Years 3/4

Mixed Age Schemes of Learning

White Rose Maths

Welcome

Welcome to the White Rose Maths' new, more detailed schemes of learning for 2017-18.

We have listened to your feedback and as a result of this, we have made some changes to the previous WRMH primary schemes. ***We believe the new schemes are bigger, bolder and more detailed than before.***

White Rose Maths' new schemes still have the ***same look and feel*** as the old WRMH ones, but we have tried to provide more detailed guidance. We have worked with enthusiastic and passionate teachers from up and down the country, who are experts in their particular year group, to bring you additional guidance. ***These schemes have been written for teachers, by teachers.***

We hope we can help make a difference to maths education in this country. ***We all believe that every child can succeed in mathematics.*** Thank you to everyone who has contributed to our work. It is only with your help that we can make a difference.

We hope that you find the new schemes of learning helpful. As always, if you or your school want support with any aspect of teaching maths please do not hesitate to get in touch

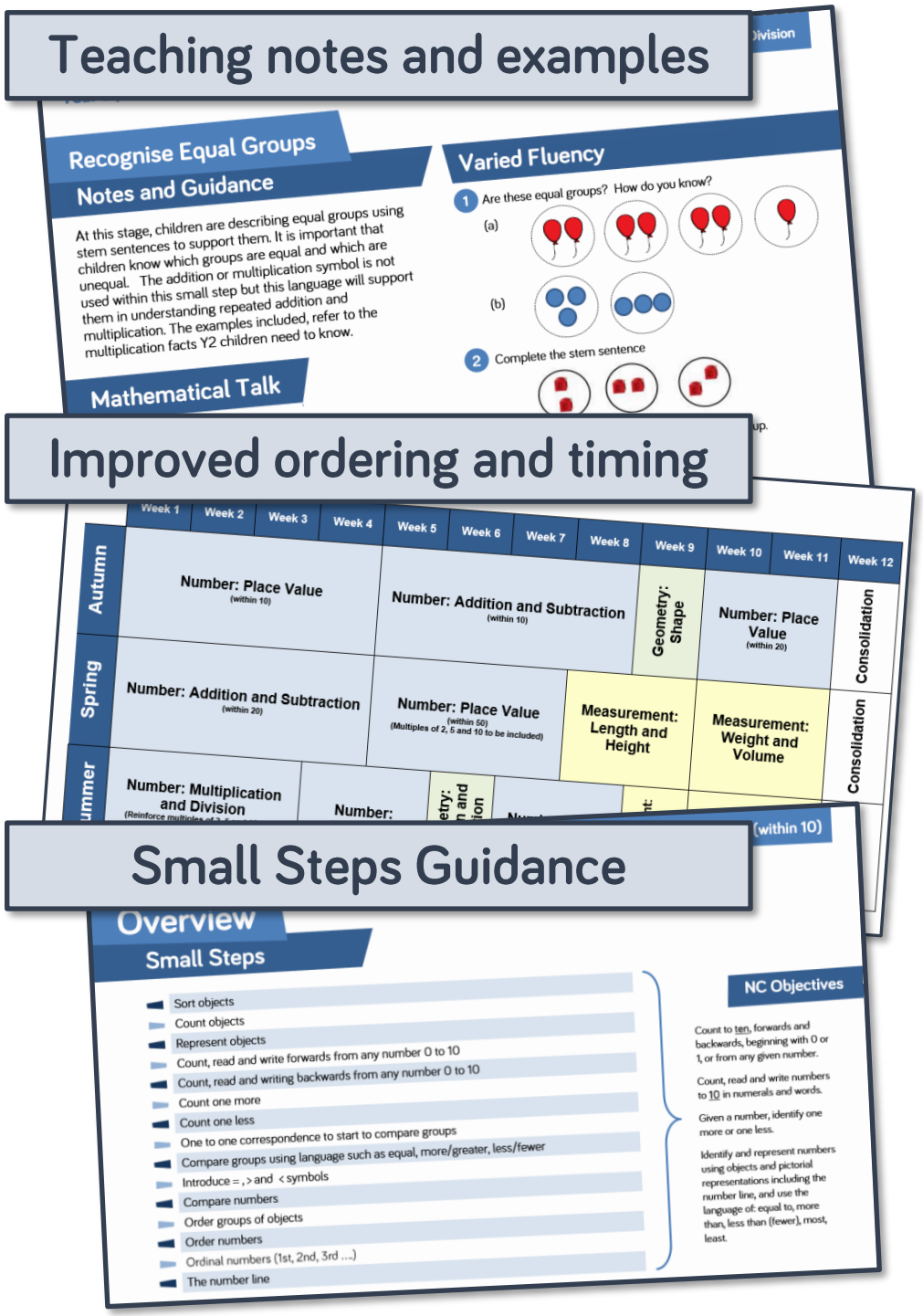
If you have any feedback on any part of our work, do not hesitate to get in touch. Follow us on Twitter and Facebook to keep up-to-date with all our latest announcements.

White Rose Maths Team
#MathsEveryoneCan

What's New?

This release of our schemes includes

- New overviews, with subtle changes being made to the timings and the order of topics.
- New small steps progression. These show our blocks broken down into smaller steps.
- Small steps guidance. For each small step we provide some brief guidance to help teachers understand the key discussion and teaching points. This guidance has been written for teachers, by teachers.
- A more integrated approach to fluency, reasoning and problem solving.
- Answers to all the problems in our new scheme.
- This year there will also be updated assessments.
- We are also working with Diagnostic Questions to provide questions for every single objective of the National Curriculum.



Meet the Team

The schemes have been put together by a wide group of passionate and enthusiastic classroom practitioners. The development of the schemes has been led by the following people who work across Trinity MAT.

Kelsey Brown

Beth Smith

Caroline Hamilton

Stephen Monaghan

Julie Matthews

Jenny Lewis

Special Thanks

The WRM Team would like to say a huge thank you to the following people who came from all over the country to contribute their ideas and experience. We could not have done it without you.

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How to use the Small Steps

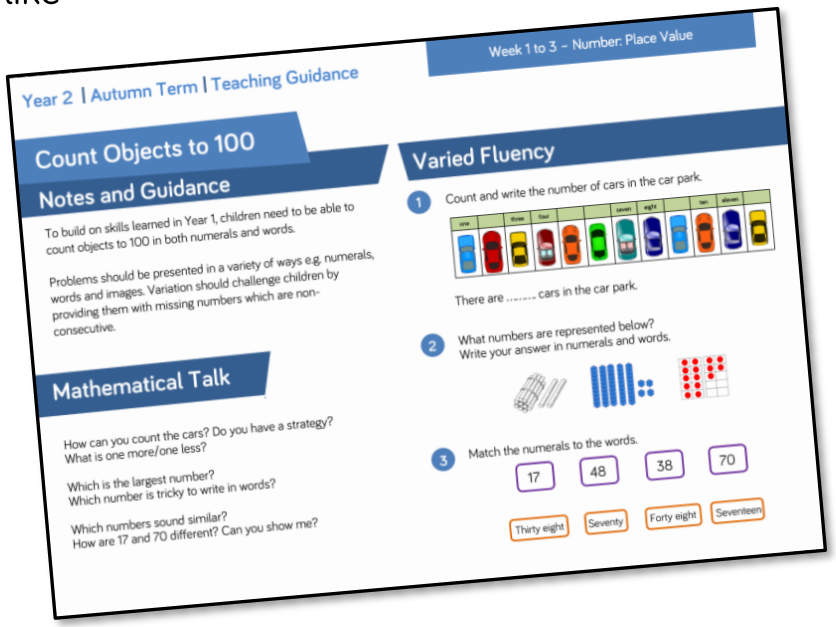
We are regularly asked how it is possible to spend so long on particular blocks of content and National Curriculum objectives. We know that breaking the curriculum down into small manageable steps should help children understand concepts better. Too often, we have noticed that teachers will try and cover too many concepts at once and this can lead to cognitive overload. In our opinion, it is better to follow a small steps approach.

As a result, for each block of content we have provided a "Small Step" breakdown. ***We recommend that the steps are taught separately*** and would encourage teachers to spend more time on particular steps if they feel it is necessary. Flexibility has been built into the scheme to allow this to happen.

Teaching Notes

Alongside the small steps breakdown, we have provided teachers with some brief notes and guidance to help enhance their teaching of the topic. The "Mathematical Talk" section provides questions to encourage mathematical thinking and reasoning, to dig deeper into concepts.

We have also continued to provide guidance on what varied fluency, reasoning and problem solving should look like



Assessments

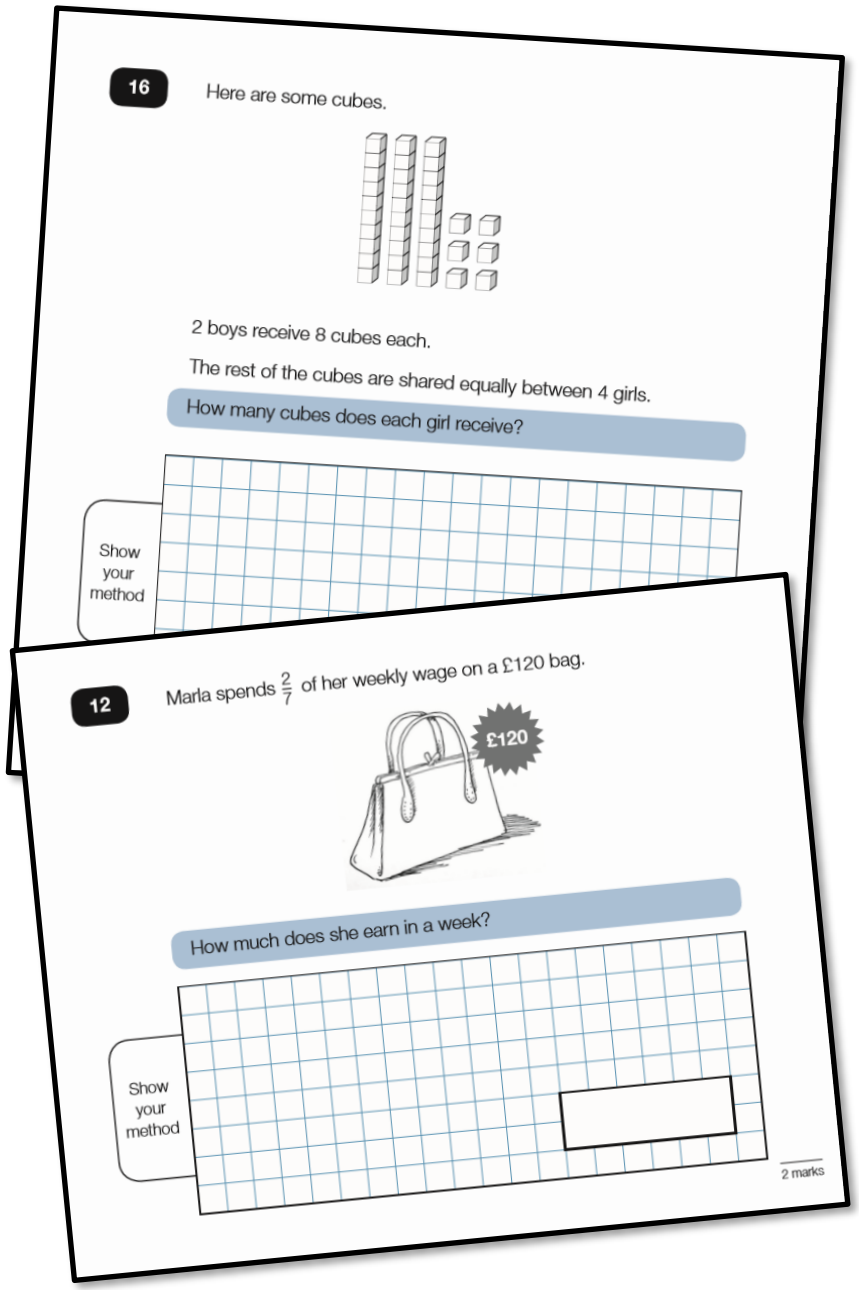
Alongside these overviews, our aim is to provide an assessment for each term's plan. Each assessment will be made up of two parts:

Part 1: Fluency based arithmetic practice
Part 2: Reasoning and problem solving based questions

Teachers can use these assessments to determine gaps in children's knowledge and use them to plan support and intervention strategies.

