Years 1/2

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

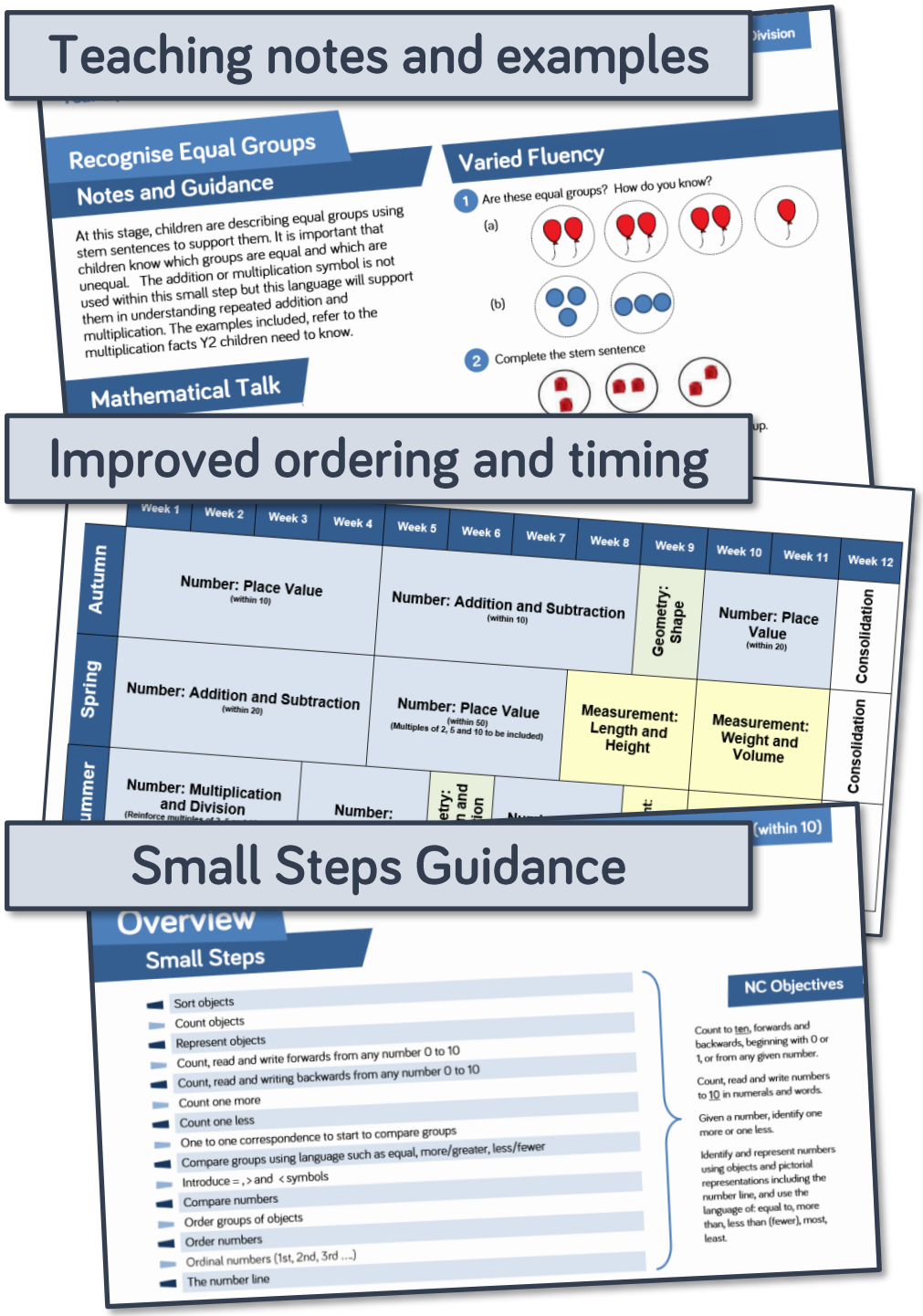
If you have any feedback on any part of our work, do not hesitate to get in touch. Follow us on Twitter and Facebook to keep up-to-date with all our latest announcements.

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.



White Rose Maths

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

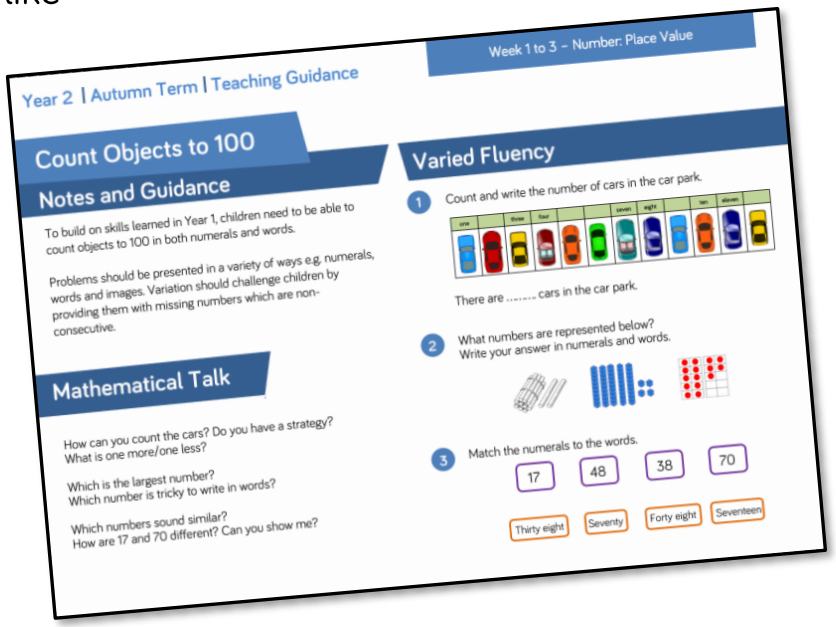
We are regularly asked how it is possible to spend so long on particular blocks of content and National Curriculum objectives. We know that breaking the curriculum down into small manageable steps should help children understand concepts better. Too often, we have noticed that teachers will try and cover 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

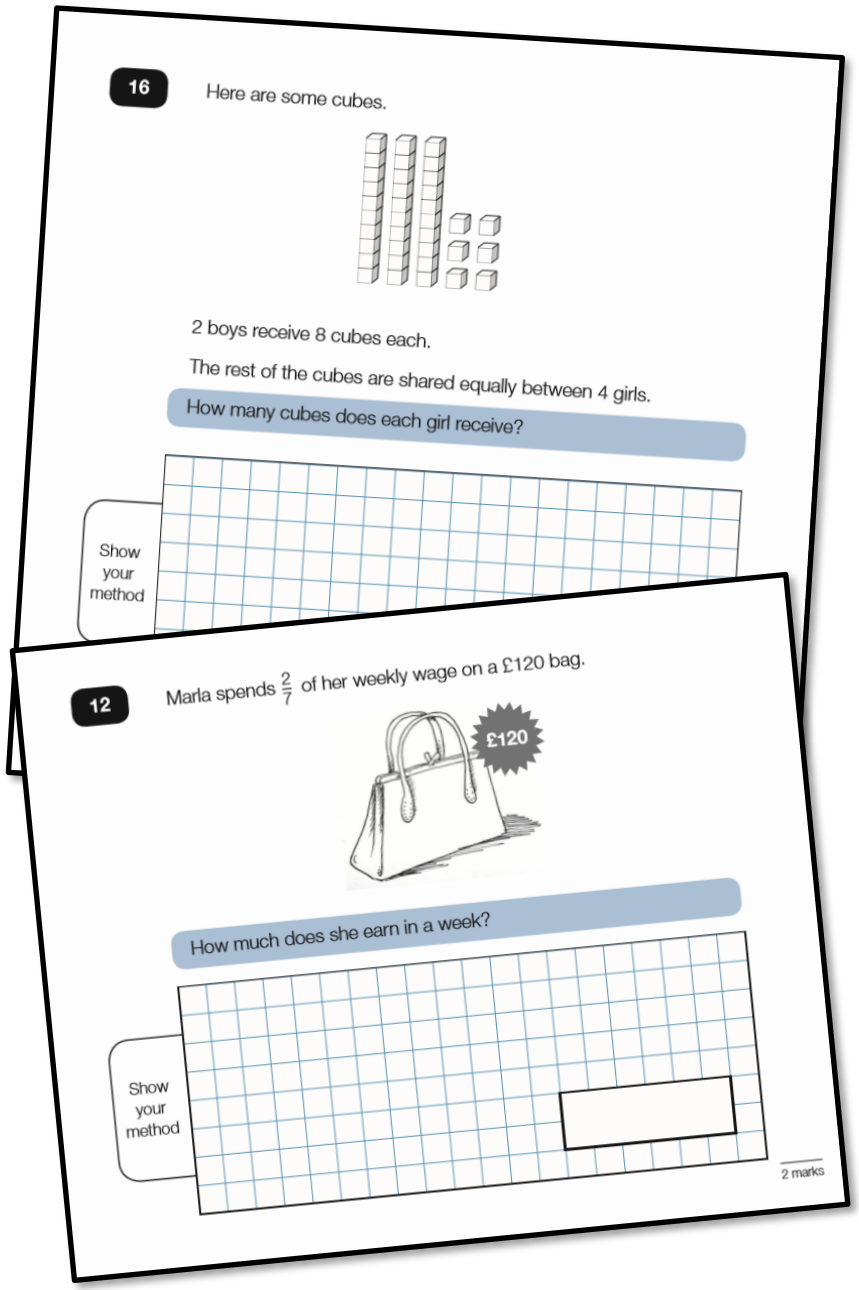
Alongside these overviews, our aim is to provide an assessment for each term's plan. Each assessment will be made up of two parts:

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.

