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Maths Curriculum Overview

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They didn't do it like that in my day!

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Current teaching methods

Some areas of the maths curriculum are taught differently today to how most adults were taught at school...including us!

We know that lots of parents and carers find it helpful to understand how their children are taught, so we are here to explore some of the resources and to explain teaching methods clearly.

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Three key aims rest at the heart of our mathematics curriculum:

1. For children to be fluent in the fundamentals of mathematics

2. For children to reason mathematically

3. For children to solve routine and non-routine problems with increasing confidence

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Aims of the meeting

- To get an insight into how Maths is taught at Our Lady of Lourdes

- To gain an understanding of the National Maths curriculum and expectations.

- To take part in a variety of Maths activities.

- To take away some ideas to support your children at home.

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Extra information needed

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Maths curriculum evening

Name _____

Year Group_____

Area of Maths_____

_____

_____

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White Rose Maths

We use White Rose Maths to plan and teach from but also supplement the scheme with others to provide support and challenge for our children

A yearly overview for each year group suggests the teaching time needed for every block of learning. The Autumn, Spring and Summer sections are split equally into 12 weeks comprising 11 weeks of blocks followed by a week of consolidation.

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White Rose Maths

The objectives in each block are broken down into a series of carefully planned small steps. Teachers teach the content in the suggested order as the step sequence is designed to gradually develop children's understanding.

As highlighted in the National Curriculum, all children must be able to access fluency, reasoning and problem solving. It's therefore essential that we as teachers provide the support needed for every child to reason and problem solve.

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White Rose scheme of learning

	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 term	**Getting to know you** (Take this time to play and get to know the children!) Contains overviews and frequently asked questions VIEW			**Just like me!** Match and sort Compare amounts Compare size, mass & capacity Exploring pattern VIEW			**It's me 1, 2, 3!** Representing 1, 2 & 3 Comparing 1, 2 & 3 Composition of 1, 2 & 3 Circles and triangles Positional language VIEW			**Light & dark** Representing numbers to 5 One more or less Shapes with 4 sides Time VIEW		
Spring term	**Alive in 5!** Introducing zero Comparing numbers to 5 Composition of 4 & 5 Compare mass (2) Compare capacity (2) VIEW			**Growing 6, 7, 8** 6, 7 & 8 Combining two amounts Making pairs Length & height Time (2) VIEW			**Building 9 & 10** Counting to 9 & 10 Comparing numbers to 10 Bonds to 10 3-D shapes Spatial awareness Patterns VIEW			Consolidation		
Summer term	**To 20 and beyond** Build numbers beyond 10 Count patterns beyond 10 Spatial reasoning 1 Match, rotate, manipulate VIEW			**First, then, now** Adding more Taking away Spatial reasoning 2 Compose and decompose VIEW			**Find my pattern** Doubling Sharing & grouping Even & odd Spatial reasoning 3 Visualise and build VIEW			**On the move** Deepening understanding Patterns & relationships Spatial mapping (4) Mapping VIEW		

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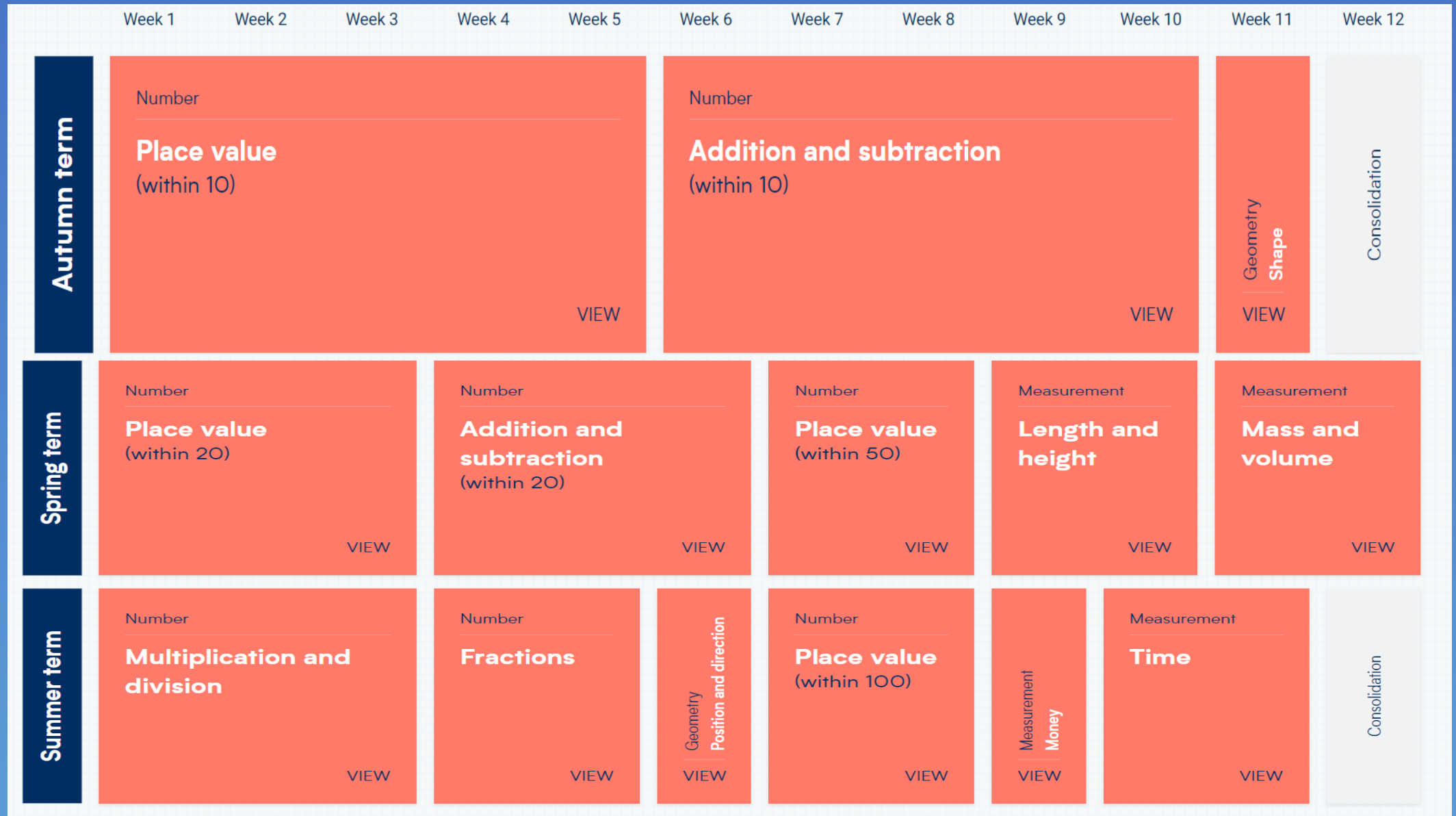
White Rose scheme of learning