The assessments have been designed with new KS1 and KS2 SATs in mind. New assessments will be released over the course of next year.

For each assessment we will aim to provide a summary spreadsheet so that schools can analyse their own data. We hope to work with Mathematics Mastery to allow schools to make comparisons against other schools. Keep a look out for information next year.



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

As an organisation 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.

We have produced a CPD unit for teachers in schools;

https://www.tes.com/teaching-resource/the-importance-of-concrete-professional-development-11476476

Additional Materials

In addition to our schemes and assessments there are a range of other materials that you may find useful.

KS1 and KS2 Problem Solving Questions

For the last two years WRMH have provided a range of KS1 and KS2 problem solving questions in the run up to SATs. There are over 150 questions on a variety of different topics and year groups.

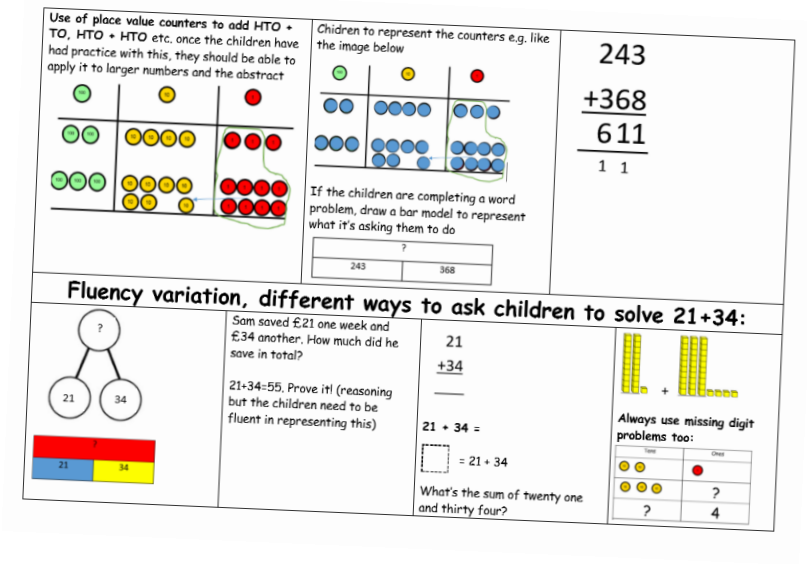
Other schemes of learning

As well as having schemes for Y1-Y6 we developed a range of other schemes of learning

- Schemes for reception
- Mixed aged schemes
- Year 7 – 9 schemes for secondary

Calculation policy/guidance

We also have our calculation policy for the four operations. This can be found on our TES page.

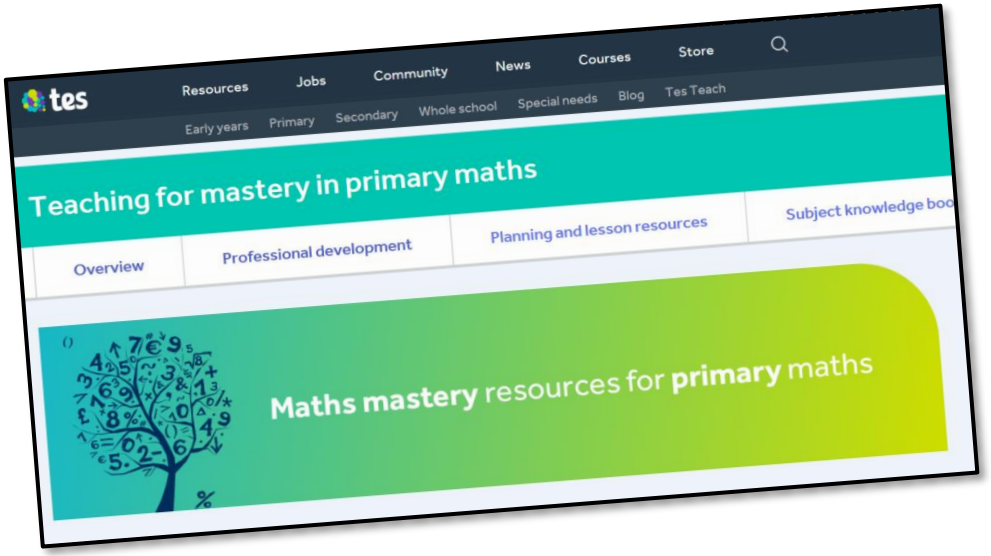


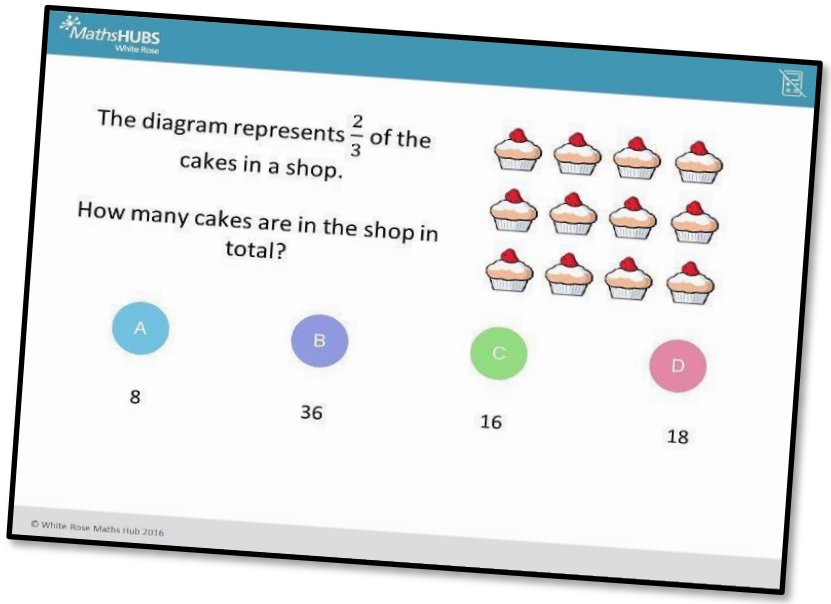
Our Partnerships

tes

www.tes.com

Over the last 12 months we have developed a partnership with tes. Working with Mathematics Mastery we have created a detailed breakdown of the National Curriculum. Watch this space for exciting developments.
https://www.tes.com/teaching-resources/teaching-for-mastery-in-primary-maths





Diagnostic Questions

www.diagnosticquestions.co.uk

From September 2017, we have written two sets of questions for every National Curriculum objective from Y1 to Y6. These are hosted free of charge on @mrbartonmaths Diagnostic Questions website.

Training

White Rose Maths offers paid for training to schools regionally, nationally and internationally. Over the last year we have delivered training to over 150 schools and have had over 1,000 people attend our face to face training.

As part of our 'Jigsaw' package we offer the following twilight courses:

- CPA
- Bar Modelling
- Reasoning and Problem Solving
- Mathematical Talk and Questioning
- Variation and Depth

If you would like any more information about our courses then email the team.

License Partners

We also work with a growing number of Teaching Schools around the country to deliver our training. All of our providers have been specially selected and they are as passionate about improving maths education as we are. All our providers offer our twilight bar modelling training course. If you want to see who your local provider is or would like to become a license partner thenplease get in touch.

Bar Modelling Deeper Learning Event

FAQs

We have bought one of the new textbook schemes, can we still use these curriculum plans?

Many schools are starting to make use of mastery textbooks used in places like Singapore and China. The schemes have been designed to work alongside these textbooks. We recommend that you follow the textbook order and use our materials for additional support and guidance.

If we spend so much time on number work, how can we cover the rest of the curriculum?

Children who have an excellent grasp of number make better mathematicians. Spending longer on mastering key topics will build a child's confidence and help secure understanding. This should mean that less time will need to be spent on other topics.

In addition, schools that have been using these schemes already have used other subjects and topic time to teach and consolidate other areas of the mathematics curriculum.

Should I teach one small step per lesson?

Each small step should be seen as a separate concept that needs teaching. You may find that you need to spend more time on particular concepts. Flexibility has been built into the curriculum model to allow this to happen. This may involve spending more than one lesson on a small step, depending on your class' understanding.

Will you be providing grade boundaries for your assessments?

No, we will not be releasing guidance on grade boundaries. We suggest the assessments are used to find out what children can and cannot do, which will help inform future planning.

FAQs continued ...

How do I use the fluency, reasoning and problem solving questions?

The questions are designed to be used by the teacher to help them understand the key teaching points that need to be covered. They should be used as inspiration and ideas to help teachers plan carefully structured lessons.

What is same day intervention?

A growing number of schools are doing different types of same day intervention. Some schools are splitting a lesson into two parts and other schools are working with small groups of students at other times during the day. The common goal is to keep up, rather than catch up.

#MathsEveryoneCan

At White Rose Maths we believe that everyone can succeed in Maths. We encourage anyone who uses our schemes to share in this belief and do all that they can to convince the children they teach that this is the case.

How do I reinforce what children already know if I don't teach the topic again?

The scheme has been designed to give sufficient time for teachers to explore concepts in depth, rather than covering it superficially and then coming back to it several times.

We understand though that schools will rightly want to ensure that students revisit concepts and ensure fluency in number.

The schemes interleave prior content in new concepts. For example when children look at measurement we recommend that there are lots of questions that practice the four operations and fractions. This helps children make links between topics and understand them more deeply.

We also recommend that schools look to reinforce number fluency throughout the year. This could be done as mental and oral starters or in additional maths time during the day.