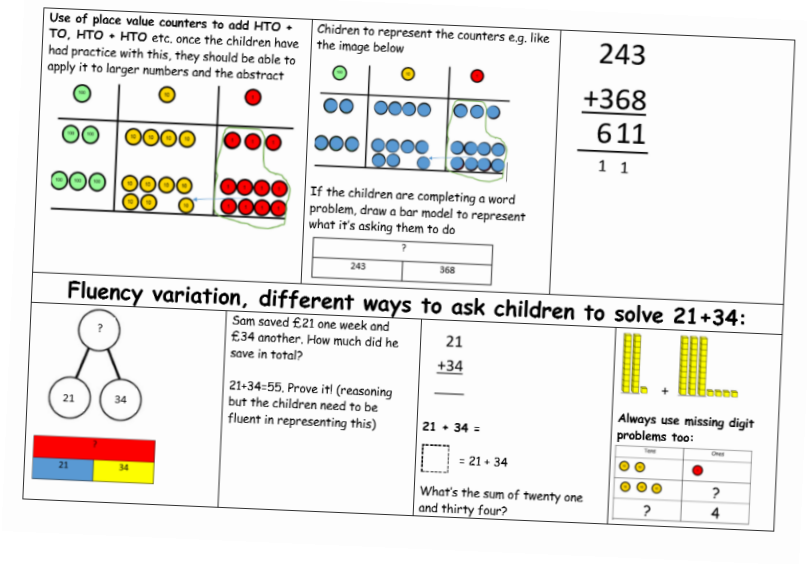
Other schemes of learning

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.

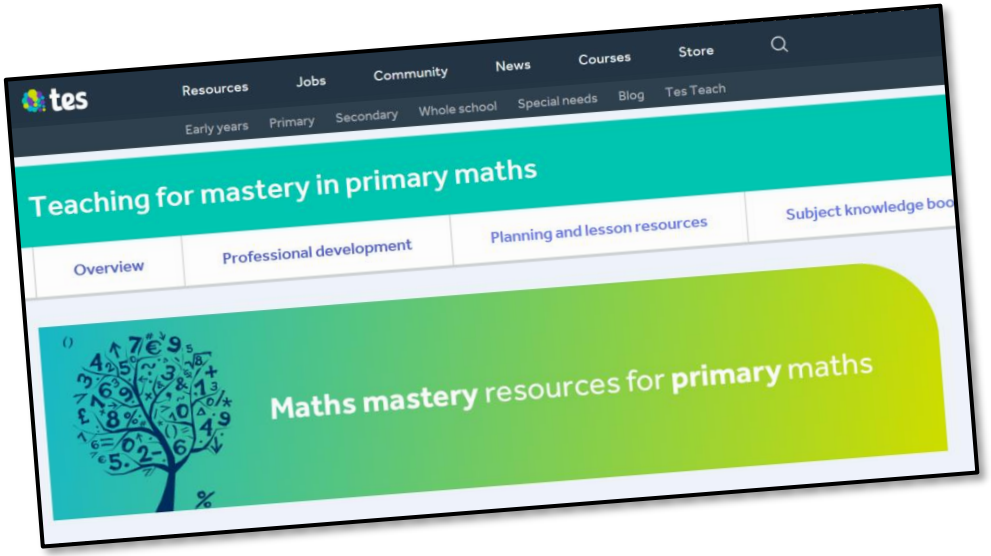


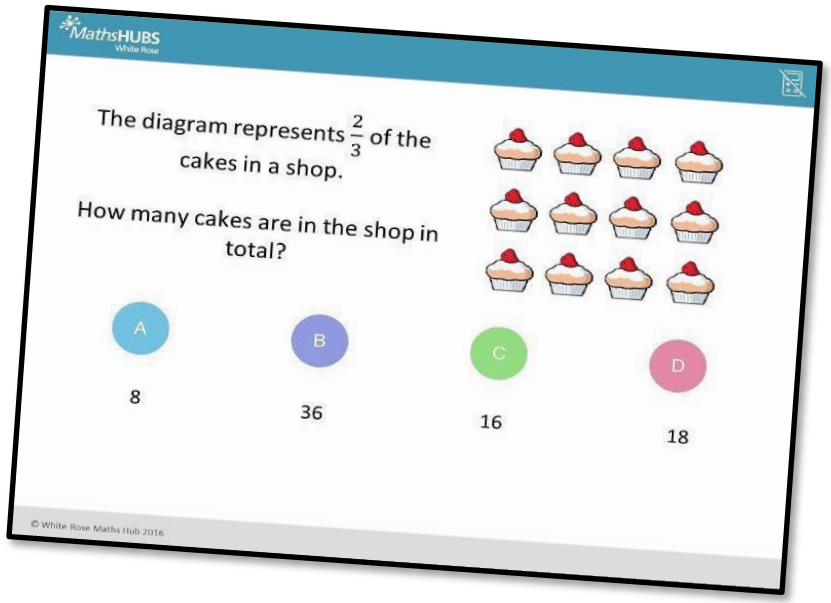
Our Partnerships

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 then please do 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 1 /2– 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				Geometry: Shape		Measurement: Money	
Spring	Number: Multiplication and Division (Y1: Place Value to 50 included)				Number: Fractions			Measurement: Length and Height		Measurement: Mass, Capacity and Temperature		Consolidation
Summer	Year 1: Place Value within 100 Year 2: Statistics		Geometry: Position and Direction		Problem solving and efficient methods		Measurement: Time			Investigations		Consolidation

Year 1/2 – 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 Count to **twenty**, forwards and backwards, beginning with 0 or 1, or from any given number. Count, read and write numbers to **20** in numerals and words. **Read and write numbers to at least 100 in numerals and in words.** **Recognise the place value of each digit in a two digit number (tens, ones)** Given a number, identify one more or one less. Identify and represent numbers using objects and pictorial representations including the number line, and use the language of: equal to, more than, less than (fewer), most, least. **Identify, represent and estimate numbers using different representations including the number line.** **Compare and order numbers from 0 up to 100; use <, > and = signs.** **Use place value and number facts to solve problems.**				Number: Addition and Subtraction Represent and use number bonds and related subtraction facts within 20 **Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100.** Read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs. Add and subtract one digit numbers to 20, including zero. **Add and subtract numbers using concrete objects, pictorial representations, and mentally, including: a two-digit number and ones; a two-digit number and tens; two two-digit numbers; adding three one-digit numbers.** Solve one step problems that involve addition and subtraction, using concrete objects and pictorial representations and missing number problems. **Solve problems with addition and subtraction: using concrete objects and pictorial representations, including those involving numbers, quantities and measures; applying their increasing knowledge of mental and written methods.** **Show that the addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot.** **Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.**			Geometry: Shape Recognise and name common 2-D shapes, including: (for example, rectangles (including squares), circles and triangles) **Identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line.** Recognise and name common 3-D shapes, including: (for example, cuboids (including cubes), pyramids and spheres.) **Identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces.** **Identify 2-D shapes on the surface of 3-D shapes, [for example, a circle on a cylinder and a triangle on a pyramid.]** **Compare and sort common 2-D and 3-D shapes and everyday objects.**		Measurement: Money Recognise and know the value of different denominations of coins and notes. **Recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value.** **Find different combinations of coins that equal the same amounts of money.** **Solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change.**	

Year 1/2– 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
Number: Place Value and Multiplication and Division Count to **50** forwards and backwards, beginning with 0 or 1, or from any number. Count, read and write numbers to **50** in numerals. Given a number, identify one more or one less. Count in multiples of twos, fives and tens. **Count in steps of 2, 3 and 5 from 0, and in tens from any number, forward and backward.** **Recall and use multiplication and division facts for the 2, 5 and 10 times tables, including recognising odd and even numbers**. Solve one step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher. **Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods and multiplication and division facts, including problems in contexts.** **Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs.** **Show that the multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot.**				Number: Fractions Recognise, find and name a half as one of two equal parts of an object, shape or quantity. Recognise, find and name a quarter as one of four equal parts of an object, shape or quantity. **Recognise, find, name and write fractions $\frac{1}{3}$, $\frac{1}{4}$, $\frac{2}{4}$ and $\frac{3}{4}$ of a length, shape, set of objects or quantity.** **Write simple fractions for example, $\frac{1}{2}$ of 6 = 3 and recognise the equivalence of $\frac{2}{4}$ and $\frac{1}{2}$.**			Measurement: Length and Height Measure and begin to record lengths and heights. **Choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm);** mass (kg/g); temperature (°C); capacity (litres/ml) **to the nearest appropriate unit, using rulers,** scales, thermometers and measuring vessels Compare, describe and solve practical problems for: lengths and heights (for example, long/short, longer/shorter, tall/short, double/half) **Compare and order lengths,** mass, volume/capacity **and record the results using >, < and =**		Measurement: Weight and Volume Measure and begin to record mass/weight, capacity and volume. **Choose and use appropriate standard units to estimate and measure** length/height in any direction (m/cm); **mass (kg/g); temperature (°C); capacity (litres/ml) to the nearest appropriate unit,** using rulers**, scales, thermometers and measuring vessels** Compare, describe and solve practical problems for mass/weight: [for example, heavy/light, heavier than, lighter than]; capacity and volume [for example, full/empty, more than, less than, half, half full, quarter] **Compare and order** lengths, mass, **volume/capacity and record the results using >, < and =**		Consolidation

