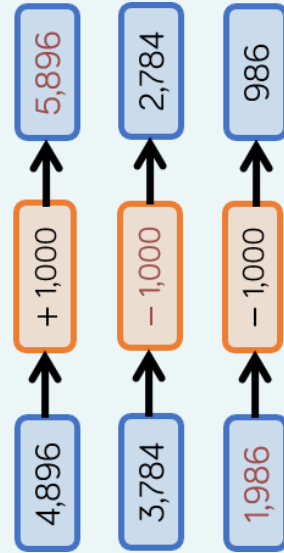
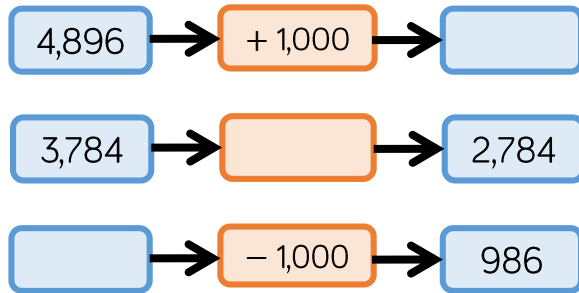
8,999

Use concrete resources to prove you are correct.

1,000 More or Less

Reasoning and Problem Solving

Complete the missing boxes:



10 less than my number is 1,000 more than 5,300. What is my number?

Can you write your own problem similar to this?

6,310

Jack says:

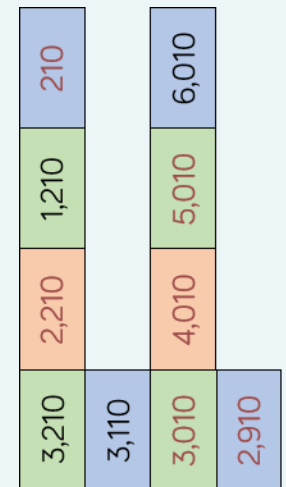
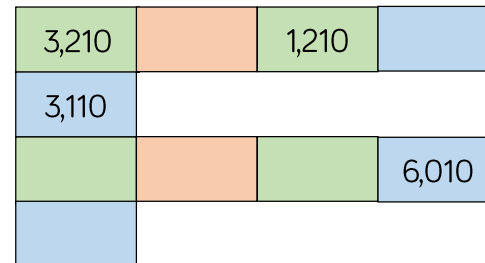


When I add 1,000 to 4,325, I only have to change 1 digit.

Is he correct?
Which digit does he need to change?

Yes, he is correct. He will need to change the thousands digit (4).

Fill in the boxes by finding the patterns:



Compare 4-digit Numbers

Notes and Guidance

Children compare 4-digit numbers using comparison language and symbols to determine/show which is greater and which is smaller.

Children should represent numbers using concrete manipulatives, draw them pictorially and write them using numerals.

Mathematical Talk

Which two numbers are being represented?

Do you start counting the thousands, hundreds, tens or ones first? Why?

Which column do you start comparing from? Why?

What strategy did you use to compare the two numbers? Is this the same or different to your partner?

How many answers can you find?

Varied Fluency

Complete the statements using $<$, $>$ or $=$

	○	
	○	
	○	
5,689		5,892

Circle the smallest amount in each pair.

- | | |
|--|-------|
| Two thousand, three hundred and ninety seven | 3,792 |
| $6,000 + 400 + 50 + 6$ | 6,455 |
| 9 thousands, 2 hundreds and 6 ones | 9,602 |

Complete the statements.

$1,985 > \underline{\quad}$

$4,203 < 4,000 + \underline{\quad} + 4$

Compare 4-digit Numbers

Reasoning and Problem Solving

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?

I have 13 numbers:

- 3,228
- 3,282
- 3,822
- 4,560
- 4,650
- 4,506
- 4,605
- 3,660
- 3,606
- 3,147
- 3,174
- 3,417
- 3,471

Use digit cards 1 to 5 to complete the comparisons:

$$564 \square < \square 73 \square$$

$$2 \square 38 > 23 \square 5$$

You can only use each digit once.

Possible answer:

$$5641 < 5732$$

$$2438 > 2335$$

Order Numbers

Notes and Guidance

Children explore ordering a set of numbers in ascending and descending order. They reinforce their understanding by using a variety of representations.