Year 3/4 – Yearly Overview

	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				Number: Multiplication and Division			Consolidation
Spring	Number: Multiplication and Division		Measurement: Length, Perimeter and Area		Number: Fractions				Year 3: Fractions Year 4: Decimals			Consolidation
Summer	Measurement: Money		Statistics		Measurement: Time			Geometry – Properties of Shapes		Year 3: Mass and Capacity Year 4: Position and Direction		Consolidation

Year 3/4 – Autumn Term

Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Number- Place Value Read and write numbers up to 1000 in numerals and in words. Identify, represent and estimate numbers using different representations. Find 10 or 100 more or less than a given number. **Find 1000 more or less than a given number.** Recognise the place value of each digit in a 3 digit number. **Recognise the place value of each digit in a 4 digit number.** Order and compare numbers to 1000. **Order and compare numbers beyond 1000.** Count from 0 in multiples of 50 and 100 **Count in multiples of 25 and 1000** Solve number problems and practical problems involving these ideas. **Solve number and practical problems that involve all of the above and with increasingly large positive numbers.** **Count backwards through zero to include negative numbers.** **Round any number to the nearest 10, 100 or 1000** **Round decimals with one decimal place to the nearest whole number.** **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.**				Number – Addition and Subtraction Add and subtract numbers mentally, including: a three-digit number and ones; a three-digit number and tens; a three digit number and hundreds. Add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction. **Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate.** Estimate the answer to a calculation and use inverse operations to check answers. **Estimate and use inverse operations to check answers to a calculation.** Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction. **Solve addition and subtraction two step problems in contexts, deciding which operations and methods to use and why.**			Number – Multiplication and Division Count from 0 in multiples of 4 and 8 **Count in multiples of 6, 7 and 9** Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables. **Recall and use multiplication and division facts for multiplication tables up to 12 × 12.** Write and calculate mathematical statements for multiplication and division using the multiplication tables they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods. **Use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers.** Solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which *n* objects are connected to *m* objects. **Solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects.**			Consolidation

Year 3/4 – Spring Term

Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
<u>Number – multiplication and division</u> Write and calculate mathematical statements for multiplication and division using the multiplication tables they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods. **Multiply two digit and three digit numbers by a one digit number using formal written layout.** Solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which *n* objects are connected to *m* objects. **Solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects.** **Recognise and use factor pairs and commutativity in mental calculations.**		<u>Measurement – Length, Perimeter and Area</u> Measure, compare, add and subtract: lengths (m/cm/mm). Measure the perimeter of simple 2D shapes. **Measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres** Continue to measure using the appropriate tools and units, progressing to using a wider range of measures, including comparing and using mixed and simple equivalents of mixed units. **Convert between different units of measure eg kilometre to metre.** **Find the area of rectilinear shapes by counting squares.**		<u>Fractions</u> Recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators. Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators. **Solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number.** Count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10 **Count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten.** Recognise and show, using diagrams, equivalent fractions with small denominators. **Recognise and show, using diagrams, families of common equivalent fractions.** Add and subtract fractions with the same denominator within one whole. **Add and subtract fractions with the same denominator.**			<u>Number – fractions</u> Compare and order unit fractions, and fractions with the same denominators. Solve problems that involve all of the above. **Recognise and write decimal equivalents of any number of tenths or hundredths.** **Recognise and write decimal equivalents to $\frac{1}{4}, \frac{1}{2}, \frac{3}{4}$** **Round decimals with one decimal place to the nearest whole number.** **Compare numbers with the same number of decimal places up to two decimal places.**		**Consolidation**

Year 3/4 – Summer Term

Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Measurement: Money Add and subtract amounts of money to give change using both £ and p in practical contexts. **Estimate, compare and calculate different measures, including money in pounds and pence.** **Solve simple measure and money problems involving fractions and decimals to two decimal places.**		Statistics Interpret and present data using bar charts, pictograms and tables. **Interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs.** Solve one-step and two-step questions (for example, 'How many more?' and 'How many fewer?') using information presented in scaled bar charts and pictograms and tables. **Solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs.**		Measurement: Time Tell and write the time from an analogue clock, including using Roman numerals and 12-hour and 24-hour clocks. **Read, write & convert time between analogue and digital 12 and 14 hour clocks.** Estimate and read time with increasing accuracy to the nearest minute. Record and compare time in terms of seconds, minutes and hours. **Convert between different units of measure eg hour to minute.** Use vocabulary such as o'clock, a.m./p.m., morning, afternoon, noon and midnight. Know the number of seconds in a minute and the number of days in each month, year and leap year. **Solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days** Compare durations of events (for example to calculate the time taken by particular events or tasks).			Geometry: Properties of Shapes Recognise angles as a property of shape or a description of a turn. Identify right angles, recognise that two right angles make a half-turn, three make three quarters of a turn and four a complete turn; identify whether angles are greater than or less than a right angle. **Identify acute and obtuse angles and compare and order angles up to two right angles by size.** Identify horizontal and vertical lines and pairs of perpendicular and parallel lines. **Identify lines of symmetry in 2D shapes presented in different orientations.** **Complete an simple symmetric figure with respect to a specific line of symmetry.** Draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them. **Compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes.**		Measurement: volume and capacity (Y3) Measure, compare, add and subtract: mass (kg/g); volume/capacity (l/ml). **Co-ordinates (Y4)** **Describe positions on a 2D grid as coordinates in the first quadrant.** **Describe movements between positions as translations of a given unit to the left/ right and up/ down.** **Plot specified points and draw sides to complete a given polygon.**		Consolidation

Place Value

Mixed Age | Autumn Term

Small Steps Progression Overview

	Representing Numbers	Counting and Multiples	Compare and Order	More or Less	Negative Numbers	Roman Numerals	Rounding
Year 1	Count, read and write numbers to 100 in numerals.	Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number.	Identify and represent numbers using objects and pictorial representations including the number line, and use the language of: equal to, more than, less than, most, least.	Given a number, identify one more and one less.			
Year 2	Read and write numbers to at least 100 in numerals and words. Recognise the place value of each digit in a two digit number (tens, ones) Identify, represent and estimate numbers to 100 using different representations including the number line.	Count in steps of 2, 3 and 5 from 0 and in tens from any number, forward and backward.	Compare and order numbers from 0 up to 100; use <, > and = signs.				

Place Value

Mixed Age | Autumn Term

Small Steps Progression Overview

	Representing Numbers	Counting and Multiples	Compare and Order	More or Less	Negative Numbers	Roman Numerals	Rounding
Year 3	Read and write numbers up to 1,000 in numerals and in words. Recognise the place value of each digit in a 3-digit number. Identify, represent and estimate numbers using different representations.	Count from 0 in multiples of 4, 8, 50 and 100	Order and compare numbers to 1,000.	Find 10 or 100 more or less than a given number.			
Year 4	Recognise the place value of each digit in a four digit number (thousands, hundreds, tens and ones) Identify, represent and estimate numbers using different representations.	Count in multiples of 6, 7, 9. 25 and 1000.	Order and compare numbers beyond 1,000	Find 1,000 more or less than a given number.	Count backwards through zero to include negative numbers.	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.	Round any number to the nearest 10, 100 or 1000

Place Value

Mixed Age | Autumn Term

Small Steps Progression Overview

	Representing Numbers	Counting and Multiples	Compare and Order	More or Less	Negative Numbers	Roman Numerals	Rounding
Year 5	Read, write, order and compare numbers to at least 1000000 and determine the value of each digit.	Count forwards or backwards in steps of powers of 10 for any given number up to 1000000.	Read, write, order and compare numbers to at least 1000000 and determine the value of each digit.		Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers including through zero.	Read Roman numerals to 1000 (M) and recognise years written in Roman numerals.	Round any number up to 1000000 to the nearest 10, 100, 1000, 10000 and 100000
Year 6	Read, write, order and compare numbers up to 10,000,000 and determine the value of each digit.		Read, write, order and compare numbers up to 10,000,000 and determine the value of each digit.		Use negative numbers in context, and calculate intervals across zero.		Round any whole number to a required degree of accuracy.

Overview

Small Steps

Year 3	Year 4	
	Roman Numerals to 100	Roman Numerals
Numbers to 1,000		Representing Numbers
100s, 10s, 1s (1)	1,000s , 100s, 10s and 1s	
100s, 10s, 1s (2)	Partitioning	
Number line to 1,000	Number line to 10,000	
Hundreds	Count in 1,000s	Counting and Multiples
Count in 50s	Count in 25s	
1, 10, 100 more or less	1,000 more or less	More or less
Comparing objects		Compare and Order
Comparing numbers	Compare numbers	
Ordering numbers	Order numbers	
	Round to the nearest 10	Rounding
	Round to the nearest 100	
	Round to the nearest 1,000	
	Negative numbers	Negative Numbers

Roman Numerals

Notes and Guidance

Building on their Y3 knowledge of numerals to 12 on a clock face, children explore Roman Numerals to 100.

They explore what is the same and what is different between the number systems, for example there is no zero.

Mathematical Talk

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

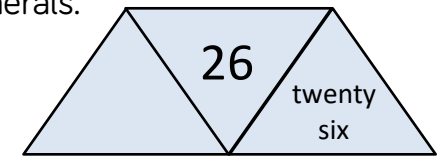
Do you notice any patterns? If 20 is XX what might 200 be?

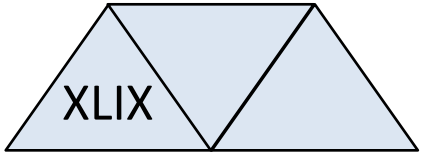
How can you check you have represented the Roman numeral correctly?

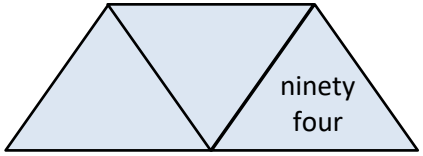
Varied Fluency

1 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!

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

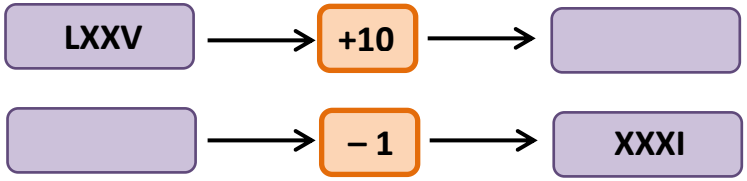






Complete the diagrams.

3 Complete the function machines.



Roman Numerals

Reasoning and Problem Solving

Solve the following calculation:

XIV + XXXVI = ☐

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

C ÷ II = L
L ÷ I = L

X × V = L
XXV × II = L

LXV – XV = L
C – L = L

XX + XX + X = L

Bobby 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 Bobby is correct

Bobby is incorrect. A lot of multiples of 10 have an X in them but the X can mean different things.
For example X in 10 just means one ten but X in 40 (XL) means 10 less than 50
X in 60 (LX) means 10 more than 50
The numbers 50 has no X and neither does 100

Numbers to 1,000

Notes and Guidance

Using Base 10 primarily, introduce children to any number up to 1,000. Base 10 will show the children the difference in size so they can clearly see that tens are bigger than ones.