Year 1/2– 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
Number: Place Value Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number. Count, read and write numbers to 100 in numerals. Given a number, identify one more and one less. 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. **Statistics** **Interpret and construct simple pictograms, tally charts, block diagrams and simple tables.** **Ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity.** **Ask and answer questions about totalling and comparing categorical data.**		Geometry: Position and Direction Describe position, direction and movement, including whole, half, quarter and three quarter turns **Use mathematical vocabulary to describe position, direction and movement including movement in a straight line and distinguishing between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anti-clockwise).** Order and arrange combinations of mathematical objects in patterns and sequences		Problem Solving and Efficient Methods		Measurement: Time Sequence events in chronological order using language [for example, before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening. Recognise and use language relating to dates, including days of the week, weeks, months and years. **Know the number of minutes in an hour and the number of hours in a day.** Tell the time to the hour and half past the hour and draw the hands on a clock face to show these times. **Tell and write the time to five minutes, including quarter past/to the hour and draw the hands on a clock face to show these times.** Compare, describe and solve practical problems for time [for example, quicker, slower, earlier, later] **Compare and sequence intervals of time.** **Measure and begin to record time (hours, minutes, seconds)**			Investigations		Consolidation

Overview

Small Steps

Year 1	Year 2	
Count forwards and backwards and write numbers to 20 in numerals and words	Count objects to 100 and read and write numbers in numerals and words	Representing Numbers
Numbers from 11 to 20	Represent numbers to 100	
Tens and Ones	Tens and Ones with a part whole model	
	Tens and Ones using addition	
	Use a place value chart	
Count one more and less		More or less
Compare groups of objects	Compare objects	Compare and Order
Compare numbers	Compare numbers	
Order groups of objects		
Order numbers	Order objects and numbers	
Ordinal numbers (1st, 2nd, 3rd)		
	Count in 2s, 5s and 10s	Counting and Multiples
	Count in 3s	

Count & Write Numbers to 20

Notes and Guidance

Children are building on their existing knowledge of counting forwards and backwards by introducing the numbers 11-20

11, 12, 13 and 15 are usually difficult for children to understand because they cannot hear the single digit in the name like others e.g. sixteen – six ones and a ten.

Mathematical Talk

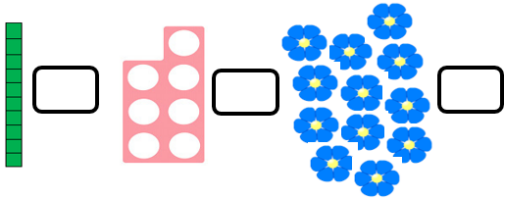
9, 10, 11, 12, 13, 14, 15, 16 what do you notice about the sounds of the numbers?

Do you notice a pattern with the numbers?

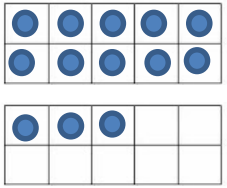
Do the ones always become greater when we count?

Varied Fluency

1 Write the numeral.



2 Write the numbers shown on the ten frame in numerals and words.



Using your own ten frame, show me:
Fourteen, 18, nine, 16

3 Fill in the missing numbers.

	15		17		
16					11

Count & Write Numbers to 20

Reasoning and Problem Solving

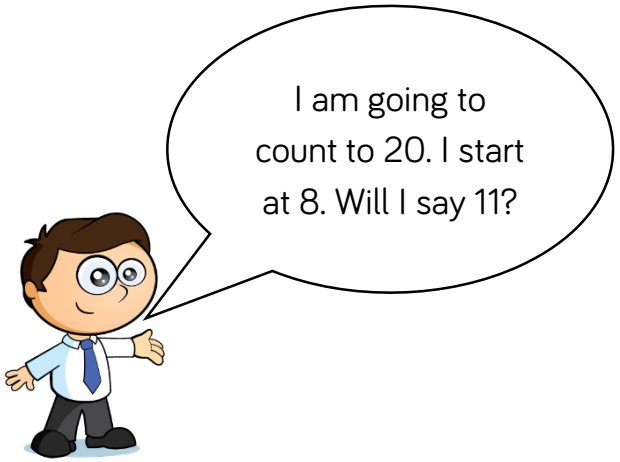
Circle the odd one out and explain why.

11, 12, 13, 14, 51, 16, 17

51 is incorrect. The number should be 15

The digits have been swapped round.

Mr. Monaghan says



Will Mr. Monaghan say 11?

Explain how you know.

Yes, because 11 is between 8 and 20

Count Objects to 100

Notes and Guidance

To build on skills learned in Year 1, children need to be able to count objects to 100 in both numerals and words.

Problems should be presented in a variety of ways e.g. numerals, words and images. Variation should challenge children by providing them with missing numbers which are non-consecutive.

Mathematical Talk

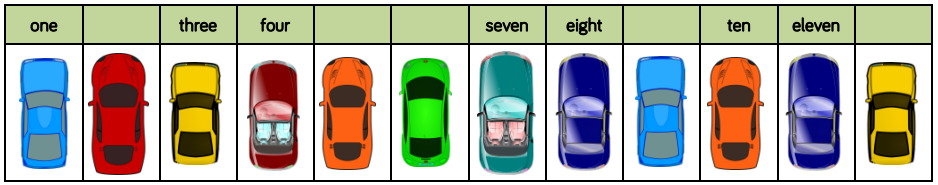
How can you count the cars? Do you have a strategy?
What is one more/one less?

Which is the largest number?
Which number is tricky to write in words?

Which numbers sound similar?
How are 17 and 70 different? Can you show me?

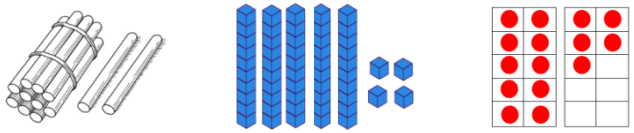
Varied Fluency

1 Count and write the number of cars in the car park.



There are …….. cars in the car park.

2 What numbers are represented below?
Write your answer in numerals and words.



3 Match the numerals to the words.

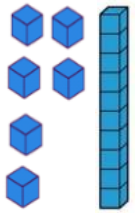
17	48	38	70

Thirty eight	Seventy	Forty eight	Seventeen

Count Objects to 100

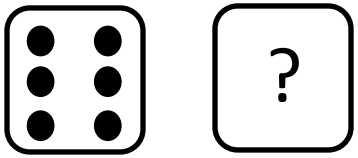
Reasoning and Problem Solving

Tom says he has 61
Is he correct?
Explain your reasoning



Tom is not correct because he has 16. He has switched his ten and one around.

Freddy rolls two dice.
One dice shows a 6.
What could his total be?
Write your answers in words.



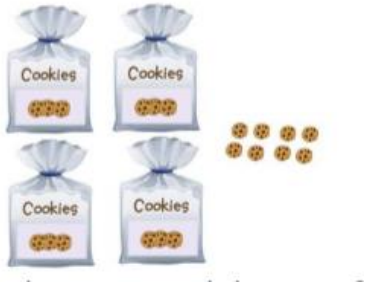
How many dots of one die?
How did you count the dots?
How many dots on a nine sided die?

Freddy's totals could be: seven, eight, nine, ten, eleven and twelve.

6 sided die:
21 dots

9 sided die:
50 dots

Each bag contains 10 cookies.



How many cookies are there altogether?

Write your answers in numerals and words.

What strategy did you use?

Did your partner use a different method?

What is the best strategy to use

There are 48 (forty eight) cookies altogether.
(*Children may count in 10s and 1s or know that there are 4 tens which equals 40, then count on 8 more.*)

Numbers from 11 to 20

Notes and Guidance

Children are using concrete and pictorial representations to explore the different ways to represent a number.
Base 10 is formally introduced in the next step but if children are familiar with this model then they can include it.
A 4 box diagram can be used to encourage multiple representations.

Mathematical Talk

Can you show me another way to represent 12? And another?

What's the same and what's different about these representations?

Which representation is the odd one out?

Varied Fluency

1 Draw a picture to show me 13 counters.

2 Match the numbers to the words.

seventeen	15
twenty	12
fifteen	17
twelve	20

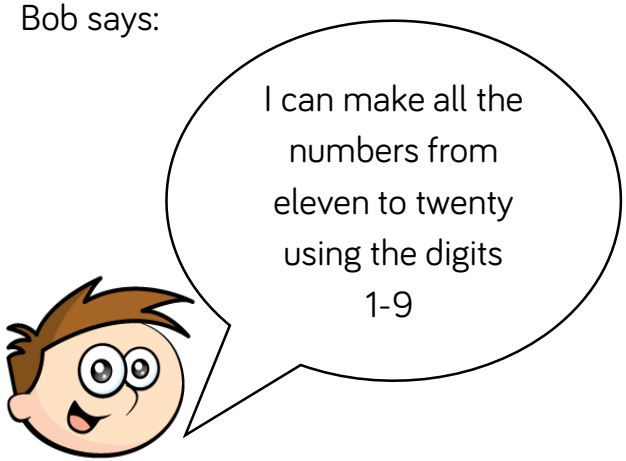
3 Using two ten frames, show me a number:

- More than 12
- Less than 20
- Equal to 10 + 10

Numbers from 11 to 20

Reasoning and Problem Solving

Bob says:



Do you agree?

No, you cannot make 20 because you need a zero.

Which card is the odd one out?

20	fifteen	15	twelve
fourteen	12	twenty	

Explain how you know.

Fourteen as it doesn't have a matching card.

Use 2 sets of number cards.

1 set with numerals 1-20

1 set with words 1-20

Play in groups of 3 or 4

Take it in turns to pick a numeral card.

If they match you win the pair, if the cards don't match put them back.