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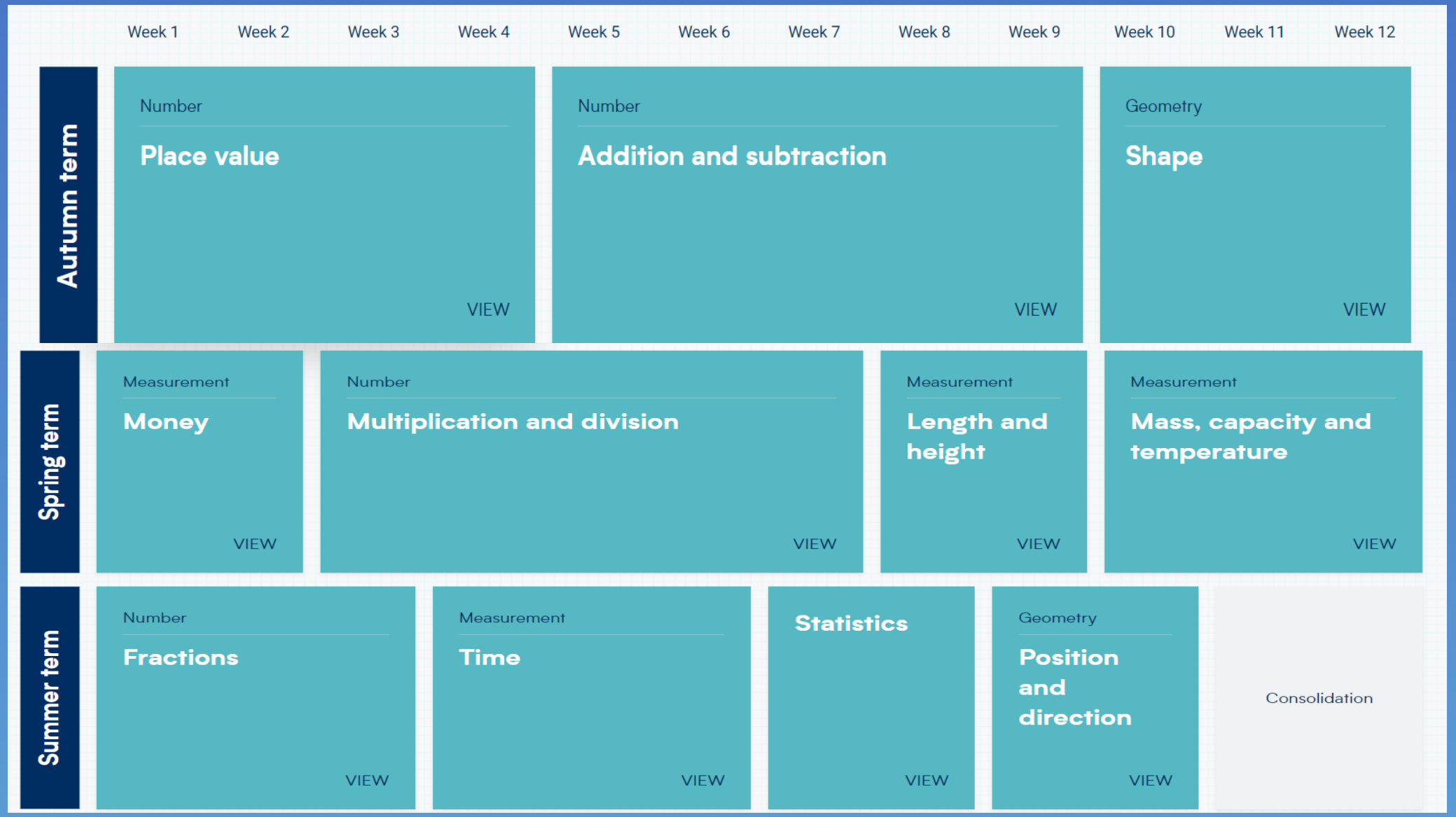
White Rose scheme of learning



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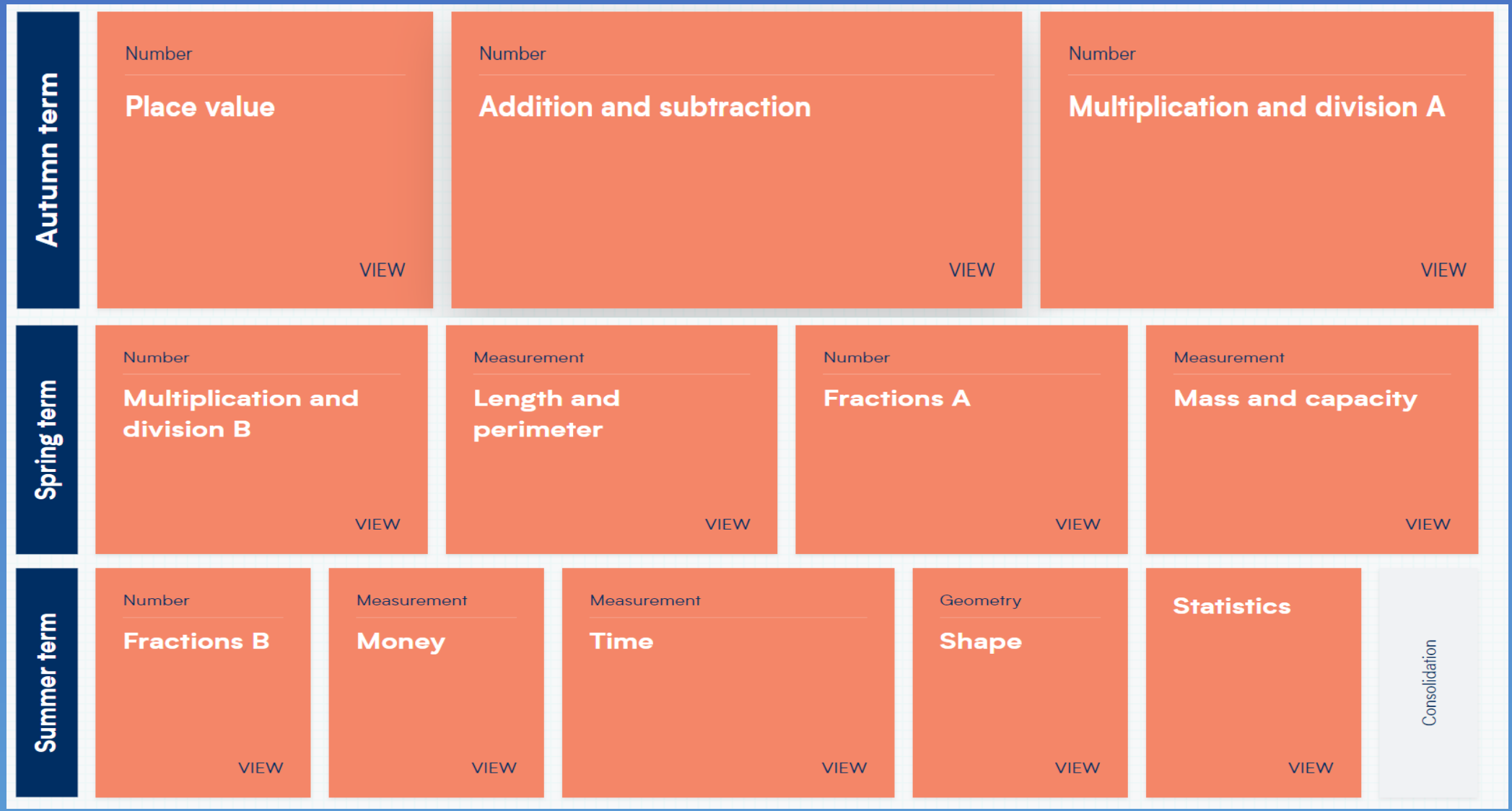
White Rose scheme of learning



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White Rose scheme of learning

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White Rose scheme of learning