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

They will not use the place value grid in this step but will focus on it in the next step.

Mathematical Talk

Does it matter which order you build the number in?

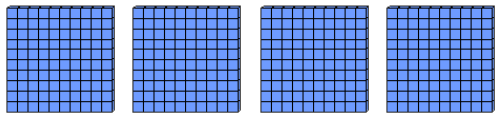
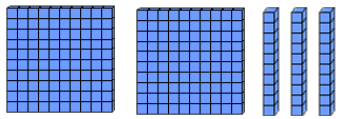
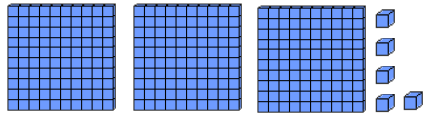
Can you have more than 9 of the same object? E.g. 11 tens

Do you prefer using the Base 10 or drawing the Base 10? Why?

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

Varied Fluency

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

Representation	Number
	
	
	

2 Use Base 10 to represent the following numbers.

- 700
- 120
- 407
- 999

3 Sanjay is drawing numbers. Can you complete them for him?

246 

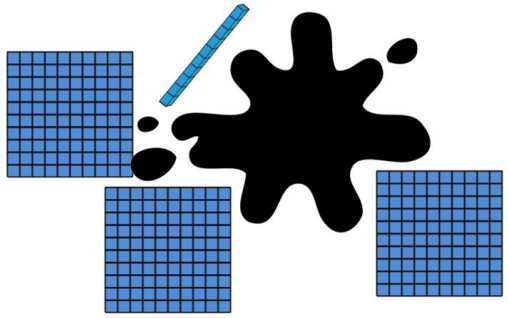
390 

706 

Numbers to 1000

Reasoning and Problem Solving

David has 420 in Base 10 but some are covered.



Work out the missing amount.

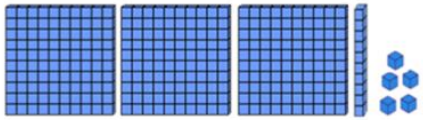
How many different ways can you make 420 with Base 10?

110 is the missing part.

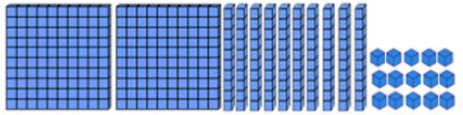
Possible answers:
1 hundred and 1 ten
110 ones
11 tens
10 tens and 10 ones
50 ones and 6 tens

Which child has made the number 315?

Ben:



Amir:



Ben and Amir 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, 1s (1)

Notes and Guidance

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

They can read numbers shown in different representations on a place value grid and be able to write them in numerals. They should be able to represent different 3 digit numbers using a variety of methods such as Base 10 or numerals.

Mathematical Talk

What is the value shown on the place value chart?

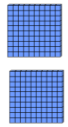
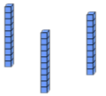
Why is it important to put the values into the correct column on the place value chart?

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

Can you make your own numbers for a friend using arrow cards?

Varied Fluency

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

Hundreds	Tens	Ones
		

Write it in numerals and words.

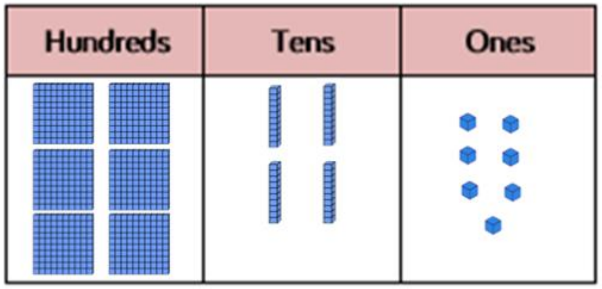
2 Complete this place value chart so that it shows 354

Hundreds	Tens	Ones
		

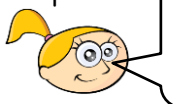
3 What number would this make?

100s, 10s and 1s (1)

Reasoning and Problem Solving



Steph



The place value grid shows 467

Do you agree?

Explain your reasoning.

What do you notice about the number shown?

I disagree because there are six hundreds in the hundreds column, four tens in the tens column and 7 ones in the ones column.

The number that is shown is 647

I notice that 647 and 467 have the same digits but the digits are worth different values.

Using each digit card, which numbers can you make?

Use the place value grid to help.

100s	10s	1s

Check your answer with a partner.

The numbers that can be made are:

530
350
503
305
53
35

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

Notes and Guidance

Children represent numbers to 9,999 on a place value grid and understand that a 4 digit number is made up of 1,000s, 100s, 10s and 1s.

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

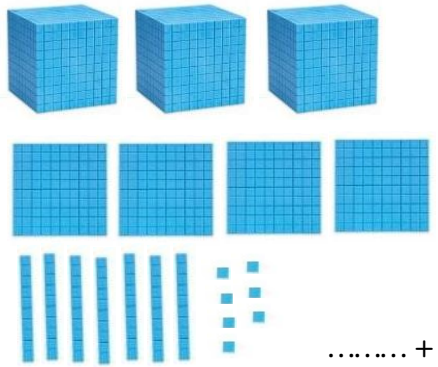
Mathematical Talk

How is the value of zero represented within a number?

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

Varied Fluency

1 Complete the sentences.

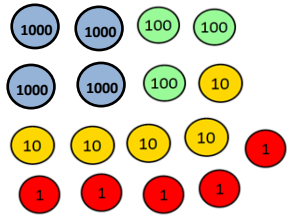


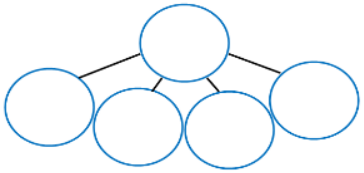
There are …….. thousands, ……. hundreds, ……. tens and ……. ones.

The number is ……..

…….. + …….. + …….. + …….. = ……..

2 Complete the part-whole model for the number represented.





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

6,9<u>8</u>3	<u>9</u>,021
<u>7</u>89	6,57<u>0</u>

1000s, 100s, 10s and 1s

Reasoning and Problem Solving

Create 5 four digit numbers where the tens number is 3 and the digits add up to 12

3,333
4,431
6,132
2,730
5,232

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.

The whole number has a digit total of 21

4,098

100s, 10s, 1s (2)

Notes and Guidance

Building on previous learning, children should now use place value counters to represent different numbers and understand how a number is made.

Their work with Base 10 should help them understand that the hundreds counter is worth more than the tens counter and the tens counter is worth more than the ones counter.

Mathematical Talk

Why do we not call this number 300506?

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

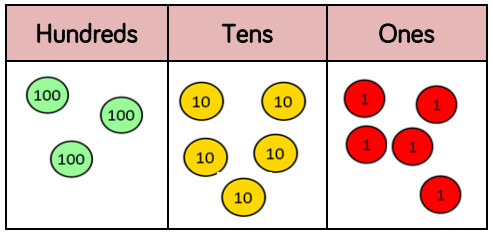
How much is shown?

Can you find all the possibilities?

Can you write a number sentence for Q3?

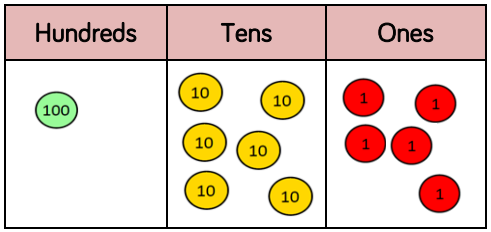
Varied Fluency

1 What number is shown in the place value chart?

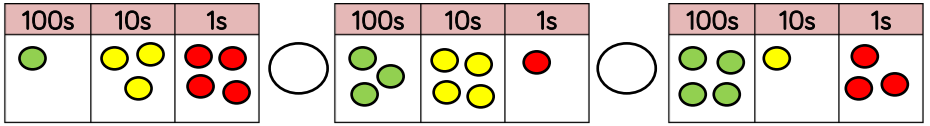


If one more (10) is added. What number would be shown?

2 True or false?
The place value grid shows 615



3 Put <, > or = in the circles to make the statement correct.



100s, 10s and 1s (2)

Reasoning and Problem Solving

Using place value counters, how many different ways can you make four hundred and fifty?

Show your solutions as a calculation

Possible answers:
100 + 100 + 100 + 100 + 10 + 10 + 10 + 10 + 10

100 + 100 + 100 + 10 + 10 + 10 + 10 + 10 + 10 + 10 + 10 + 10 + 10 + 10 + 10 + 10 + 10

Alice

The number in the place value grid is the greatest number you can make with 8 counters.

100s	10s	1s
●● ●● ●●	●	●

Do you agree?
Prove your answer.

Alice is incorrect because you could make 800 instead of 611

100s	10s	1s
●● ●● ●●		●● ●● ●●●

Helen

The place value chart shows 607

Dave

I think it shows 670

Who is correct?

Explain your reasoning.

Helen is correct because there are six counters in the hundreds column, zero counters in the tens column and seven counters in the ones.

If it was 670 there would be seven counters in the tens column and no counters in the ones column.

Partitioning

Notes and Guidance

This small step builds on basic partitioning. Children will explore how numbers can be broken apart in more than one way.

This step is particularly important later on, when children begin to exchange. Understanding that 5000 + 300 + 20 + 9 is equal to 4000 + 1300 + 10 + 19 is crucial, and this small step enables children to explore this explicitly.

Mathematical Talk

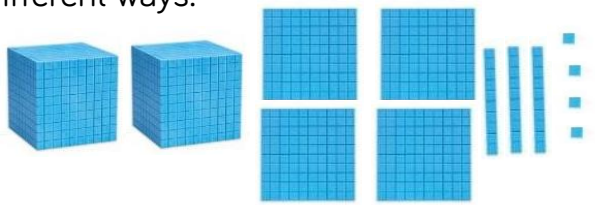
What number is being shown?

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

If you know ten 100s are equal to 1000 and ten 10s are equal to 100, how can you use this to make different exchanges?

Varied Fluency

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

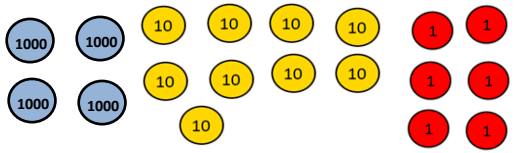


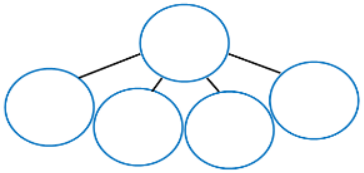
2000 + 400 + ☐ + 4

1000 + ☐ + ☐ + 14

1000 + 1300 + ☐ + ☐

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





3 Lily describes a number. She says,

"My number has 4 thousands and 301 ones"

What is Lily's number?
Can you describe it in a different way?