Representing Numbers

Notes and Guidance

Children need to be able to represent numbers to 100 using a range of concrete materials.

In this small step, children should also be able to state how a number is made up. For example they can express 42 as 4 tens and 2 ones or as 42 ones.

Mathematical Talk

How have the beads been grouped? How does this help you count?

Which part of the resource represents tens/ones?

Which resource do you prefer to use for larger numbers? Which is quickest? Which would take a long time?

Varied Fluency

1 Here is part of a bead string.

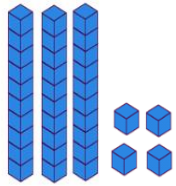
Complete the sentence.

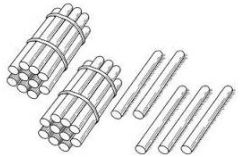
There are …….. tens and …….. ones.

The number is ……..

Represent 45 on a bead string.

2 Match the number to the correct representation.





Three tens and four ones

Twenty five

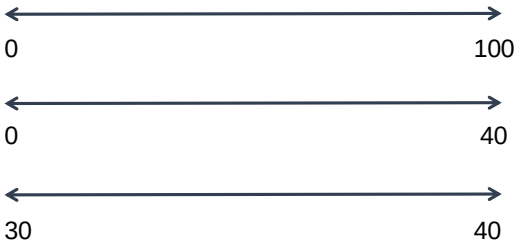
33

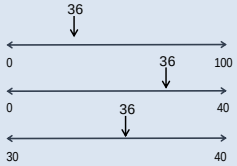
3 Represent 67 in **three different** ways?

Represent Numbers

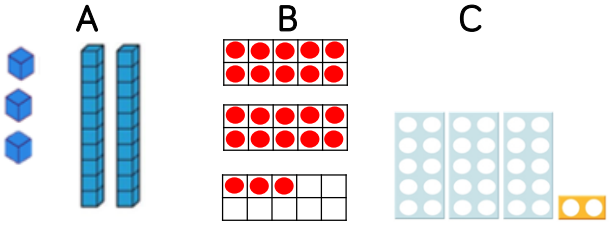
Reasoning and Problem Solving

Place 36 on each of the number lines below:



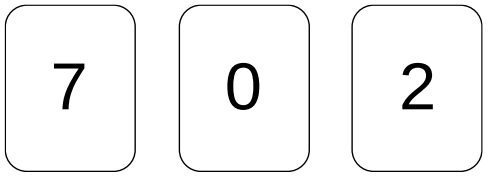


One of these images does not show 23. Can you explain the mistake?



C does not show 23, it shows 32. They have reversed the tens and ones.

How many two digit numbers can you make using the digit cards?



70
20
72
27

What is the largest number?
Prove it by using concrete resources.

The largest number is 72

What is the smallest number?
Prove it by using concrete resources.

The smallest number is 20.

Why can't the 0 be used as a tens number?

Tens and Ones

Notes and Guidance

Children will learn each number from 11 to 19 has '1 ten and a bit more'. They will see 10 and 20 as having just tens and no ones. Children still need to see numbers can be seen in different ways and therefore discuss 1 ten being equal to 10 ones.
Base 10 will be introduced in this step. Children can use these concrete but also draw them as 'sticks and bricks'. A line represents 1 ten and a dot represents 1 one.

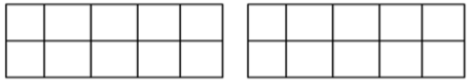
Mathematical Talk

Which is greater 1 ten or 1 one?
How do you know?

Can you swap tens for ones?
Will it change the amount?
Explain.

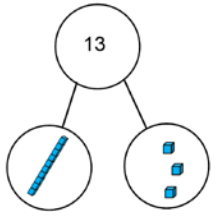
Varied Fluency

1 Fill in the ten frames with counters to show 14

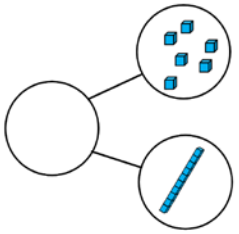


☐ = ☐ ten ☐ ones

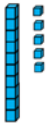
2 My number is ____
It has ____ tens and ____ ones.



My number is ____
It has ____ tens and ____ ones.



3 Complete:

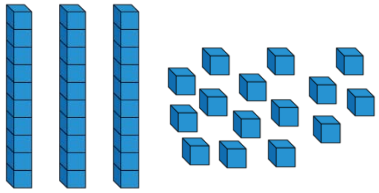


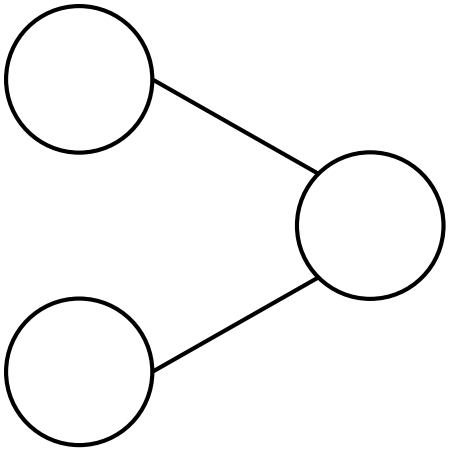
☐ = ☐ ten ☐ ones

Tens and Ones

Reasoning and Problem Solving

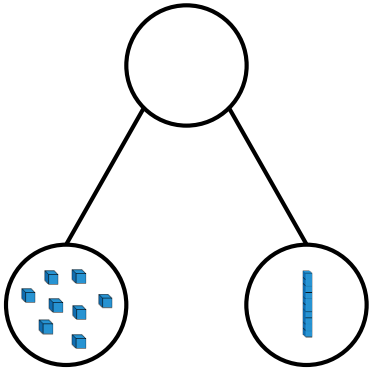
How many ways can you complete the part whole model using the Base 10 equipment – you do not have to use it all.



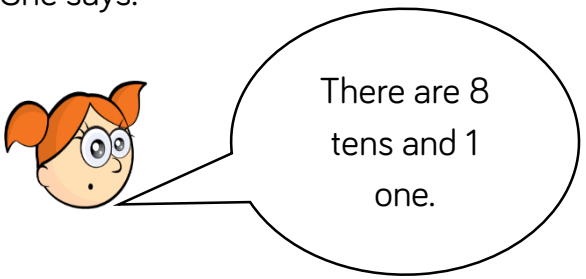


Open ended e.g. 1 ten and 5 ones make 15

Jodie makes a part whole model.



She says:



Explain her mistake.

What is her number?

Jodie has counted the ones as tens and the tens as ones.

She should say there is 1 ten and 8 ones.

Her number is 18

Tens and Ones (1)

Notes and Guidance

Children now partition numbers and need to have an understanding of what each digit represents.

It is important that children can partition numbers in a variety of ways, not just as tens and ones. For example, 58 is made up of 5 tens and 8 ones or 4 tens and 18 ones, or 20 and 38, etc.

Mathematical Talk

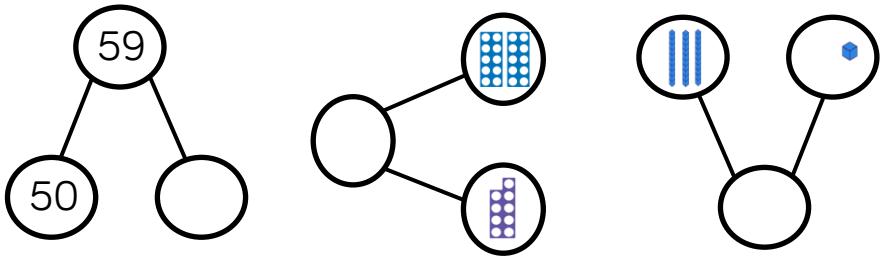
Which part do we know? How can we use the whole and part to work out the missing part?

Can you use concrete materials/draw something to help you partition?

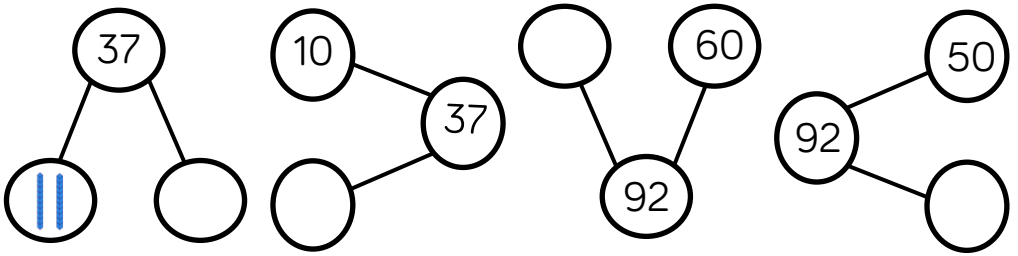
How can you rearrange the counters to help you count the lemon and strawberry cupcakes?

Varied Fluency

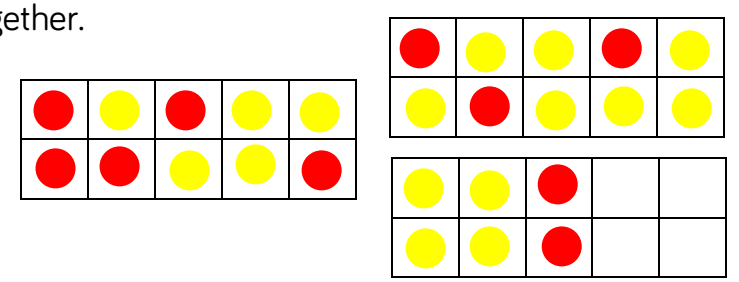
1 Complete the part whole models.