Children find the largest or smallest number from a set.

Mathematical Talk

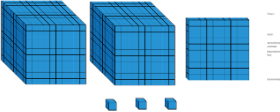
Which number is the greatest? Which number is smallest?
How do you know?

Why have you chosen to order the numbers this way?

What strategy did you use to solve this problem?

Varied Fluency

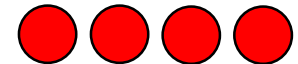
Fill in the circle using $<$, $>$ or $=$

2,764  XXVII

Here are four digit cards:

Arrange them to make as many different 4-digit numbers as you can and put them in ascending order.

Rearrange four counters in the place value chart to make different numbers.



1000s	100s	10s	1s

Record all your numbers and write them in descending order.

Order Numbers

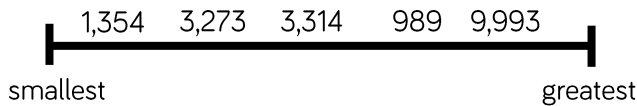
Reasoning and Problem Solving

Alex has ordered five 4-digit numbers. The smallest number is 3,450, and the largest number is 3,650

All the other numbers have digit totals of 20

What could the other three numbers be?

What mistake has been made?



3,476

3,584

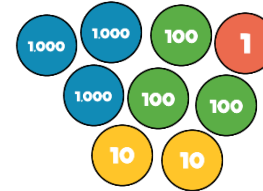
3,593

The number 989 is in the wrong place. A common misconception could be that the first digit is a high number the whole number must be large. They have forgotten to check how many digits there are in the number before ordering.

Put these amounts in ascending order.

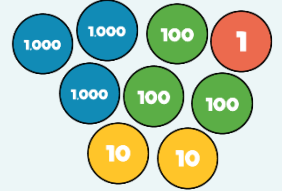
Half of 2,400

LXXXVI



LXXXVI

Half of 2,400



Put one number in each box so that the list of numbers is ordered smallest to largest.

1000s	100s	10s	1s
1	1		3
1		2	7
1	2	5	
1		5	9
1	3	8	
1		1	5

Can you find more than one way?

Possible answer:

1000s	100s	10s	1s
1	1	1	3
1	1	2	7
1	2	5	0
1	3	5	9
1	3	8	4
1	4	1	5

Round to the Nearest 1,000

Notes and Guidance

Children build on their knowledge of rounding to the nearest 10 and 100, to round to the nearest thousand for the first time.

Children must understand which multiples of 1,000 a number sits between.

When rounding to the nearest 1,000, children should look at the digits in the hundreds column.

Mathematical Talk

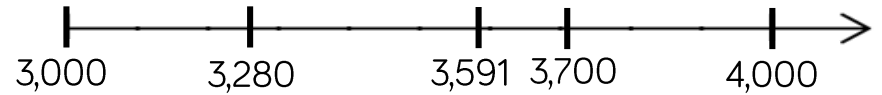
Which thousands numbers does _____ sit between?

How can the number line help you to see which numbers round up/down?

Which place value column do we need to look at when we round the nearest 1,000?

Varied Fluency

- Say whether each number on the number line is closer to 3,000 or 4,000



Round 3,280, 3,591 and 3,700 to the nearest thousand.

- Round these numbers to the nearest 1,000
 - Eight thousand and fifty-six
 - 5 thousands, 5 hundreds, 5 tens and 5 ones
 -
 - LXXXII

- Complete the table.


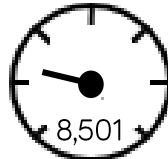

Start number	Rounded to the nearest 10	Rounded to the nearest 100	Rounded to the nearest 1,000
4,999			
LXXXII			

Round to the Nearest 1,000

Reasoning and Problem Solving

David's mum and dad are buying a car.

They look at the following cars:

<p>Car A</p>  <p>9,869</p> <p>Approximately 10,000 miles</p>	<p>Car B</p>  <p>8,501</p> <p>Approximately 8,000 miles</p>	<p>Car C</p>  <p>7,869</p> <p>Approximately 8,000 miles</p>
--	--	--

Are all of the cars correctly advertised?

Explain your reasoning.

Car B is incorrectly advertised. It should be rounded up to 9,000

A number is rounded to the nearest thousand.