Partitioning

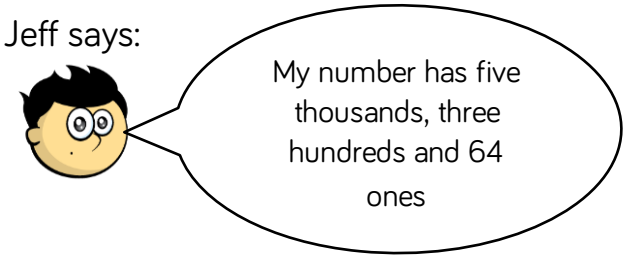
Reasoning and Problem Solving

Which is the odd one out?

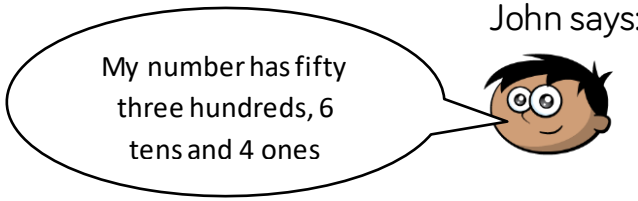
3,500	3,500 ones
2 thousands and 15 hundreds	35 tens

35 tens is the odd one out because it does not make 3500, it make 350

Jeff says:



John says:



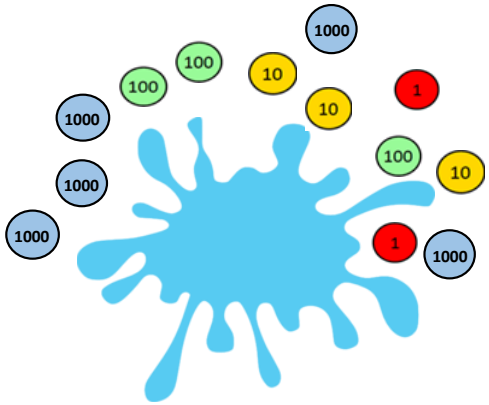
Who has the largest number?
Explain.

They both have the same number because 53 hundreds is equal to 5 thousand and 3 hundred. Jeff and John both have 5364

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.



Could be one 1,000 counter and one 100 counter.
Could be ten 100 counters and ten 10 counters.
Could be eleven 100 counters.

Number line to 1,000

Notes and Guidance

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

Number lines can 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, what facts can help you?

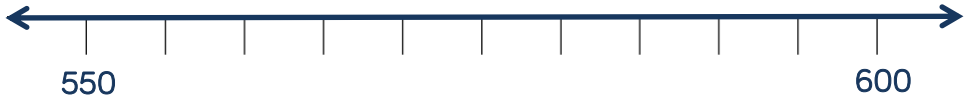
Can you draw a number line when 600 is the starting number and 650 is half way?

What value can A definitely not be? How do you know?

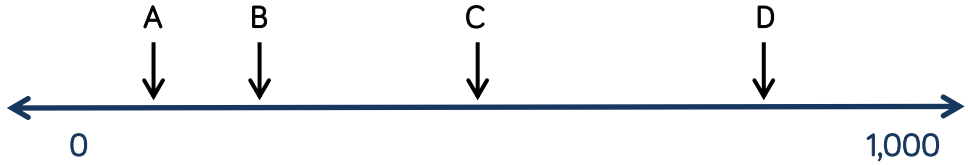
Varied Fluency

1 Draw an arrow to show the number 800

Draw an arrow to show the number 560



2 Which letter is closest to 250?

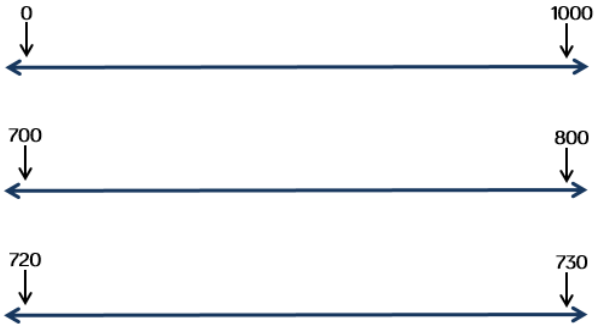


3 Estimate the value of A.

Number Line to 1000

Reasoning and Problem Solving

Place seven hundred and twenty five on each of the number lines below.



Explain why seven hundred and twenty five is not at 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.

The first line would have 500 at half way so 725 is on the right of the line but the second line has 750 at half way so 725 is on the left of the line.

If the number on the line is 780, what could the start and end numbers be?

Find three different ways and explain your reasoning.

Example answers:

Start 0 end 1000 because 500 would be in the middle and 780 would be further along than 500

Start 730 end 790

Start 700 end 800

Number Line to 10,000

Notes and Guidance

This step focuses only on the number line. Children are expected to estimate, work out and draw numbers on a number line to 10,000.

Discuss being able to count in steps from both sides.

Number lines can 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?

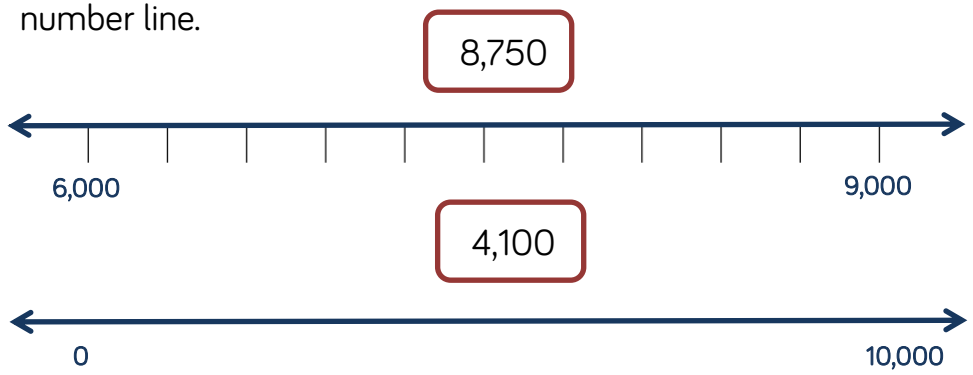
When estimating where a number should be placed, what facts can help you?

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

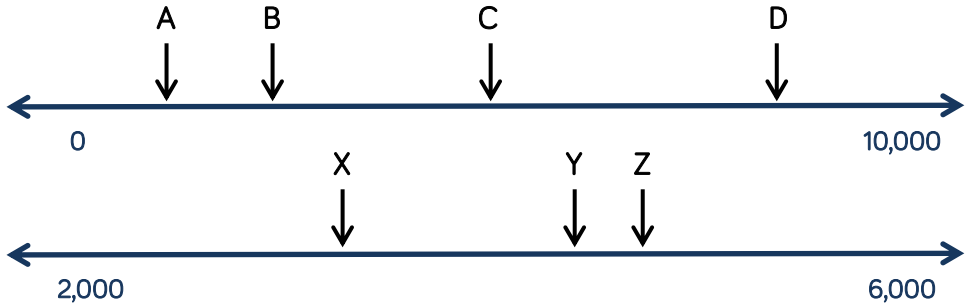
When a number line has no values at the end, what strategies could you use to help you figure out the missing value? Could there be more than one answer?

Varied Fluency

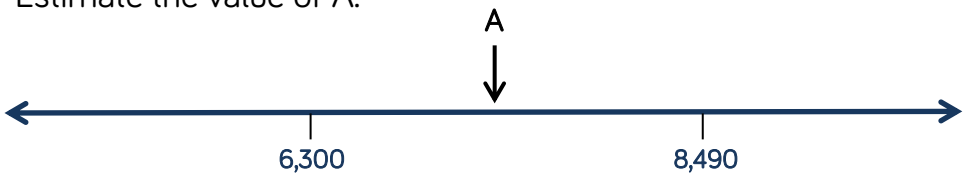
1 Draw arrows to show where the numbers would be on the number line.



2 Estimate the value of each letter.



3 Estimate the value of A.



Number Line to 10,000

Reasoning and Problem Solving

Place 6,750 on each of the number lines

6,000 — 7,000

6,500 — 8,000

0 — 10,000

Are they in the same place? Why?

No
Each line has different numbers at the start and end so the position of 6,750 changes.
Line 1: 6,500 at half way so 6,720 is past the mid- point
Line 2: 7,250 at half way so 6,750 is before the mid-point.
Line 3: 5,000 in the middle, so 6,750 is past the mid-point.

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

Possible answers:

8,400 – 9,500
5,000 – 10, 000
9,120 – 9,220

Hundreds

Notes and Guidance

To build on prior learning in Year 2, children need to understand what 100 is.

Children can explore 100 using a variety of different representations.

Once children understand the concept of 100, they will count objects and numbers in multiples of 100 up to 1,000.

Mathematical Talk

How many jars of sweets would you need to have 700 sweets?

Look at the place value chart with 100, 200, 300, 400... in.
What do you notice?

Can you show me this answer in a different way?
What does it mean when the ten and zero column in a place value chart are blank?
Why did you write a zero?
Why are there two zeros?

What's the same and what's different between 900 and 1,000?

Varied Fluency

1 There are 100 sweets in each jar.
How many sweets are there altogether?

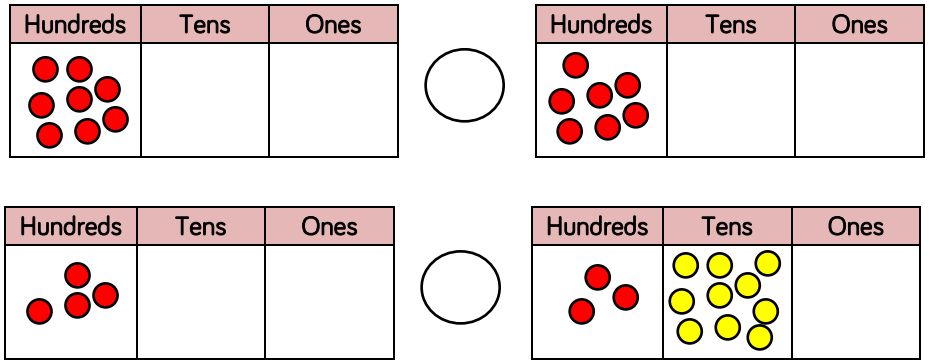
100 100 100 100

2 Complete the number tracks.

200	300		500			800	

	900	800			500		

3 Use <, > or = to compare the place value grids.



Hundreds

Reasoning and Problem Solving

If I count in 100s from zero, all of the numbers will be even.
Convince me.

Yes, they will always be even because I am starting with a zero in ones and adding to the hundreds. I do not add anything to the ones so it will always end in a zero which is odd.

Sort these statements into always, sometimes or never.

- When counting in hundreds, the ones column changes.
- The hundreds column changes every time you count in hundreds.
- To count in hundreds we use 3 digit numbers.