	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 term	Number **Place value** VIEW			Number **Addition and subtraction** VIEW		Number **Multiplication and division A** VIEW			Number **Fractions A** VIEW			
Spring term	Number **Multiplication and division B** VIEW			Number **Fractions B** VIEW		Number **Decimals and percentages** VIEW			Measurement **Perimeter and area** VIEW		Statistics VIEW	
Summer term	Geometry **Shape** VIEW			Geometry **Position and direction** VIEW		Number **Decimals** VIEW			Number **Negative numbers** VIEW	Measurement **Converting units** VIEW		Measurement **Volume** VIEW

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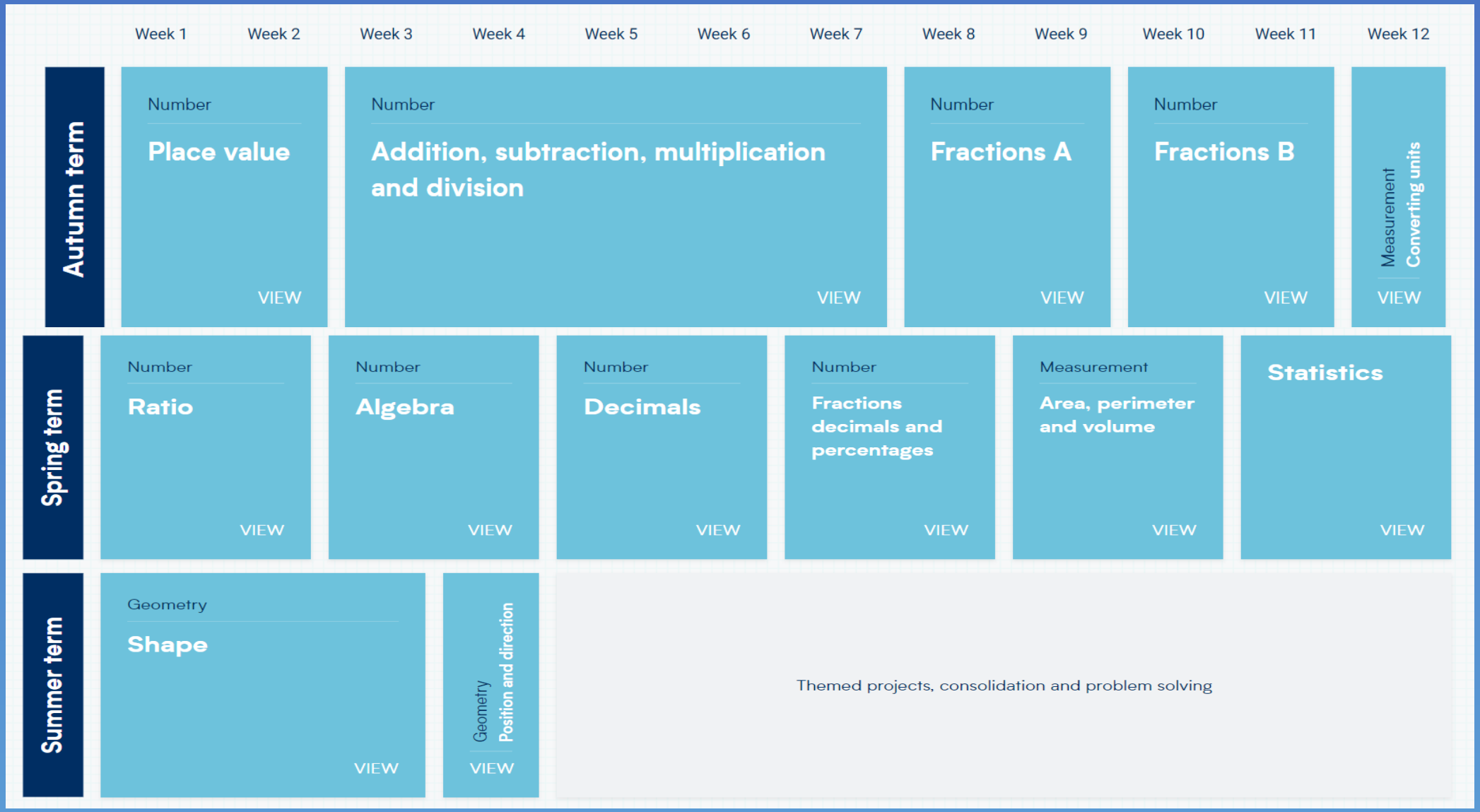
White Rose scheme of learning



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Attitudes towards maths

•The best thing that parents and carers can do for children is to have a positive attitude towards maths. Please don't say things like "I can't do maths" or "I hated maths at school"; your child might start to think like that themselves.

•Point out the maths in everyday life. Include your child in activities involving maths such as using money, cooking and travelling.

•Praise your child for effort rather than talent - this shows them that by working hard they can always improve.

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Maths Vocabulary

Understanding maths can be complex. This is often made more tricky by a number of different words that we use to describe the same process (add, sum, total) or specialist vocabulary that needs to be memorised. This maths vocabulary booklet contains a huge array of maths words and their meanings. We will email out the key vocabulary to all families to aid with their understanding.

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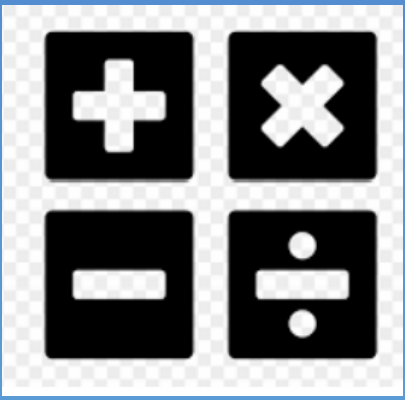
Parent Workshop Progression in calculation methods in Early Years to Year 6

› Examine the strategies of how addition and subtraction, are taught from Early Years to Year 6 in line with our school Calculation Policy

› Discuss how the 2 operations are taught using the CPA approach (concrete – pictorial - abstract)



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The CPA Approach

Concrete, Pictorial and Abstract

We use a CPA approach to help our pupils understand the processes of mathematics better.

Concrete Maths: This is using real life objects or mathematical manipulatives. children use concrete objects to show their mathematical understanding and solve problems, such as a ten frame.

Pictorial Maths: This is where the child's maths is represented through a diagram. This is usually based on the concrete materials. These representations can be used to help children reason and solve problems.

Abstract Maths: Using concrete and pictorial maths help children to understand the abstract maths better. There are explicit links between each stage. This stage sees the children using a written calculation or formal methods.

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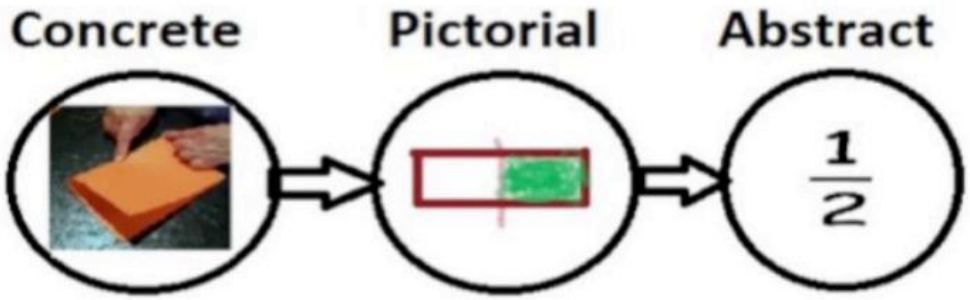
The CPA Approach

The CPA Approach

Maths should be practical for all ages and the CPA approach used at any time and with any age to support understanding



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EYFS Maths

Maths is a Prime area in the EYFS Curriculum.