2 Complete the part whole models.



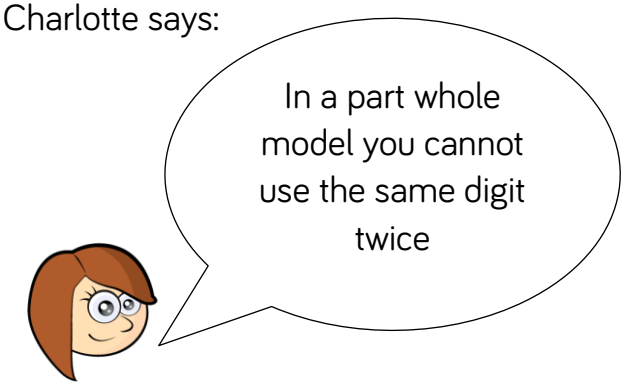
3 The ten frames represent lemon and strawberry cupcakes. Draw a part whole model to show how many cupcakes there are altogether.



Tens and Ones (1)

Reasoning and Problem Solving

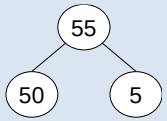
Charlotte says:



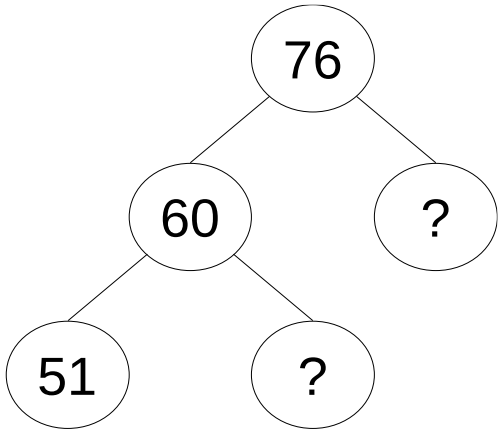
Do you agree with Charlotte?

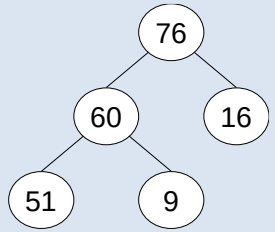
Explain your reasoning.

Disagree- you can use the same digit in a part whole model. i.e



Complete the extended part whole model:





Tens and Ones (2)

Notes and Guidance

Children will build on previous learning on the part whole model and how tens and ones can be partitioned and recombined to make a total.

This small step will focus on using the addition symbol to express numbers to 100. For example 73 can be written as 70 + 3 = 73

Mathematical Talk

What clues are there in the calculations? Can we look at the tens number or the ones number to help us?

What number completes the part-whole model?

What is the same and different about the calculations?

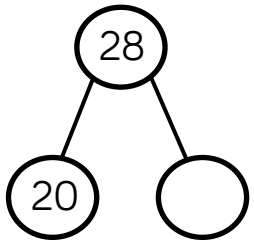
What are the key bits of information? Can you draw a diagram to help you?

Varied Fluency

1 Match the number sentences to the correct number.

20 + 19	10 + 4	40 + 0	80 + 1
40	14	81	39

2 Complete the part-whole model and write four number sentences to match.



____ + ____ = ____

____ + ____ = ____

____ = ____ + ____

____ = ____ + ____

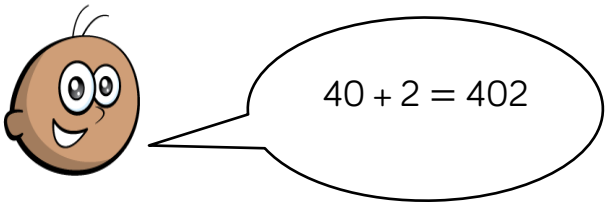
3 Hattie has 20 sweets and Noah has 15 sweets.
Represent the total number of sweets:

- With concrete resources
- In a part whole model
- As a number sentence

Tens and Ones (2)

Reasoning and Problem Solving

Joel thinks that:



Explain the mistake he has made.

Can you show the correct answer using concrete resources?

40 + 2 = 42
Joel has combined the numbers to make 402

Fill in the missing numbers:

1 ten + 3 ones = 13

2 tens + ☐ ones = 23

☐ 3 tens + 3 ones = ☐

tens + 3 ones = 43

What would the next number in the pattern be?

1 ten + 3 ones = 13
2 tens + 3 ones = 23
3 tens + 3 ones = 33
4 tens + 3 ones = 43

5 tens + 3 ones = 53

Place Value Charts

Notes and Guidance

To build on skills previously taught, children are now formally presenting their work in the correct place value columns to aid understanding of place value.

It is important for children to use concrete, pictorial and abstract representations in their place value chart.

Mathematical Talk

How many tens are there?

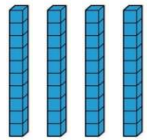
How many ones are there?

What is different about using Base 10 and place value counters?

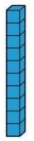
Can you write any other number sentences about the place value chart?

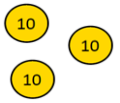
Varied Fluency

1 What number is represented in the place value chart?

Tens	Ones
	

2 Complete the place value charts using Base 10 and place value counters to represent the number 56.

Tens	Ones
	

Tens	Ones
	

3 What number is represented in the place value chart?

Tens	Ones
9	1

Write two different number sentences for this number.

____ + ____ = ____

____ = ____ + ____

Place Value Charts

Reasoning and Problem Solving

How many two digit numbers can you make that have the same number of tens and ones?

Tens	Ones

Tens	Ones

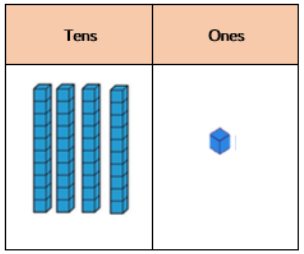
Tens	Ones

Possible answers:

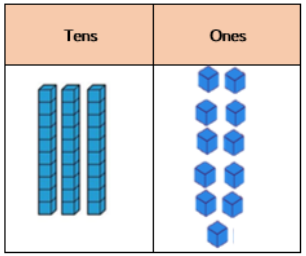
11
22
33
44
55
66
77
88
99

Are these two place value charts of equal value?

A



B



What is the same?

What is different?

Yes they are of the same value-41.

40+1=41
30+11=41

Same: Both A and B show 41

Different: There are different tens and ones in each place value chart.

Count One More & One Less

Notes and Guidance

Building on previous place value knowledge, children will apply their skills to find one more and one less. Prior to this small step, children would have been exposed to the language of more and less and used resources such as number lines and number tracks. A misconception that children might come across, when using the language one more, is whether it is one more 1 or one more 10. Therefore this should be addressed with clear modelling, using practical resources.

Mathematical Talk

What do you notice about the tens and ones?

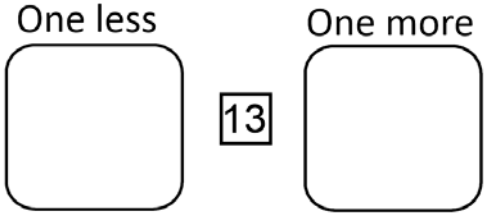
Which digit changes?

What's the same and what's different between 12 and 13?

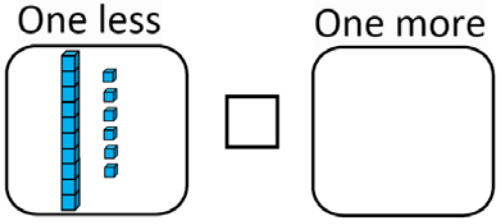
Varied Fluency

1 Make one more and one less than these numbers.

2 Draw



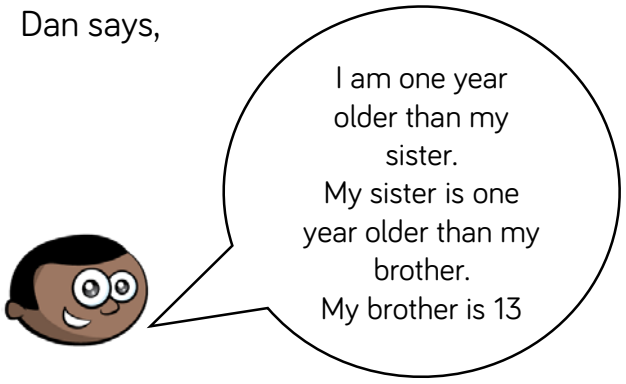
3 Draw



Count One More & One Less

Reasoning and Problem Solving

Dan says,



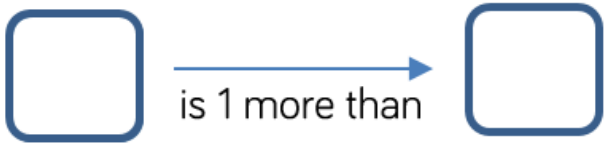
How old is Dan?
How old is his sister?

51 is incorrect. The number should be 15

The digits have been swapped round.

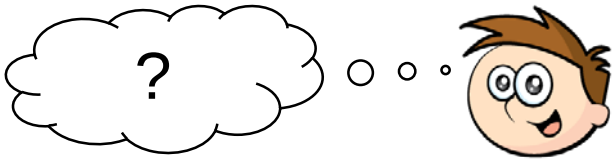
Use number cards 11-20.

How many different ways can you complete the boxes below?



Example answers:
18 is 1 more than 17
12 is 1 more than 11

Adam thinks of a number.

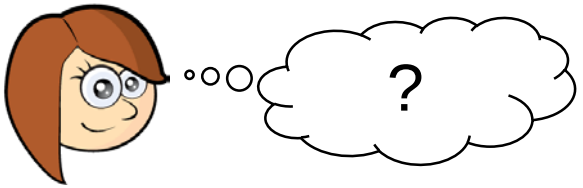


1 more than his number is 11

What is his number?