When counting in hundreds, the ones column changes. (never)

The hundreds column changes every time you count in hundreds. (always)

To count in hundreds we use 3 digit numbers. (sometimes)

Sarah thinks the place value grid is showing the number eight.

Do you agree?
Explain.

Using all the counters, what is the smallest number you can make with the counters?

I disagree with Sarah because the eight counters are in the hundreds column which shows eight hundreds.

The smallest number I can make is eight.

Count in 1,000s

Notes and Guidance

Looking at four digit numbers for the first time, children explore what a thousand is through concrete and pictorial representations.

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

Mathematical Talk

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

When counting in thousands, which digit changes?

Varied Fluency

1 How many sweets are there altogether?

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

2 What numbers are represented below?

Write them in numerals and words.

3 Complete the number tracks.

3,000	4,000		6,000			9,000	
	9,000		7,000			4,000	

Count in 1000s

Reasoning and Problem Solving

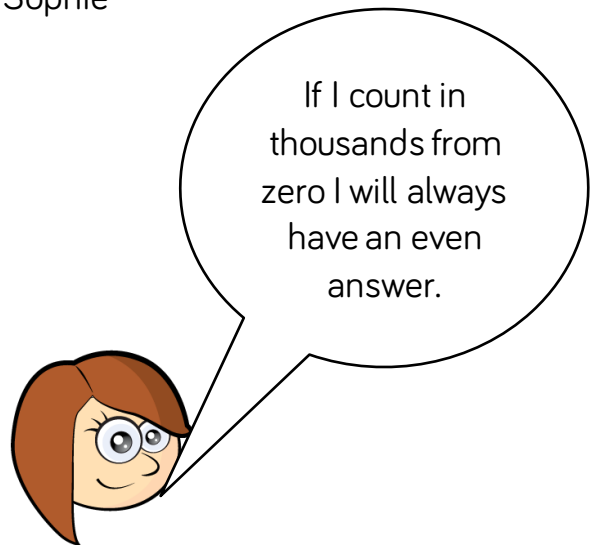
Sort these statements into **sometimes, always, never.**

- 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.

When counting in hundreds, the ones digit changes. NEVER
The thousands column changes every time you count in thousands. ALWAYS
To count in thousands, we use 4 digit numbers.
SOMETIMES

True or false?

Sophie



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

Count in 50s

Notes and Guidance

Children use their knowledge of the patterns in the 5 times table to count in steps of 50.

Children should start from a multiple of 50 and be able to count forwards and backwards.

Mathematical Talk

Can you notice a pattern as the numbers increase?

Explain how you have ordered the numbers.

Why is correct place value important when ordering numbers in a sequence?

What relationship do you notice between the 5 times table and 50 times table?

Varied Fluency

1 Complete the number tracks.

50		150	200			350		450	

	750	700	650			500			350

2 Circle the mistake in each sequence.

50, 100, 105, 200, 250, 300.....

990, 950, 900, 850, 800.....

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

5	10	15	20	25	30

50	100	150	200	250	300

Count in 50s

Reasoning and Problem Solving

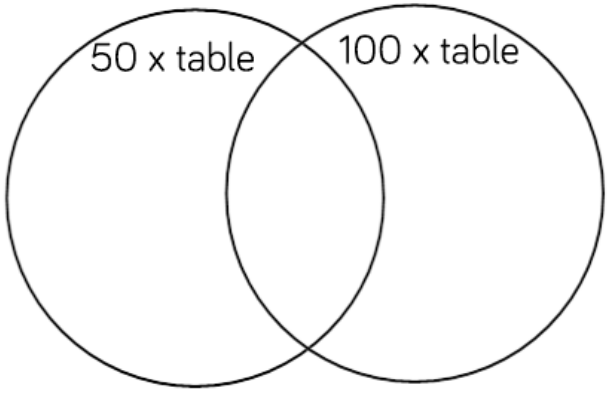
Circle the odd one out.

100, 150, 200, 215, 300

Explain how you know.

The odd one out is 215 as it is not in the 50 times table and the next number in the sequence should be 250

Create calculations for your friends to sort into the diagram



Possible answers:
Double 25
Half of 200
300 – 150
400 + 100
Double 150

Sort these statements into always, sometimes or never.

- When counting in 50s, the numbers are even.
- There are only two digits in a multiple of 50
- Only the hundreds and tens column changes when counting in 50s.

When counting in 50s. the numbers are even (always)

There are only two digits in a multiple of 50 (sometimes)

Only the hundreds and tens column changes when counting in 50s (sometimes)

Which is quicker: counting to 50 in 10s or counting to 150 in 50s?

Explain your answer.

It is quicker to count to 150 in 50s as it would only be 3 steps.
It would be 5 steps to count in 10s to 50

Count in 25s

Notes and Guidance

Focusing on patterns, children count in 25s. They use their knowledge of counting in 50s and 100s to become fluent in 25s.

Children should recognise and use the fact that there are four 25s in 100.

Mathematical Talk

Can you notice a pattern as the numbers increase?

What digit do multiples of 25 end in?

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

Varied Fluency

1 Complete the number tracks.

25		75		125	150				250

	725	700		650		600			

2 Circle the mistake in each sequence.

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

1,000, 975, 925, 900, 875....

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

25	50	75	100	125	150

50	100	150	200	250	300

Counting in 25s

Reasoning and Problem Solving

Hayley 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
-

Are these statements always, sometimes or never true?

Possible answers

Multiples of 1,000 are multiples of 25 because 25 goes into 1,000 exactly.

Not all multiples of 25 are multiples of 1,000. i.e 1,075.

Jeff is counting down in 25s from 790, will he say 725?

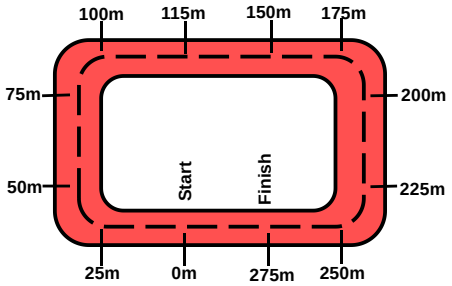
Explain with an example.

Possible answer:
No, he will not say 725 because:

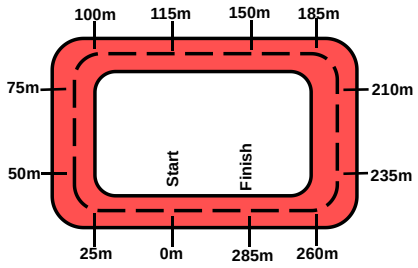
790, 765, 740, 715, 690, 665

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 25m to 100m. After this they have continued to count in 25s correctly from 150

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

1, 10, 100 more or less

Notes and Guidance

Building on children's learning in Year 2 where they explored finding 1 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 ways. For example, as numerals or words or with concrete resources.

Mathematical Talk

What is 10 more than/less than?

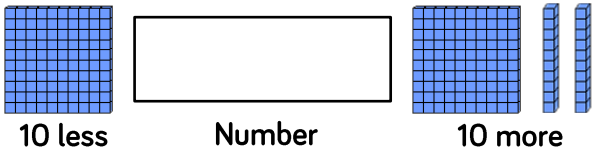
What is 100 more than/less than?
Which column changes?

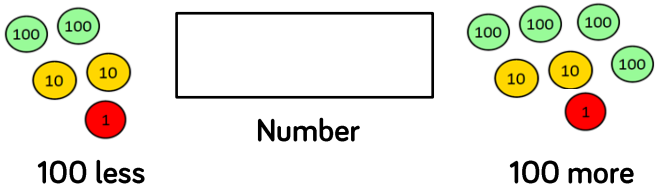
What happens when I subtract 10 from 209?

Explain why you have chosen to represent your answer. E.g. I have used an image to show my answer because……

Varied Fluency

1 Put the correct number in each box.

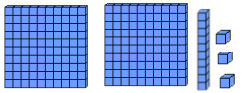




2 Show ten more and ten less than the following numbers using Base 10 and place value counters.

- 550
- 724
- 302

3 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 problem similar to describe the original number.

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

A similar problem could be; 10 less than my number is the same as 100 more than 100

I think of a number and add 10, subtract 100 and subtract 1

My answer is 256

What number did I start with?

What can you do to check?

The start number was 345

To check I can start at 345 add 10 which is 355, subtract 100 which is 255 and add 1 which is 256

A counter has dropped off the place value chart.

What number could it have been?

If a counter fell from the ones, the number would be 302

If a counter fell from the ten, the number would be 311

If a counter fell from the hundreds, the number would be 401

1,000 more or less

Notes and Guidance

Building on Year 3 where they explored finding 1, 10 and 100 more or less, children now move onto 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 numerals or Base 10

Mathematical Talk

What is 1,000 more than/less than a number? Which column changes?

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 1000 more than ____ is ____ because..... I can prove this by_____.

Varied Fluency

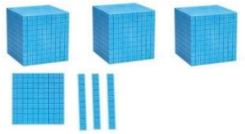
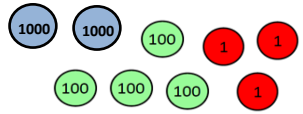
1 Fill in the missing values.

9,523 + 10 = ☐

☐ + 3,589 = 3,689

3,891 + ☐ = 4,891

2 Complete the table.

1,000 less	Number	1,000 more
		
		

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

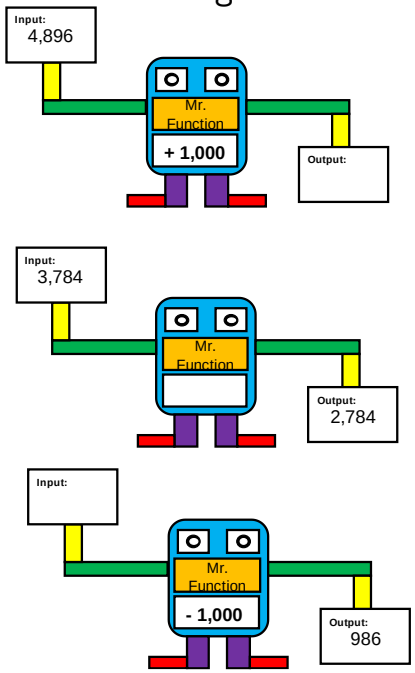
5,000 | 7,500 | 2,359 | 8,999

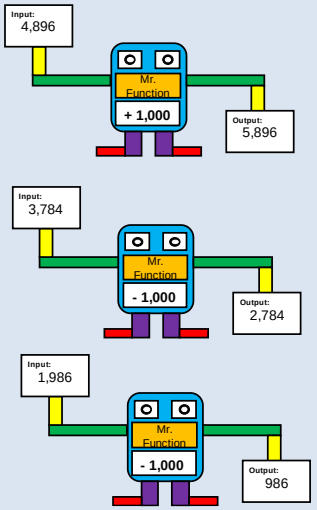
Use concrete resources to prove you are correct.