Developing a strong grounding in number is essential so that all children develop the necessary building blocks to excel mathematically. Children should be able to count confidently, develop a deep understanding of the numbers to 10, the relationships between them and the patterns within those numbers. By providing frequent and varied opportunities to build and apply this understanding - such as using manipulatives, including small pebbles and tens frames for organising counting - children will develop a secure base of knowledge and vocabulary from which mastery of mathematics is built. In addition, it is important that the curriculum includes rich opportunities for children to develop their spatial reasoning skills across all areas of mathematics including shape, space and measures. It is important that children develop positive attitudes and interests in mathematics, look for patterns and relationships, spot connections, 'have a go', talk to adults and peers about what they notice and not be afraid to make mistakes.

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Place Value – Year 1

Statutory requirements
Pupils should be taught to: ▪ 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; count in multiples of twos, fives and tens ▪ 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 (fewer), most, least ▪ read and write numbers from 1 to 20 in numerals and words.

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Place Value – Year 1: to 10

Step 1	Sort objects
Step 2	Count objects
Step 3	Count objects from a larger group
Step 4	Represent objects
Step 5	Recognise numbers as words
Step 6	Count on from any number
Step 7	1 more
Step 8	Count backwards within 10
Step 9	1 less
Step 10	Compare groups by matching
Step 11	Fewer, more, same
Step 12	Less than, greater than, equal to
Step 13	Compare numbers
Step 14	Order objects and numbers
Step 15	The number line

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Place Value – Year 1: to 20

Step 1	Add by counting on within 20
Step 2	Add ones using number bonds
Step 3	Find and make number bonds to 20
Step 4	Doubles
Step 5	Near doubles
Step 6	Subtract ones using number bonds
Step 7	Subtraction – counting back
Step 8	Subtraction – finding the difference
Step 9	Related facts
Step 10	Missing number problems

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Place Value – Year 2

Statutory requirements

Pupils should be taught to:

- count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and backward
- recognise the place value of each digit in a two-digit number (tens, ones)
- identify, represent and estimate numbers using different representations, including the number line
- compare and order numbers from 0 up to 100; use <, > and = signs
- read and write numbers to at least 100 in numerals and in words
- use place value and number facts to solve problems.

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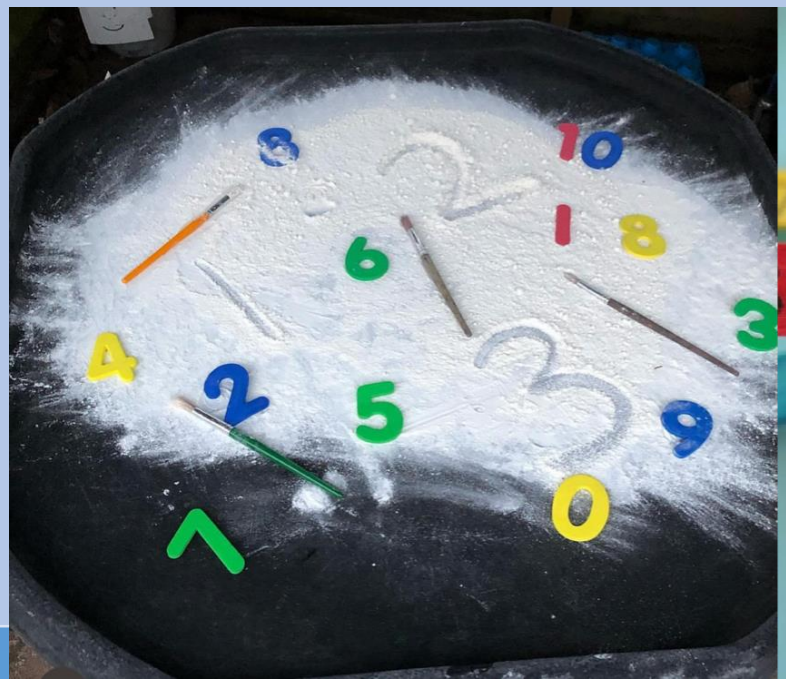
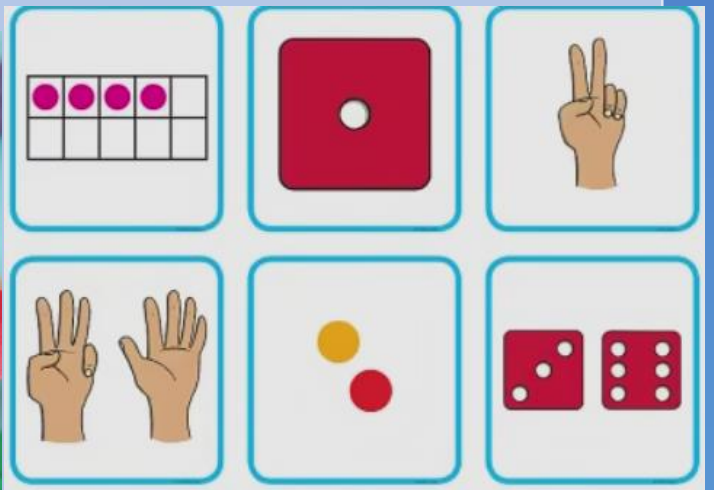
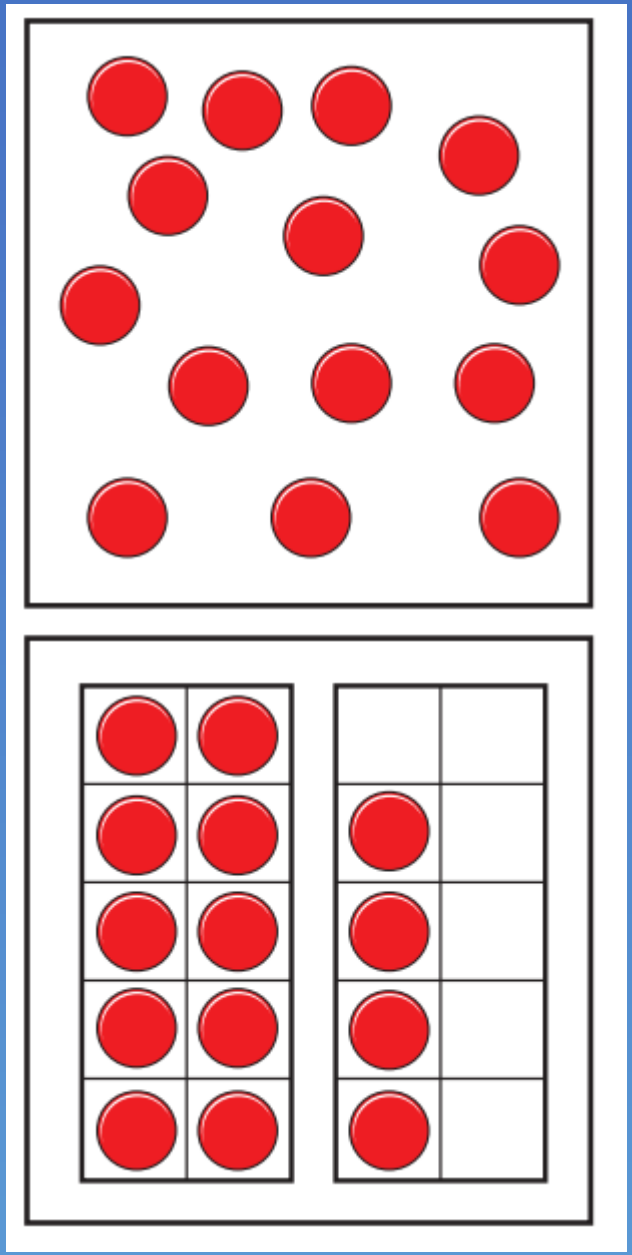
Place Value – Year 2