Adam's number: 10

Jan thinks of a number.



1 less than her number is 15

What is her number?

Jan's numbers: 16

Compare Groups of Objects

Notes and Guidance

Once children have been exposed to making and exploring numbers greater than 10, they can begin to compare groups of numbers. This builds on, and continues to use vocabulary of comparison such as; greater than, less than and equal to. Because children have explored finding the difference, they can use this as a strategy to find out how many more. Thus making it the ideal time to recap finding the difference.

Mathematical Talk

How many in each group?

Which group has the most?

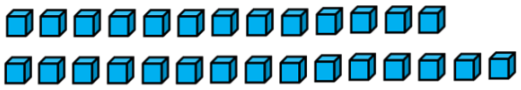
Which group has the least?

How do you know?

What could you call the middle group?

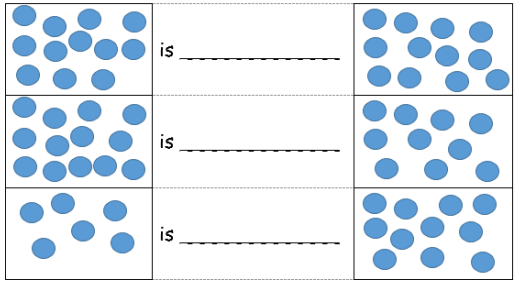
Varied Fluency

1 Which is greater?



By how many?

2 Use **more than**, **less than** or **equal to** to complete the sentences.



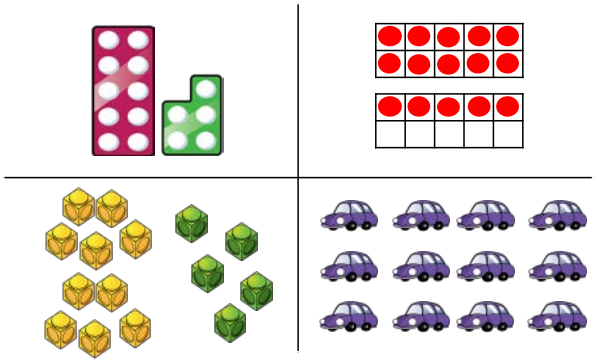
3 In pairs, both make a number on a bead string (only use up to 20 beads). Compare bead strings and use <, > or = in a sentence.

Compare Groups of Objects

Reasoning and Problem Solving

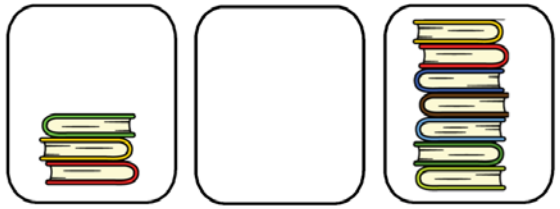
Which image is the odd one out?

Why?



The cars because there are 12 and the rest show 15

How many books can go in the empty box?



Compare with your partners- have you drawn the same amount of books?

How many possibilities are there?

The middle box could have 4, 5 or 6

Compare Objects

Notes and Guidance

Once children are secure with tens and ones and how to place numbers on a place value chart, comparing objects can be introduced.

Children are expected to compare a variety of objects using the vocabulary more than, less than and equal to and the symbols < and >.

Mathematical Talk

How can you arrange the objects to make them easy to compare?

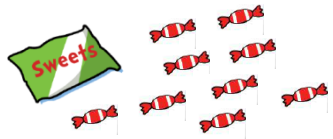
Do groups of ten help you count? Why?

Varied Fluency

1 A packet of sweets contain 10 sweets.

Helena's sweets

Zak's sweets

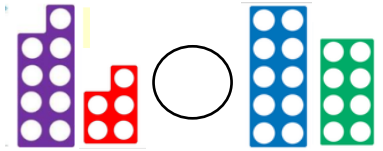


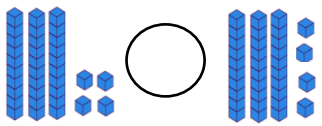
Who has the most sweets?

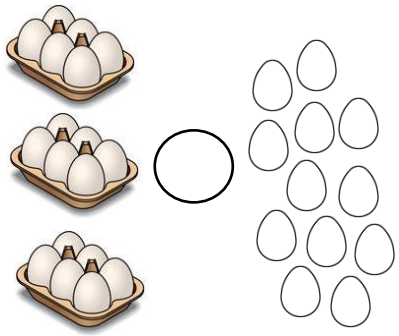
2 Use cubes to show that:

- Eleven is less than fifteen.
- 19 is greater than 9.
- 2 tens is equal to 20.

3 Put <, > or = in each circle.





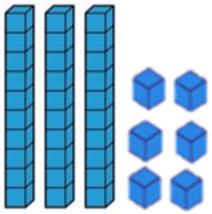


Compare Objects

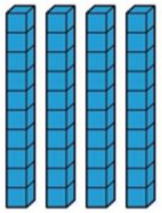
Reasoning and Problem Solving

Daisy and Dave are comparing numbers that they have made.

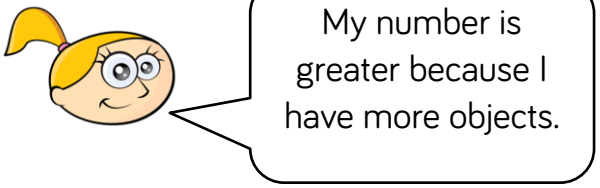
Daisy



Dave



Daisy

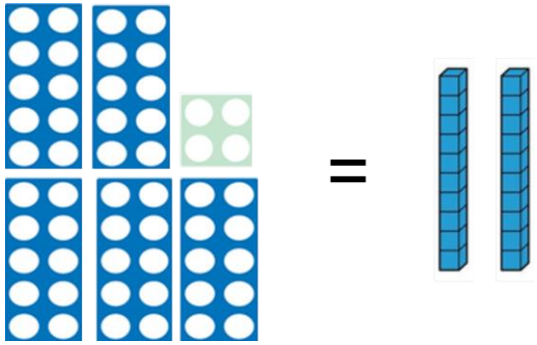


Is Daisy correct?

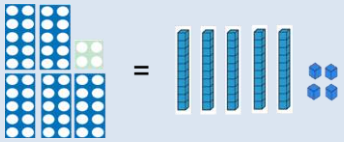
Explain your answer.

Daisy is incorrect because Dave has 4 tens which makes 40 and Daisy has 3 tens and 6 ones which makes 36
Therefore Dave has more.

Use Base 10 to make A and B equal:



How could you make B more than A?



B can be greater than A if you add more than 34 to it.

Compare Numbers

Notes and Guidance

Previously, children have compared numbers up to 10. They are now building on this knowledge by comparing numbers up to 20.
In this step, children will be given abstract numbers and need to be encouraged to use previous learning to choose an efficient method to compare numbers.
Within examples, make sure children are also continuing to compare numbers below 10 as well as 10 and above.

Mathematical Talk

What happens to the sign when you swap the numbers around?

Will zero always be the smallest?

Varied Fluency

1 Circle the greater number.

- Twelve Twenty
- 8 17

2 Here are two number cards. Use the number track to explain which one is smaller.

13 17

11	12	13	14	15	16	17	18	19	20

3 Complete the statements.

14 ◯ 9

19 ◯ 20

13 < ___

Compare Numbers

Reasoning and Problem Solving

Sarah has three jars of sweets.

A = 12 B = C = 17

She says:

How many sweets could be in B?

Possible answers:
13, 14, 15, 16

Discussion point with class:

can it be 12 or 17?

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

Fill the gaps:

☐ is more than 15 but less than 20

☐ is less than eighteen but more than twelve.

What numbers could go in the boxes?

Explain your answer.

Possible answers:

16, 17, 18, 19

13, 14, 15, 16, 17

Compare Numbers

Notes and Guidance

Children compare numbers using the language greater than, less than, more than, fewer, most, least and equal to.

They are able to use the symbols <, > and = to write number sentences.

Mathematical Talk

Can you prove your answers using concrete resources?

Can you prove your answers by drawing a diagram?

Is there more than one answer?

Do you need to work the number sentences out to decide which is greater?

Varied Fluency

1 Complete the statements using **more than**, **less than** or **equal to.**

42 is _____ 46

81 is _____ 60 + 4

30 + 8 is _____ thirty eight

2 Complete the number sentences.

4 tens and 9 ones > _____

_____ < 70 + 5

eight tens = _____

3 Put <, > or = in each circle.

28 ◯ 30

90 ◯ 70 + 28

30 + 23 ◯ 40 + 13

20 + 14 ◯ 24

Compare Numbers

Reasoning and Problem Solving

How many different numbers can go in the box?

$$13 < \square < 20$$

14,15,16,17,18,19

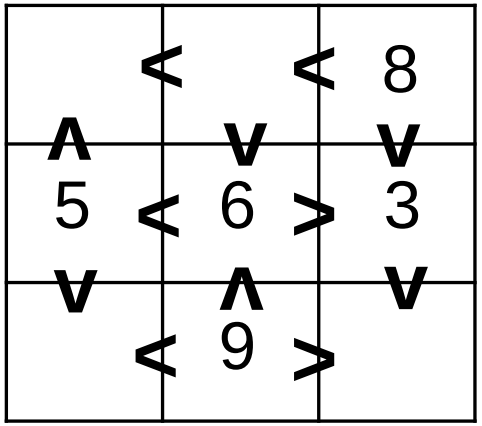
True or False:

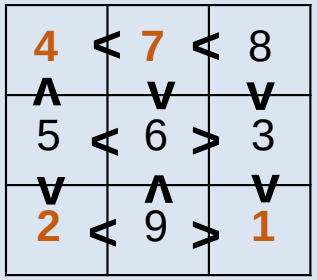
One ten and twelve ones is bigger than two tens.