1,000 More or Less Than

Reasoning and Problem Solving

Complete the missing boxes:



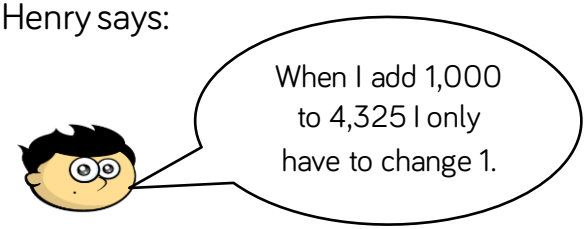


10 less than my number is 1000 more than 5300. What is my number?

Can you write your own problem similar to this?

6310

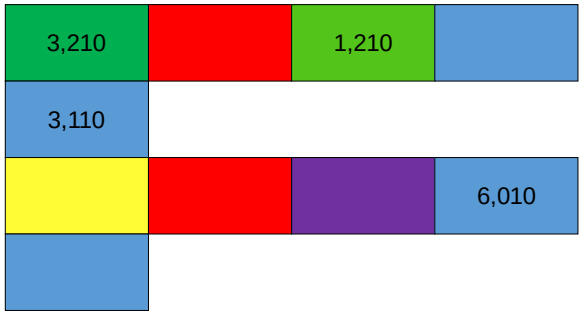
Henry says:

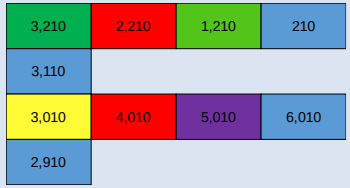


Is he correct?
Which digit does he need to change?

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

Fill in the boxes by finding the patterns:





Comparing Objects

Notes and Guidance

Children continue to use objects to represent numbers to 1,000.

When given two numbers represented by objects, they use comparison language and symbols to determine which is greatest and which is smallest. Children can build up the numbers using concrete manipulatives and draw them pictorially.

Use stem sentences to ensure the correct vocabulary is being used e.g. ____ is greater than ____

Mathematical Talk

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

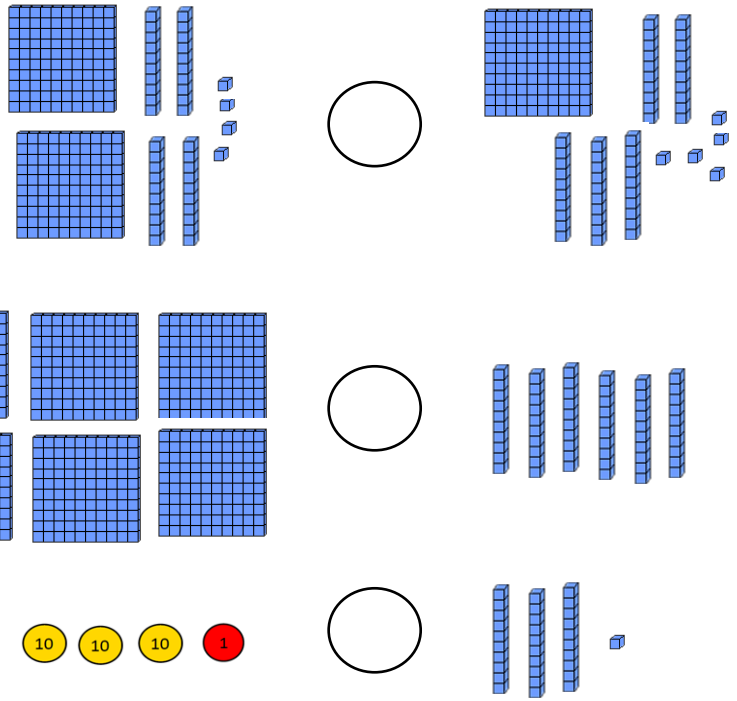
What strategy did you use to compare the two numbers? Is this the same or different to your partner?

Are the Base 10 and place value counters showing the same amount? How do you know?

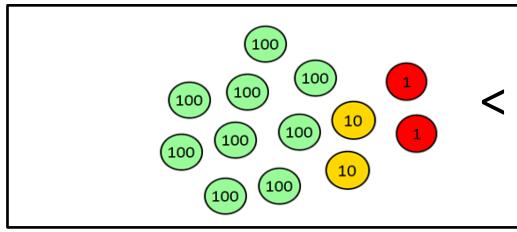
Is there only one answer?

Varied Fluency

1 Fill in the circle with <, > or =



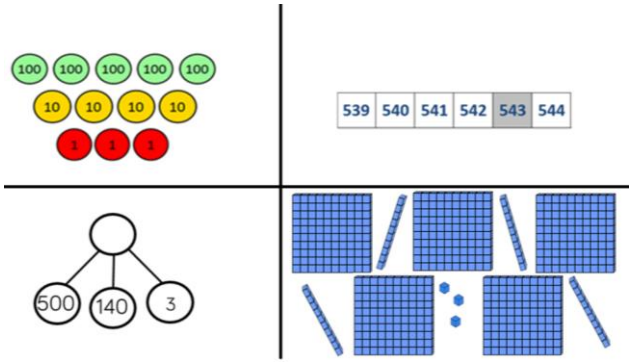
2 Draw objects to make the statement true.



Comparing Objects

Reasoning and Problem Solving

Which image is the odd one out?



Explain why.

How else can you represent the number?

The part whole model is the odd one out because it shows 643 All the other images show 543

Children could show 543 in a part whole model correctly; in Base 10 a different way or with place value counters a different way.

True or false?
Explain.

What could you do to make the image correct?

The image is not correct because the number 244 is represented on both sides of the inequality symbol.

An equals sign should have been used.

To make it correct I could add something to the number on the left or take away something from the right.

Comparing Numbers

Notes and Guidance

Children will be given numbers as digits rather than objects. They need to be encouraged to use previous learning to choose an efficient method to compare the numbers.
For example, children may:

- Place numbers on a number line
- Make the numbers using a concrete representation and compare each column
- Draw the numbers in a place value chart and compare each column

Mathematical Talk

What was your strategy to compare the two numbers?

Which column is the greatest? Why?

Which column do you start comparing from? Why?

Varied Fluency

1 Circle the greatest amount in each case.

Nine hundred and two	920
500 and 63	568
7 hundreds and 6 ones	76 tens

2 Fill in the circle with <, > or =

399 ◯ 501

800 ◯ 80 tens

3 Complete the statements.

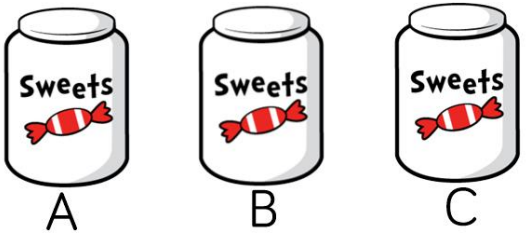
600 + 70 + 4 > 600 + …… + 4

Two hundred and five < ……

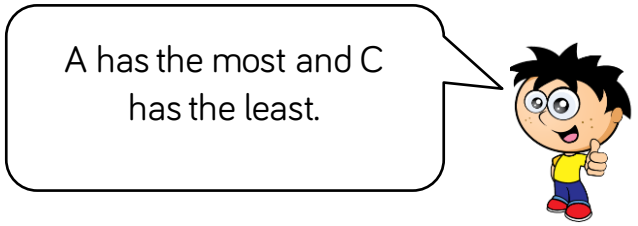
Comparing Numbers

Reasoning and Problem Solving

Patryk has 3 jars of sweets.



A has 235 sweets.
C has 175 sweets.



Patryk

How many sweets could be in B?

Explain how you know.

B could be anything between and including 176 to 234

Discussion point:
Can it be 235 or 175?

It cannot because it would have to be phrased 'A and B have the least'.

I am thinking of a number.

It is between 300 and 500

The digits add up to 14

The difference between the greatest digit and smallest digit is 2

What could my number be?

Is there only one option?

Explain your method of working it out.

446 or 464

Possible method:
Only options for hundreds column are 3 and 4
Start with 3 and have 11 left to make 14
There are no pairs of numbers to make 11 with a difference of 2
Start with 4 and have 10 left to make. 6 and 4 have a difference of 2

You cannot use any other pairs to 10 because the difference between the greatest and smallest would be more than 2

Compare 4-digit Numbers

Notes and Guidance

In this small step, children should compare 4 digit numbers using comparison language and symbols to determine which is greater and which is smaller.

Mathematical Talk

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

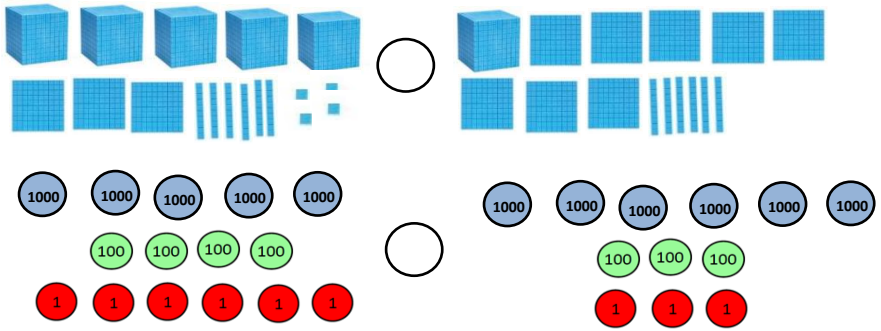
Which column do you start comparing from? Why?

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

1 Fill in the circle using <, > or =



5,689 ◯ 5,892

2 Circle the smallest amount.

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

3 Complete the statements.

1,985 > ……

4,203 < 4,000 + …… + 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?

Possible answers:
3,822
3,741
4,560

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

3,650 and 2,345

9,999 and 2,893

Possible answer:

Stephen and Charlotte play a video game. Stephen scores 3,650 points. Charlotte scores 2,345 points. Who has the most points?

Ordering Numbers

Notes and Guidance

Children explore ordering a set of numbers from smallest to greatest and greatest to smallest.

They need to be able to explain their reasoning for their choices.

At this point children are introduced to the words ascending and descending.

Mathematical Talk

Which has the fewest/most?

Which number is greater?

Which number is the least?

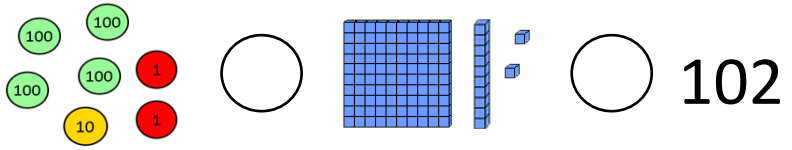
Why have you chosen to order the numbers this way?

Varied Fluency

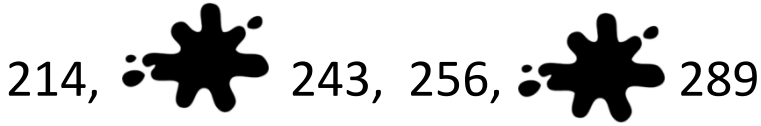
1 Here are three digit cards.