Step 1	Numbers to 20
Step 2	Count objects to 100 by making 10s
Step 3	Recognise tens and ones
Step 4	Use a place value chart
Step 5	Partition numbers to 100
Step 6	Write numbers to 100 in words
Step 7	Flexibly partition numbers to 100
Step 8	Write numbers to 100 in expanded form
Step 9	10s on the number line to 100
Step 10	10s and 1s on the number line to 100
Step 11	Estimate numbers on a number line
Step 12	Compare objects
Step 13	Compare numbers
Step 14	Order objects and numbers
Step 15	Count in 2s, 5s and 10s
Step 16	Count in 3s





Subitising



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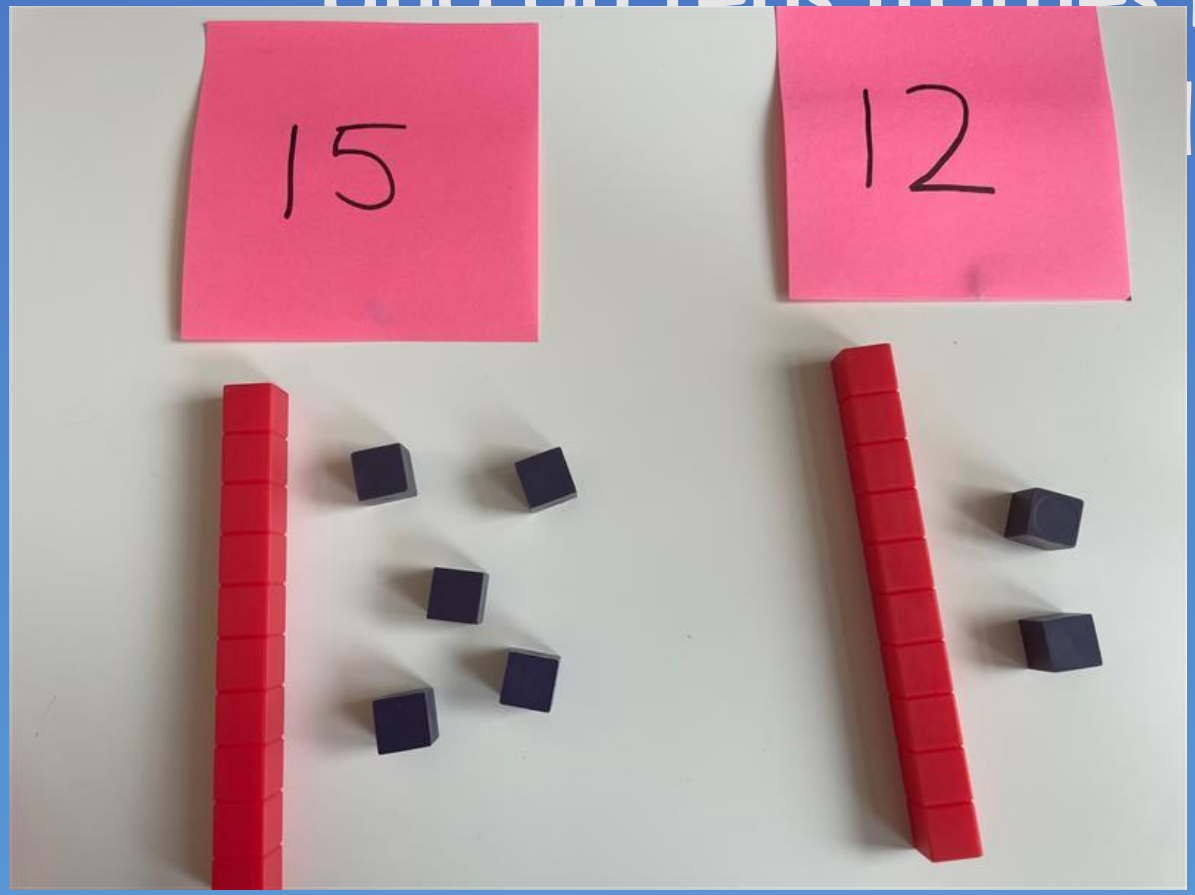
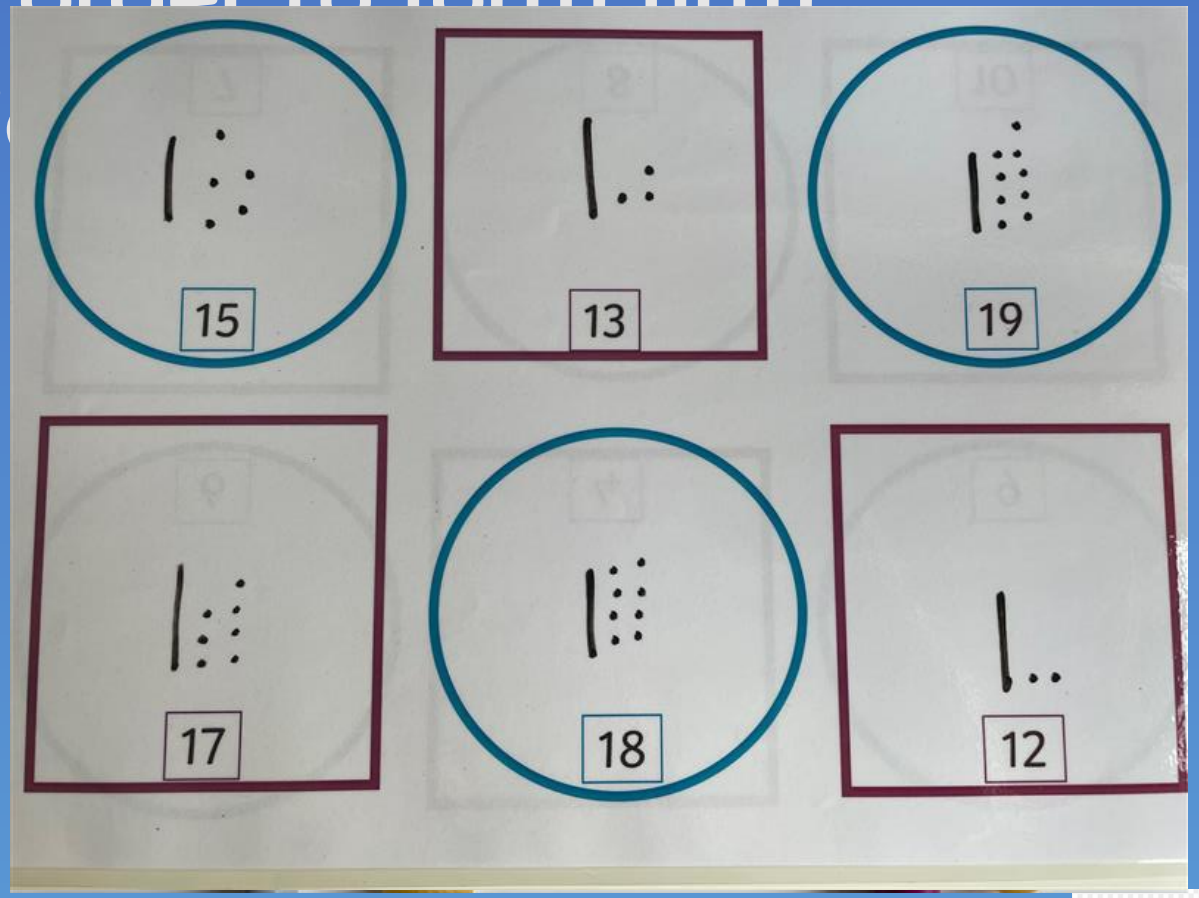
In Year 1, we build on our reception knowledge of numbers by making numbers with Base 10 and on tens frames in order to form firm



Concrete



Pictorial

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Addition (+)

add

more

plus

more than

altogether

total

sum of

increase

Subtraction (-)

take away

minus

fewer than

less than

subtract

difference

How much more is ...?

decrease

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EYFS

- Join two groups together and recount to find the total.