Explain how you know.

True:
One ten + twelve ones = 22
Two tens = 20

Fill in the missing numbers using 1,2,4 and 7





Order Groups of Objects

Notes and Guidance

Children are building on their knowledge of ordering groups up to 10 by applying the same skills to numbers up to 20. It is important children still order numbers below 10 as well.
Children will be ordering three groups of objects in this step to support them in ordering 3 abstract numbers in the following step.
It is important to share different methods so children are continually exposed to more efficient ways.

Mathematical Talk

What ways can you order the groups?

Can you just look at two groups first? Why?

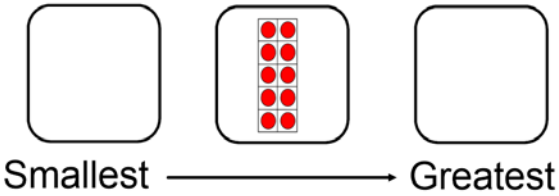
Can you think of an amount less than the smallest group?

How is your drawing different to your partners?

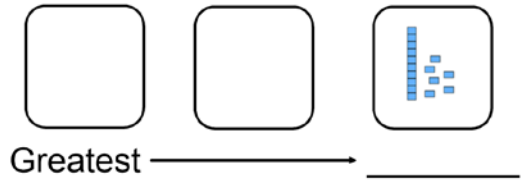
Varied Fluency

1 Order the crayons from smallest to greatest.

2 Draw counters in each box to make it correct.



3 Complete.



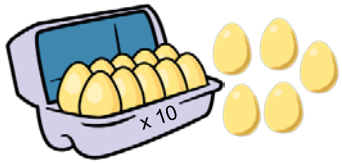
Order Groups of Objects

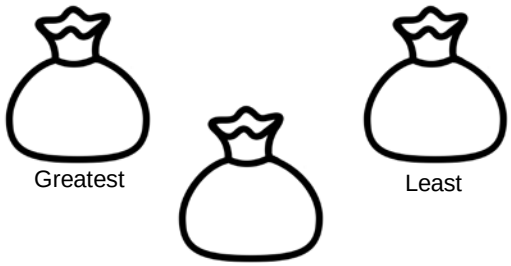
Reasoning and Problem Solving

The eggs are put into the baskets.

All the eggs are used.

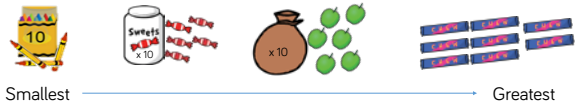
How many solutions can you find?



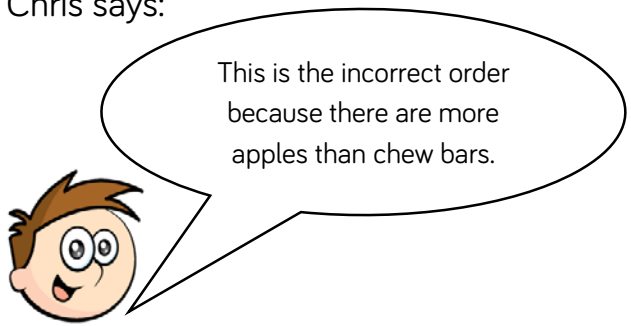


Example: 8, 5, 2 or 9, 4, 1 etc

Annie orders the following from smallest to greatest:



Chris says:



Do you agree with Chris?

Has Annie done anything else wrong?

I agree with Chris, there are more apple than chew bars. There are also more sweets than chew bars.

The order should be:

Crayons, chew bars, sweets, apples.

Order Numbers

Notes and Guidance

Children are now ordering abstract digits from 0-20. They can choose to represent these with concrete materials or draw them pictorially.
Children need to apply their knowledge of tens and ones to help them work within the abstract. For example, when comparing 8 and 15 only one number has a ten therefore 15 must be greater.

Mathematical Talk

Is it easier with objects or numbers?
Why?

If you have numbers, can you still use objects?
Does this help?
Why?

Varied Fluency

1 Order the numbers correctly.

13 18 15

☐ ☐ ☐

Greatest → Smallest

2 Three children were playing basketball.
The scoreboard shows how many hoops they scored each.

Kay: 9
Ben: 16
Tim: 13

The winner is the child who scores the most.
1st :
2nd :
3rd :

3 Order the numbers from greatest to smallest.

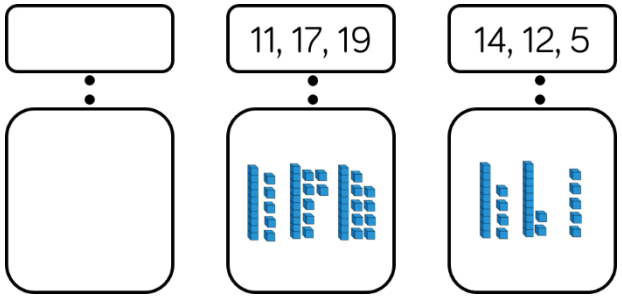
- 12, 5, 7
- 20, 17, 11

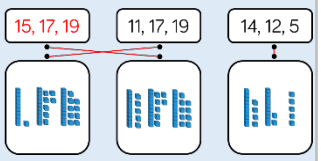
Now order them from smallest to greatest. What do you notice?

Order Numbers

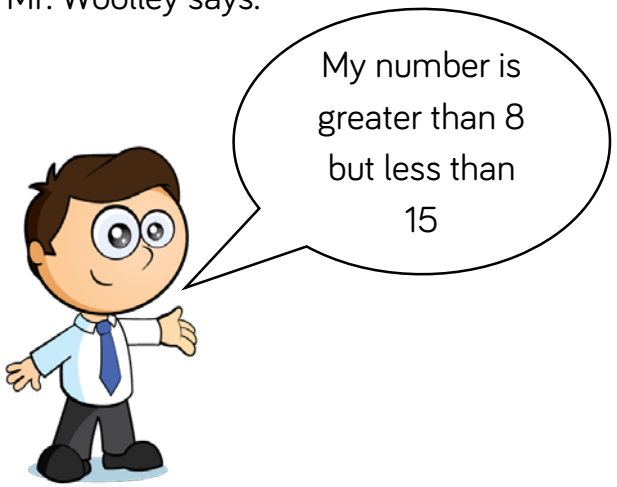
Reasoning and Problem Solving

Complete the image and match the numerals to the correct picture.





Mr. Woolley says:



What could his number be?

Possible answers:

9, 10, 11, 12, 13 or 14

Order Numbers

Notes and Guidance

Children order numbers and objects from smallest to greatest or greatest to smallest.

They should be encouraged to use concrete or pictorial representations to prove or check their answers.

Children use the vocabulary 'smallest' and 'greatest' and may also use the < or > symbols to show the order of their numbers.

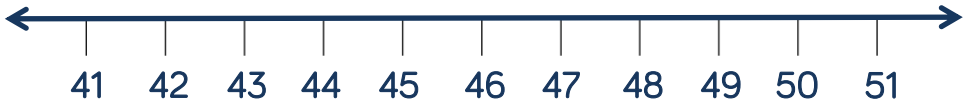
Mathematical Talk

How does the number line help you order the numbers?

How does Base 10 prove that your order is correct?

Varied Fluency

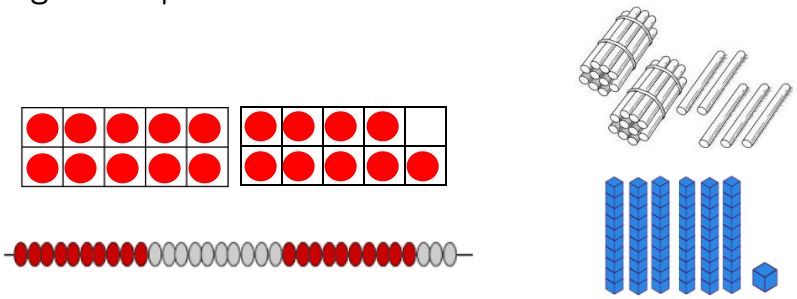
1 Circle the numbers 48, 43 and 50 on the number line.



Put the numbers 48, 43 and 50 in order starting with the smallest.

2 Use Base 10 to make the numbers sixty, sixteen and twenty six. Write the numbers in order starting with the greatest number.

3 The diagrams represent different numbers.



Circle the greatest number.
Circle the smallest number.
Complete the number sentence _____ > _____

Order Numbers

Reasoning and Problem Solving

If you ordered the numbers below, which would be the fourth?

Explain how you ordered them.

33	53	37
29	34	43

37 would be the fourth number

I ordered them from smallest to largest:

29, 33, 34, 37, 43, 53

Bill has written a list of 2 digit numbers.

The digits of each number add up to 5.

None of the digits are 0.

Can you find all the numbers Bill could have written?

Write the numbers in order from smallest to largest.

14, 23, 32, 41

Ordinal Numbers

Notes and Guidance

This is a non-statutory statement in the Year 1 curriculum. It has been included to see numbers as positional. It also links to previous lessons such as ordering numbers.

Stem sentences support children with using new mathematical language correctly.

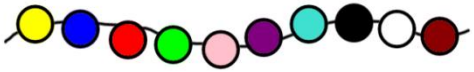
Mathematical Talk

When would I use 'last' place? Explain how you know.

Explain how to brush your teeth using the vocabulary first, second and third.