The answer is 7,000

What could the original number have been?

Give five possibilities.

What is the greatest number possible?

What is the smallest number possible?

Possible answers:

- 6,678
- 7,423
- 7,192
- 6,991

Greatest: 7,499
Smallest: 6,500

Count in 25s

Notes and Guidance

Children will count in 25s to spot patterns. They use their knowledge of counting in 50s and 100s to become fluent in 25s.

Children should recognise and use the number facts that there are two 25s in 50 and four 25s in 100.

Mathematical Talk

What is the first/second number pattern counting up in?
 Can you notice a pattern as the numbers increase/decrease?
 Are any numbers in both of the number patterns? Why?

What digit do multiples of 25 end in?

What's the same and what's different when counting in 50s and 25s?

Varied Fluency

- Look at the number patterns.
 What do you notice?

25	50	75	100	125	150
----	----	----	-----	-----	-----

50	100	150	200	250	300
----	-----	-----	-----	-----	-----

- Complete the number tracks

25		75		125	150				250
----	--	----	--	-----	-----	--	--	--	-----

	725	700		650		600			
--	-----	-----	--	-----	--	-----	--	--	--

- Circle the mistake in each sequence.

2, 275 2,300 2,325 2,350 2,400, ...

1,000 975 925 900 875 ...

Count in 25s

Reasoning and Problem Solving

Whitney is counting in 25s and 1,000s. She says:

- Multiples of 1,000 are also multiples of 25
- Multiples of 25 are therefore multiples of 1,000

Do you agree with Whitney? Explain why.

I don't agree. Multiples of 1,000 are multiples of 25 because 25 goes into 1,000 exactly, but not all multiples of 25 are multiples of 1,000 e.g. 1,075

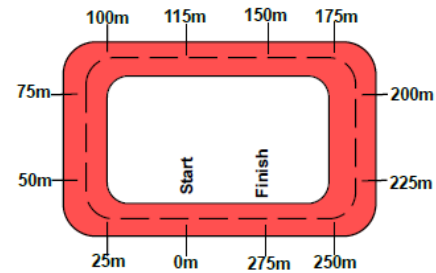
Ron is counting down in 25s from 790. Will he say 725?

Explain your answer.

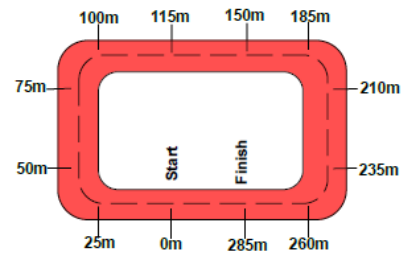
No, he will not say 725 because:
790, 765, 740, 715, 690, 665, ...

Two race tracks have been split into 25m intervals.

Race track A



Race track B



What errors have been made?

Possible answers:

Race track A has miscounted when adding 25 m to 100 m. After this they have continued to count in 25s correctly from 150

Race track B has miscounted when adding 25 m to 150 m. They have then added 25 m from this point.

Negative Numbers

Notes and Guidance

Children recognise that there are numbers below zero. It is essential that this concept is linked to real life situations such as temperature, water depth etc.

Children should be able to count back through zero using correct mathematical language of “negative four” rather than “minus four” for example. This counting can be supported through the use of number squares, number lines or other visual aids.

Mathematical Talk

What number is missing next to -5 ? Can you count up to fill in the missing numbers?

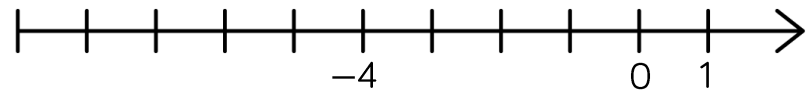
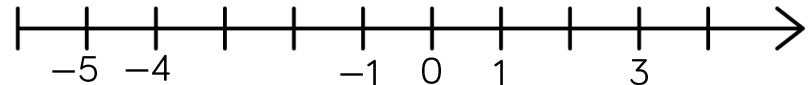
Can you use the words positive and negative in a sentence to describe numbers?

What do you notice about positive and negative numbers on the number line? Can you see any patterns?