- Join two groups together and count on to find the total.

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Year 1: Statutory Requirements Addition and Subtraction

Statutory requirements
Pupils should be taught to: ▪ read, write and interpret mathematical statements involving addition (+), subtraction (–) and equals (=) signs ▪ represent and use number bonds and related subtraction facts within 20 ▪ add and subtract one-digit and two-digit numbers to 20, including zero ▪ solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = □ – 9.

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Year 1: + & - within 10

Step 1	Introduce parts and wholes
Step 2	Part-whole model
Step 3	Write number sentences
Step 4	Fact families – addition facts
Step 5	Number bonds within 10
Step 6	Systematic number bonds within 10
Step 7	Number bonds to 10
Step 8	Addition – add together
Step 9	Addition – add more
Step 10	Addition problems
Step 11	Find a part
Step 12	Subtraction – find a part
Step 13	Fact families – the eight facts
Step 14	Subtraction – take away/cross out (How many left?)
Step 15	Take away (How many left?)
Step 16	Subtraction on a number line
Step 17	Add or subtract 1 or 2

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Year 1: + & - within 20

Step 1	Add by counting on within 20
Step 2	Add ones using number bonds
Step 3	Find and make number bonds to 20
Step 4	Doubles
Step 5	Near doubles
Step 6	Subtract ones using number bonds
Step 7	Subtraction – counting back
Step 8	Subtraction – finding the difference
Step 9	Related facts
Step 10	Missing number problems

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Year 2: Statutory Requirements Addition and Subtraction

Statutory requirements

Pupils should be taught to:

- 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
- recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100
- 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
- show that 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.

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Year 2: Addition & Subtraction

Step 1	Bonds to 10
Step 2	Fact families - addition and subtraction bonds within 20
Step 3	Related facts
Step 4	Bonds to 100 (tens)
Step 5	Add and subtract 1s
Step 6	Add by making 10
Step 7	Add three 1-digit numbers
Step 8	Add to the next 10
Step 9	Add across a 10
Step 10	Subtract across 10
Step 11	Subtract from a 10
Step 12	Subtract a 1-digit number from a 2-digit number (across a 10)
Step 13	10 more, 10 less
Step 14	Add and subtract 10s
Step 15	Add two 2-digit numbers (not across a 10)
Step 16	Add two 2-digit numbers (across a 10)

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Year 2: Addition & Subtraction

Step 17	Subtract two 2-digit numbers (not across a 10)
Step 18	Subtract two 2-digit numbers (across a 10)
Step 19	Mixed addition and subtraction
Step 20	Compare number sentences
Step 21	Missing number problems

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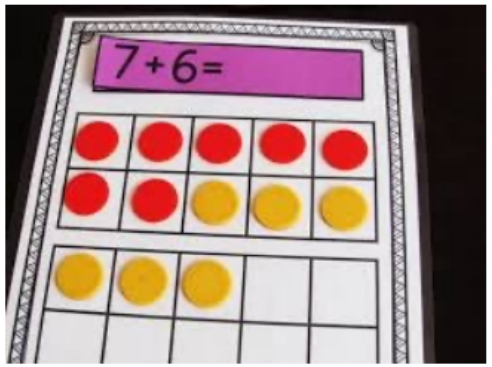
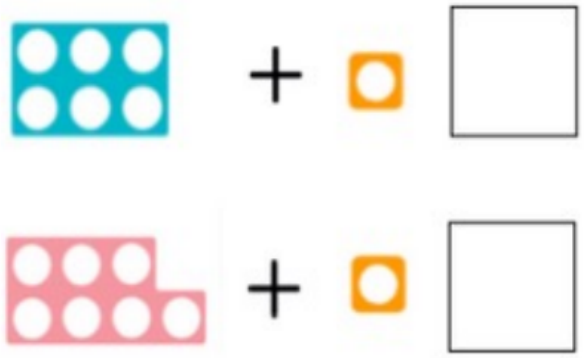
Addition : Progression in strategies

Practical : combining sets of objects and adding on





HAVE A GO

Can you use your ten frames, numicon and number beads to calculate :

8 + 3 =

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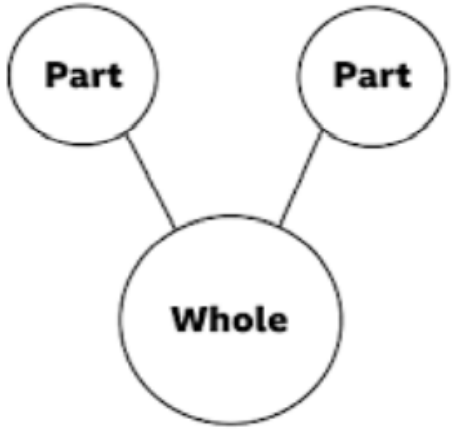
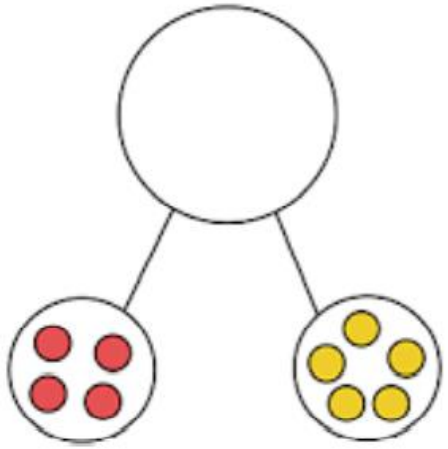
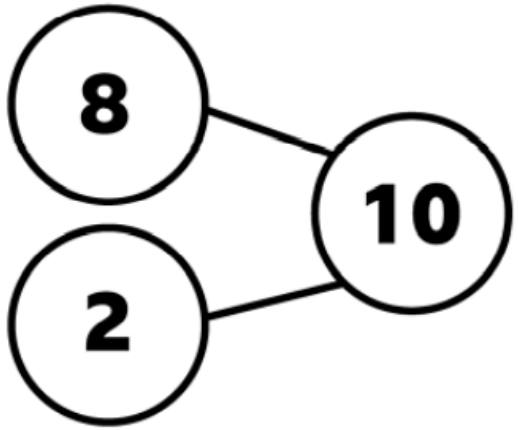
Addition : Progression in strategies