Varied Fluency

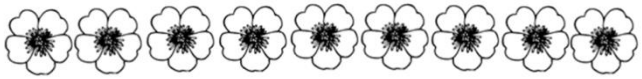
1 Here is a string of beads.



The 1st bead is _____

The _____ bead is black.

2 Colour the 7th flower blue.



Colour in another flower and complete the sentence.

The _____ flower is _____

3 Three children have a race.

Maggie finishes first.
Seb finishes third.
What place does Kody finish in?

Ordinal Numbers

Reasoning and Problem Solving

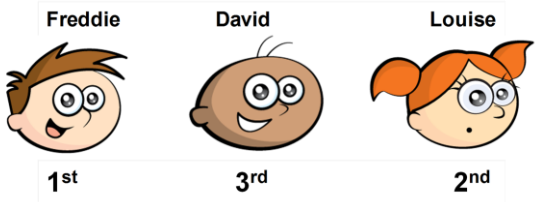
Spot and explain the mistake:

1st	2nd	Third	5th

4th is missing. Children should explain by saying things like 4th comes after 3rd and before 5th

David, Louise and Freddie take part in a race.

The results are:



Fill in the blanks:

Finished behind _____.

Finished in front of _____.

Finished in front of _____, but behind _____.

David finished behind Louise or Freddie.
Freddie finished in front of David or Louise.
Louise finished in front of David but behind Freddie.

Count in 2s, 5s, 10s

Notes and Guidance

Children now need to count on and back in 2s, 5s and 10s.

It is important that children do not always start from zero, however they should start on a multiple of 2 or 5 when counting in 2s and 5s but can start from any number when counting in 10s. For example when counting in 2s they should not start at 3.

Encourage children to look for patterns as they count.

Mathematical Talk

What do you notice? Are the numbers getting larger or smaller?

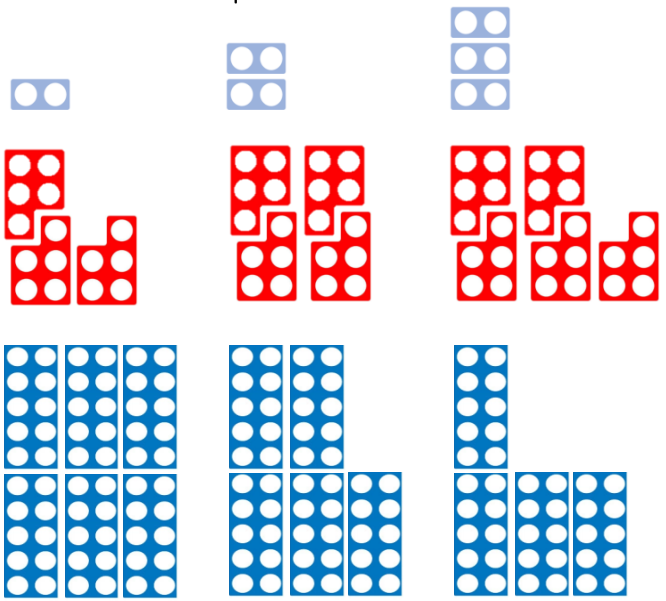
Are the numbers getting bigger or smaller each time? By how much?

Can you spot a pattern?

Why is it the odd one out? Can you correct the mistake?

Varied Fluency

1 Continue each number sequence.



2 Circle the odd one out in each number pattern.

- 2, 4, 6, 8, 9, 10, 12…..
- 0, 5, 10, 20, 30, 40…..
- 35, 30, 25, 20, 12, 10…..

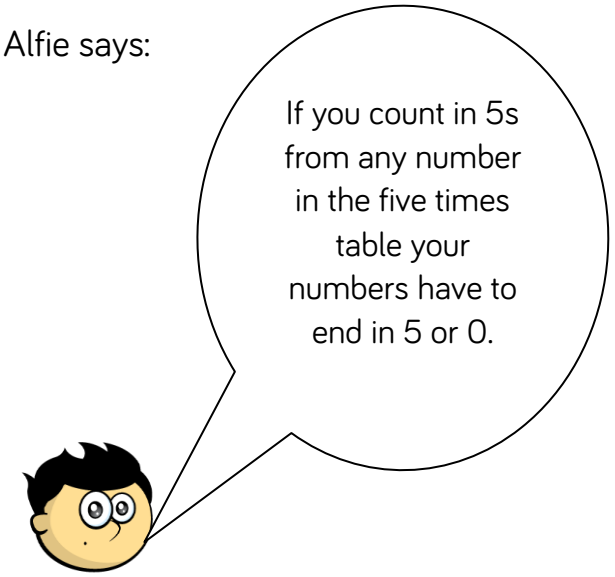
3 Count forwards and backwards in jumps of ten from:

- Fifty seven
- 40 + 1

Count in 2s, 5s, 10s

Reasoning and Problem Solving

Alfie says:



Do you agree with Alfie?

Prove it.

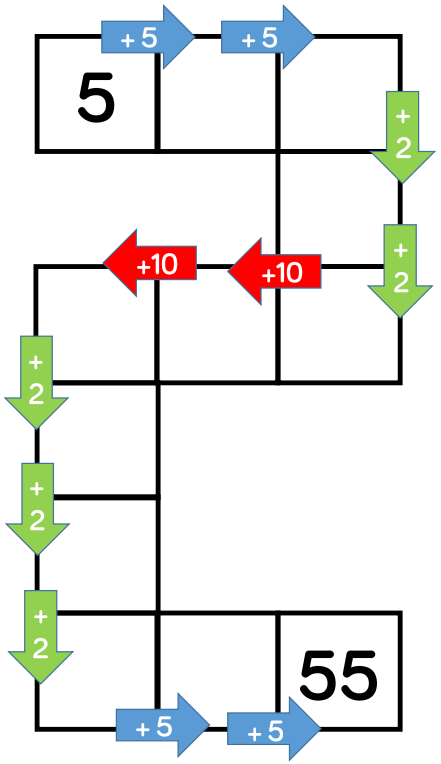
Agree.

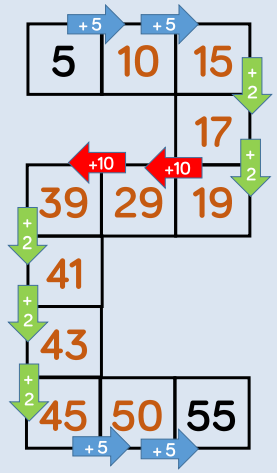
Each number in the 5 times tables does end in a 5 or 0.

5, 10, 15, 20, 25, 30, 35, 40, 45, 50.

Using these numbers, travel from 5 to 53 adding 2s, 5s and 10s:

10, 29, 43, 15, 17, 48, 39, 19, 41





Count in 3s

Notes and Guidance

Children now need to count on and back in 3s from any multiple of 3.

Encourage children to look for patterns as they count and use resources such as a number track, a counting stick and concrete representations.

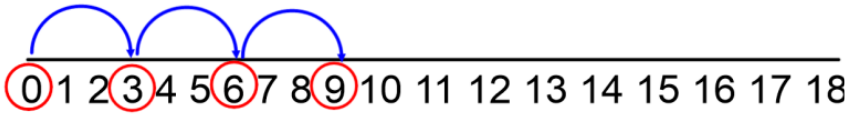
Mathematical Talk

What do you notice? Are the numbers getting larger or smaller?

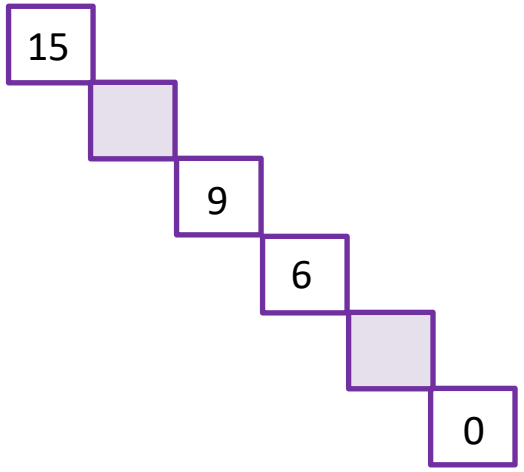
Can you spot a pattern?

Varied Fluency

1 What do you notice about the numbers that are circled?
Continue the pattern.



2 Complete the number sequence.



3 Sid has 15 stickers. He collects 3 more each day.
Complete the number track to show how many he will have in 6 days.

15						

Count in 3s

Reasoning and Problem Solving

True or False

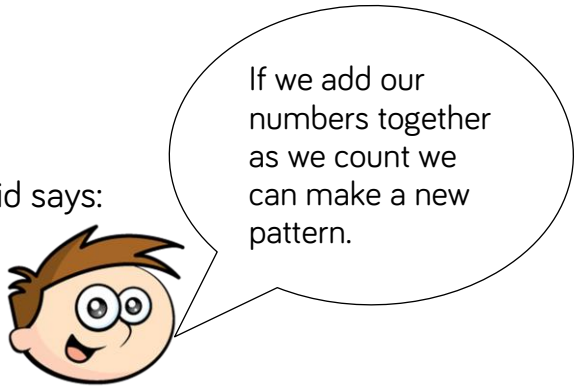
I start at 0 and count in 3's. I say the number 14.

False, If I count in 3s I go: 3, 6, 9, 12, 15

Sid is counting in 2s, Luke is counting in 3s.

Sid	2	4	6	8
Luke	3	6	9	12
+				

Sid says:



What pattern do they make?

What happens if both Sid and Luke count in 5s?

If Sid and Luke add their numbers together they will be counting in 5s.

If Sid and Luke both count in 5s they will be counting in 10s.