What is the greatest number you can make?
What is the smallest number you can make?

2 Add the symbols <, > or = to make the statement correct.



3 Jenny put some numbers in ascending order then ink spilt onto her page covering two of the numbers.

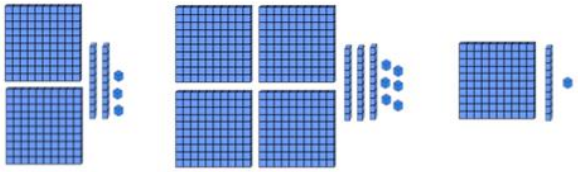


What could the numbers be?

Ordering Numbers

Reasoning and Problem Solving

The numbers are ordered from smallest to greatest.



Is this correct?

Explain your answer.

It is incorrect because the Base 10 are showing (from L-R) 223, 436, 111

They should be ordered 111, 223, 436

True or false?

You must look at the highest place value column first when ordering any numbers.

True because columns on the left are made up from columns on the right.
There this will tell you the greatest value.

Ordering Numbers

Notes and Guidance

Children explore ordering a set of numbers in ascending and descending order.

Children can then find the largest or smallest number from a set.

Mathematical Talk

Which number is the greatest? Which number is the highest/lowest?

Why have you chosen to order the numbers this way?

What strategy did you use to solve this problem?

Varied Fluency

1 Put the numbers in order starting with the smallest.

2,764  XXVII

2 Here are four digit cards.

4	0	5	3

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

3 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 a Set of Numbers

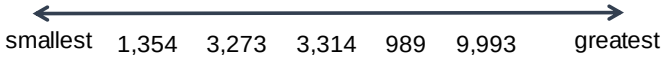
Reasoning and Problem Solving

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

All the other numbers have digit totals of 20

What could the other three numbers be?

Explain the mistake.



3,476

3,584

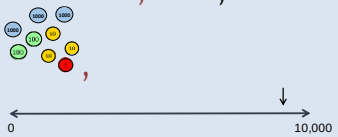
3,593

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.

Order these amounts:

Half of 2,400 LXXXVI

LXXXVI,
Half of 2,400 ,



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

Th	H	T	O
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?

Th	H	T	O
1	1	1	3
1	1	2	7
1	2	5	8
1	3	5	9
1	3	8	4
1	4	1	5

Round to the nearest 10

Notes and Guidance

Starting with 2 digit numbers, children look at the position of a number on a number line. They then apply their understanding to three digit numbers, focusing on the number of ones rounding up or down.

Highlight the importance of five here and the idea that although it is in the middle of the two numbers it always rounds up.

Mathematical Talk

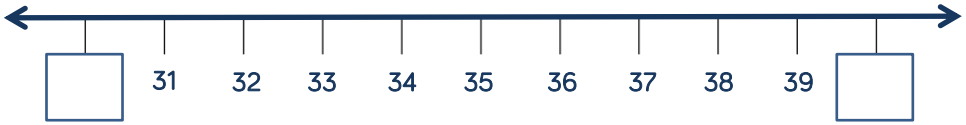
Which column do we look at when rounding to the nearest 10?

What is a multiple of 10? Which multiples of 10 does this number sit between?

Which number is being represented? Will we round it up or down? Why?

Varied Fluency

1 Which multiples of 10 do the numbers sit between?



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

Round 163, 166 and 167 to the nearest 10

3 Complete the table.

Start number	Rounded to the nearest 10
	
851	
XCVIII	

Round to nearest 10

Reasoning and Problem Solving

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

370

365
366
367
368
369
370
371
372
373
374

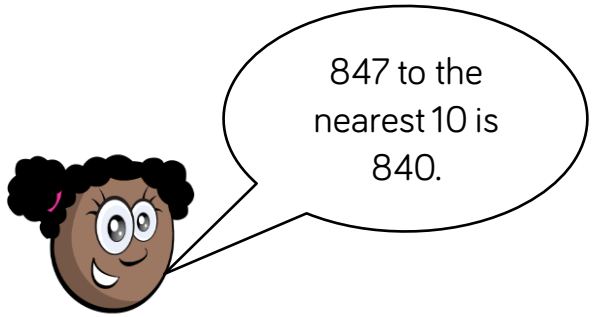
Two different two-digit numbers both round to 40 when rounded to the nearest 10
The sum of the 2 numbers is 79

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

Jasmine says:



Do you agree with Jasmine?

Explain why.

I don't agree with Jasmine 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

Building on the previous step, 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, and understanding of which hundreds a number sits between, to help them round.

Mathematical Talk

How is rounding to the nearest 100 similar and different to the nearest 10?

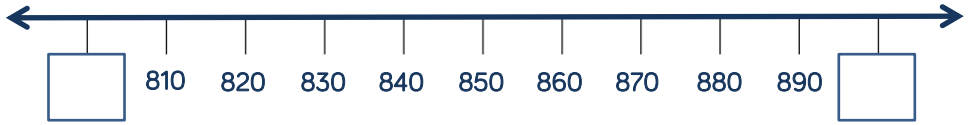
Which column do we need to look at when rounding to the nearest 100?

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

When rounding to 10 our number has one zero and when rounding to 100 is has two zeros. Why?

Varied Fluency

1 Which multiples of 100 do the numbers sit between?



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

Round 537, 555 and 568 to the nearest 100

3 Complete the table.

Start number	Rounded to the nearest 10
	
994	
XLV	

Round to the Nearest 100

Reasoning and Problem Solving

Are the statements always, sometimes or never true?

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

Sometimes- a number with a five in the ones column might have 0-4 in the tens column and round down or might have 5-9 in the tens column and round up.

Sometimes- a number with a five in the hundreds column might have 0-4 in the tens column and round down or might have 5-9 in the tens column and round up.

When a number is rounded to the nearest 100 it is 200

When the same number is rounded to the nearest 10 it is 250

What could the number be?

249 because when rounded to the nearest 10 it round to 250 and when rounded to the nearest 100 it rounds to 200

Other numbers include: 248, 247, 246, 245

Using the digit cards 0-9, can you make 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 1000

To 20 it could be: 15-24

To 10 it could be: 5-14

To 500 it could be 650-749

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

Round to the nearest 1000

Notes and Guidance

Within this small step, children are rounding to the nearest thousand for the first time, building on their knowledge of rounding to the nearest 10 and 100.

Children must understand which thousands number a number sits between.

When rounding to the nearest 1000, children should look at the digits in the hundreds column.

Mathematical Talk

Which place value column do we need to look at when we round the nearest 1000?

What does approximately mean?

The word approximately means 'not exact, but close enough to be used'.

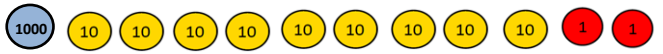
When is it best to round to 10? 100? 1,000?
Can you give an example of this? Can you justify your reasons?

Varied Fluency

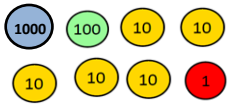
1 Say whether each number on the number line is closer to 3,000 or 4,000

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

2 Round these numbers to the nearest 1,000

- Eight thousand and fifty six
- 5 thousands, 5 hundreds, 5 tens and 5 ones.
- 

3 Complete the table.

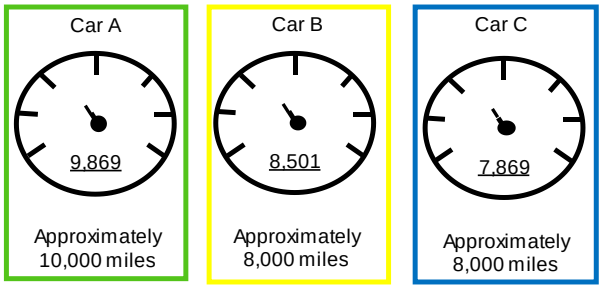
Start number	Rounded to the nearest 10	Rounded to the nearest 100	Rounded to the nearest 1000
			
4,999			
LXXXII			

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:



Car B is incorrectly advertised - it should be rounded up to 9,000

True or false?

All of the cars are correctly advertised.

Explain your reasoning.

A number is rounded to the nearest thousand.

The answer is 7,000.

What could the original number have been?

Give 5 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

Negative Numbers

Notes and Guidance

Children in Year 4 need to recognise that there are numbers below zero. It is essential that this concept is linked to real life situations such as temperature, water depth, money etc.

Children should be able to count back through zero. This can be supported through the use of number squares, number lines or other visual aids.

Mathematical Talk

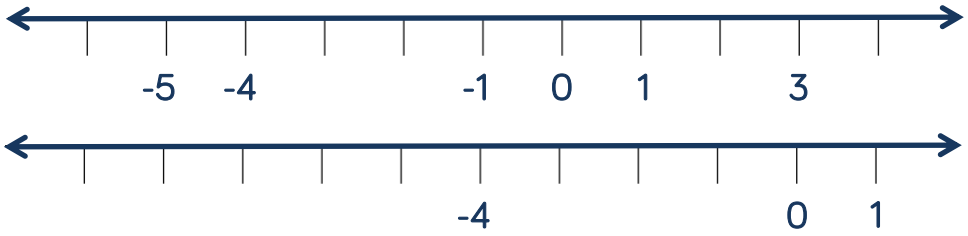
Can you use the words positive and negative in a sentence to describe numbers?

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

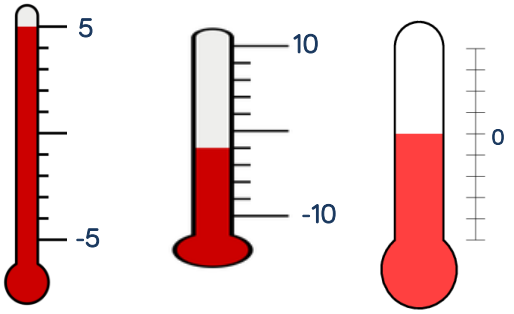
Is -1 degrees warmer or colder than -4 degrees? Can you research the coldest ever recorded temperature on Earth?

Varied Fluency

1 Complete the number lines.



2 Fill in the temperatures on the different thermometers.



3 Zak is counting backwards out loud.
He says,

"two, one, minus one, minus two, minus three…."

What mistake has Zak made?

Negative Numbers

Reasoning and Problem Solving

Tom says he has 61.

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.

Tom is not correct

a)0 is incorrect as it is written twice

b)1 is incorrect. The other numbers have a difference of 2 but 1 -2 has a difference of 3

c)-25 is incorrect. The other numbers have a difference of 5 and -15 and -25 have a difference of 10

Each bag contains 10 cookies.

Sam counted down in 3's until he reached -18.

He started at 21.

What was the tenth number he said?

Prove it.

-9
3 x 10 = 30. Then subtract 30 from 21 to get to -9

Anna is counting down from 11 in fives.

Does she say -11?

Prove it.

No
11, 6, 1, -2, -7, -12