Part- whole model







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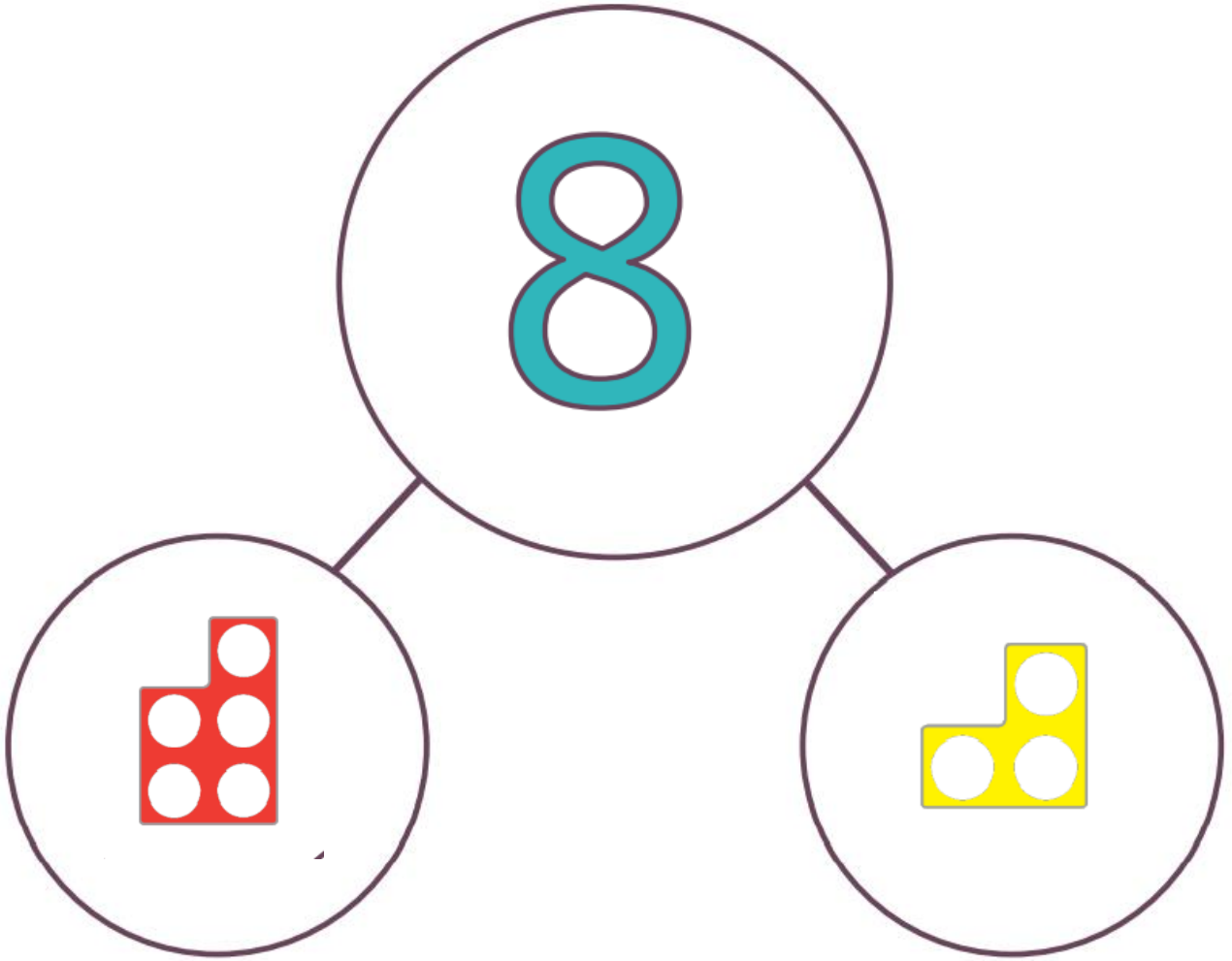
HAVE A GO

Complete the part-whole model.



8 - ? = 5

5 = 8 - ?

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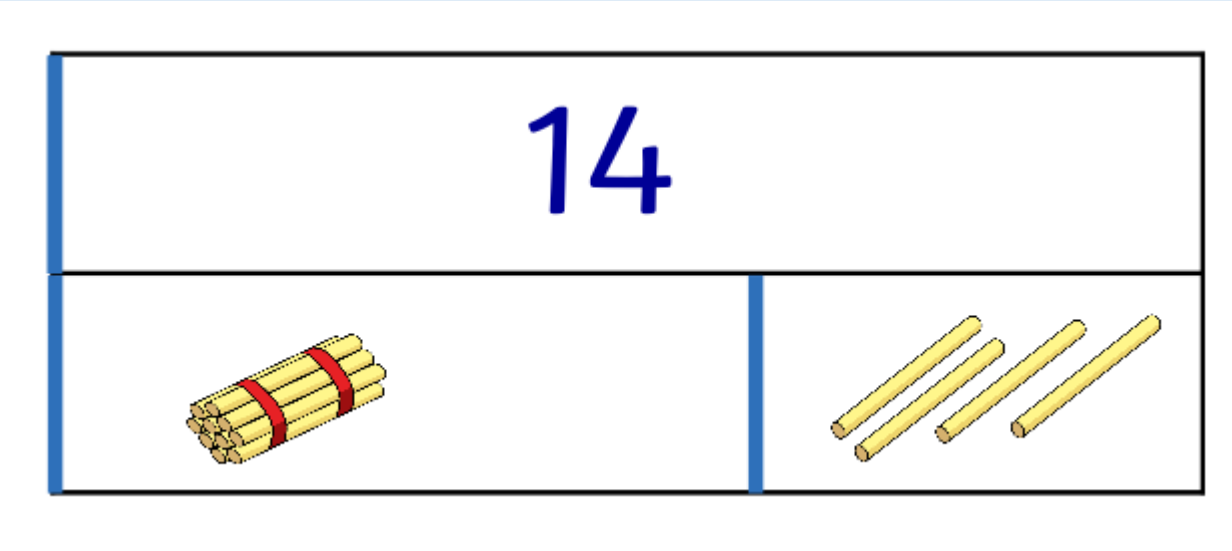
HAVE A GO



10 + 4 = 14

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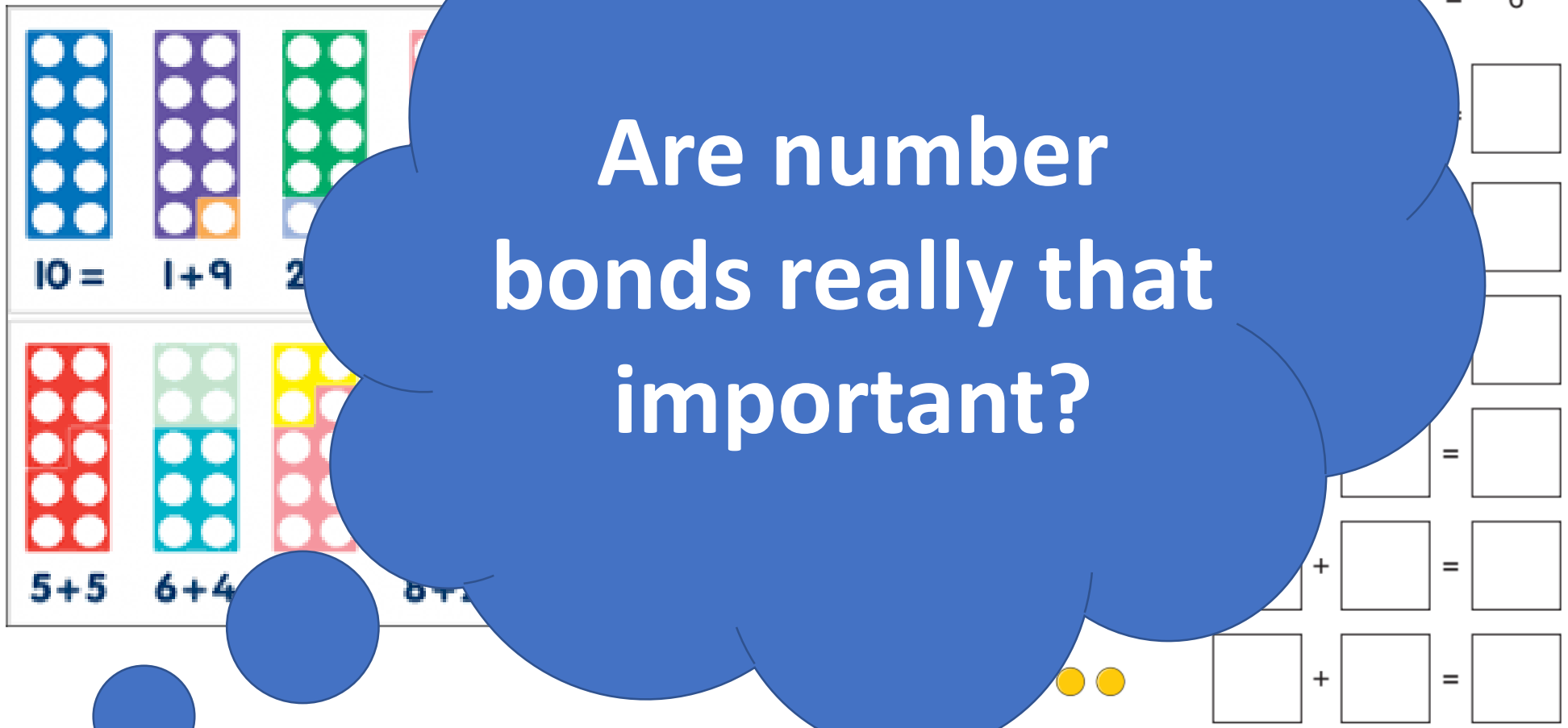
Num