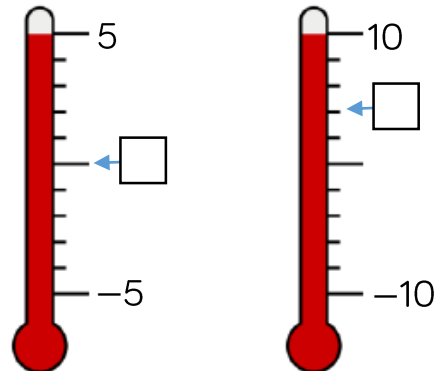
Is -1 degrees warmer or colder than -4 degrees?

Varied Fluency

Complete the number lines



Fill in the missing temperatures on the thermometers.



Dexter is counting backwards out loud.

He says,

“Two, one, negative one, negative two, negative three ...”

What mistake has Dexter made?

Negative Numbers

Reasoning and Problem Solving

Can you spot the mistake in these number sequences?

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

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

c) $5, 0, -5, -10, -20$

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

a) 0 is incorrect as it is written twice.

b) 1 is incorrect. The sequence has a difference of 2 each time, so the first number should be 2

c) -20 is incorrect. The sequence is decreasing by 5, so the final number should be -15

Teddy counted down in 3s until he reached -18

He started at 21, what was the tenth number he said?

-6

Ensure the first number said is 21
 $21, 18, 15, 12, 9, 6, 3, 0, -3, -6, \dots$

Roman Numerals

Notes and Guidance

Children will build on their knowledge of numerals to 12 on a clock face, from Year 3, to explore Roman Numerals to 100

They explore what is the same and what is different between the number systems, including the fact that in the Roman system there is no symbol for zero and so no placeholders.

Mathematical Talk

Why is there no zero in the Roman Numerals? What might it look like?

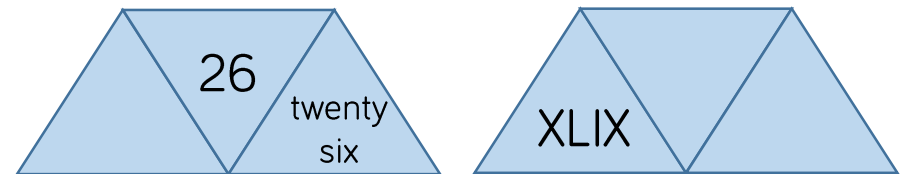
Can you spot any patterns? If 20 is XX what might 200 be?

How can you check you have represented the Roman Numeral correctly? Can you use numbers you know, such as 10 and 100 to help you?

Varied Fluency

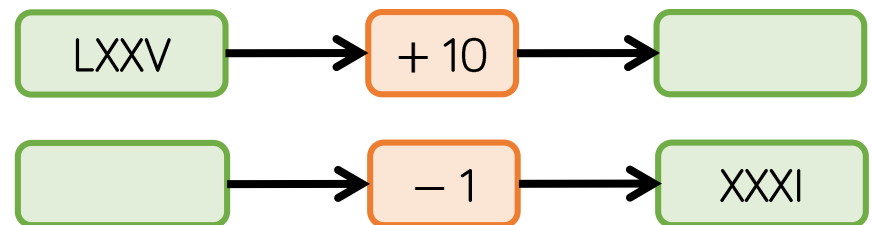
- Lollipop stick activity.
 The teacher shouts out a number and the children make it with lollipop sticks.
 Children could also do this in pairs or groups, and for a bit of fun they could test the teacher!

- Each diagram shows a number in numerals, words and Roman Numerals.



Complete the diagrams.

- Complete the function machines.



Roman Numerals

Reasoning and Problem Solving

Solve the following calculation:

$$XIV + XXXVI = \underline{\quad}$$

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

Answer: L

Other possible calculations include:

$$C \div II = L$$

$$L \div I = L$$

$$X \times V = L$$

$$XXV \times II = L$$

$$LXV - XV = L$$

$$C - L = L$$

$$XX + XX + X = L$$

Mo says:

In the 10 times table, all the numbers have a zero. Therefore, in Roman Numerals all multiples of 10 have an X



Research and give examples to prove whether or not Mo is correct.

Mo is incorrect. A lot of multiples of 10 have an X in them, but the X can mean different things depending on its position. For example, X in 10 just means one ten, but X in XL means 10 less than 50. X in 60 (LX) means 10 more than 50. The number 50 has no X and neither does 100.