Are number bonds really that important?

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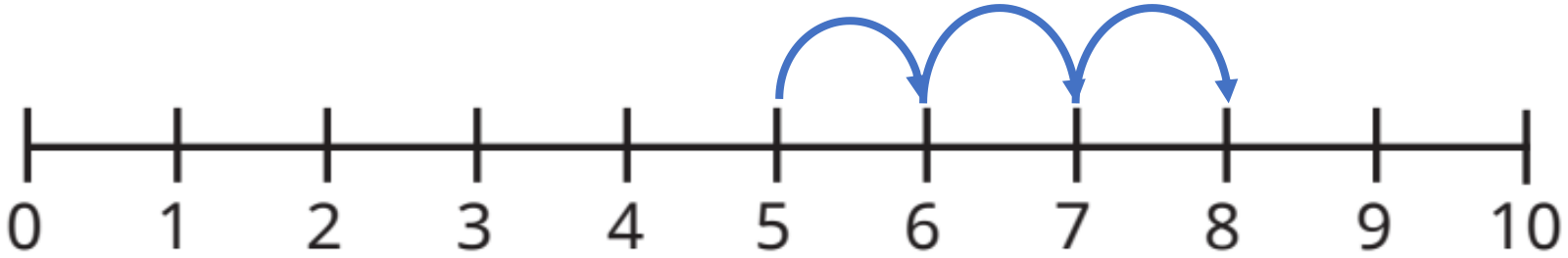
Addition : Progression in strategies

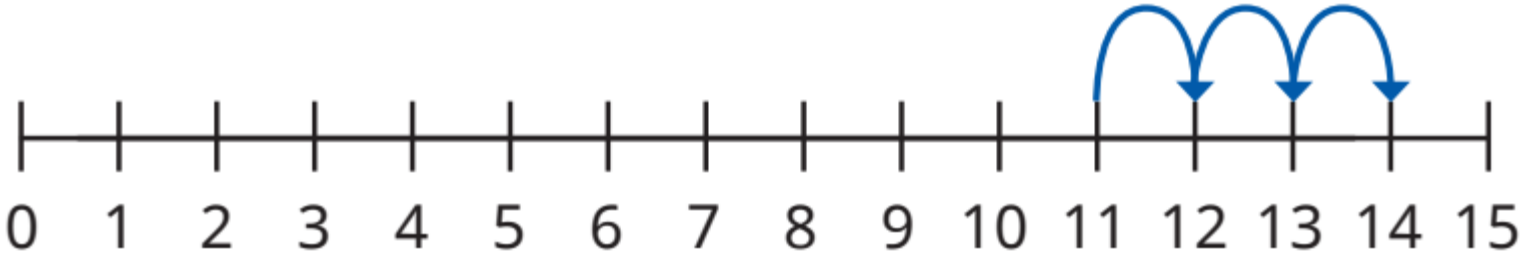
1 digit to a 1 digit within 5, then 10 then 20 – not crossing 10.

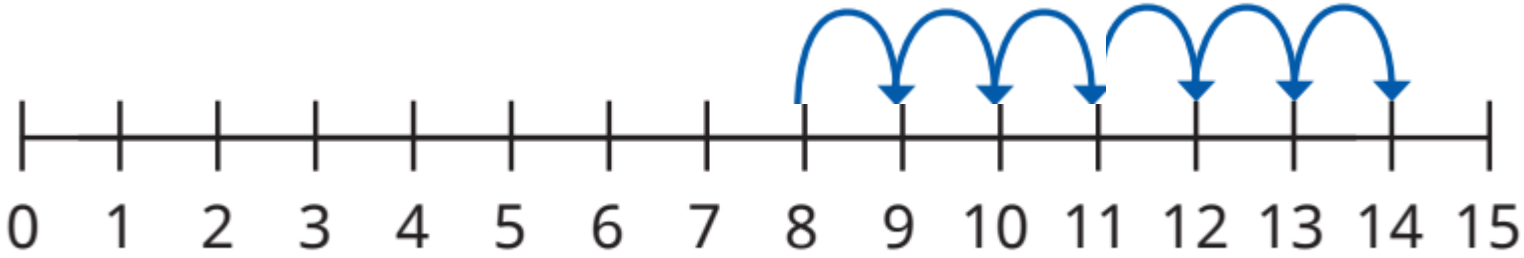
1 digit to a 2 digit– not crossing 10.

1 digit to a 2 digit– crossing 10

Number tracks and number lines







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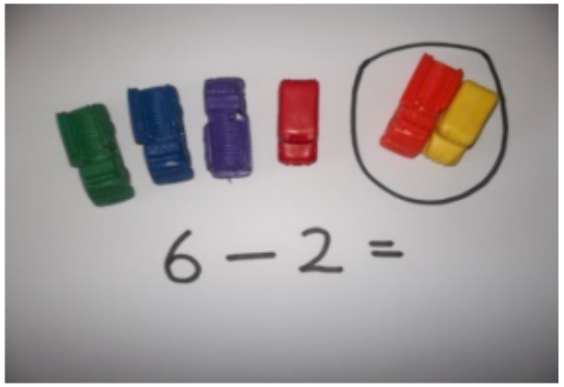
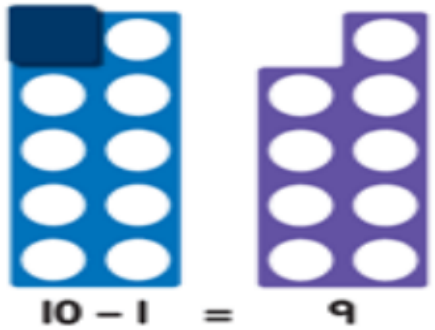
Subtraction: Progression in strategies

Practical



20 – 4 = 16



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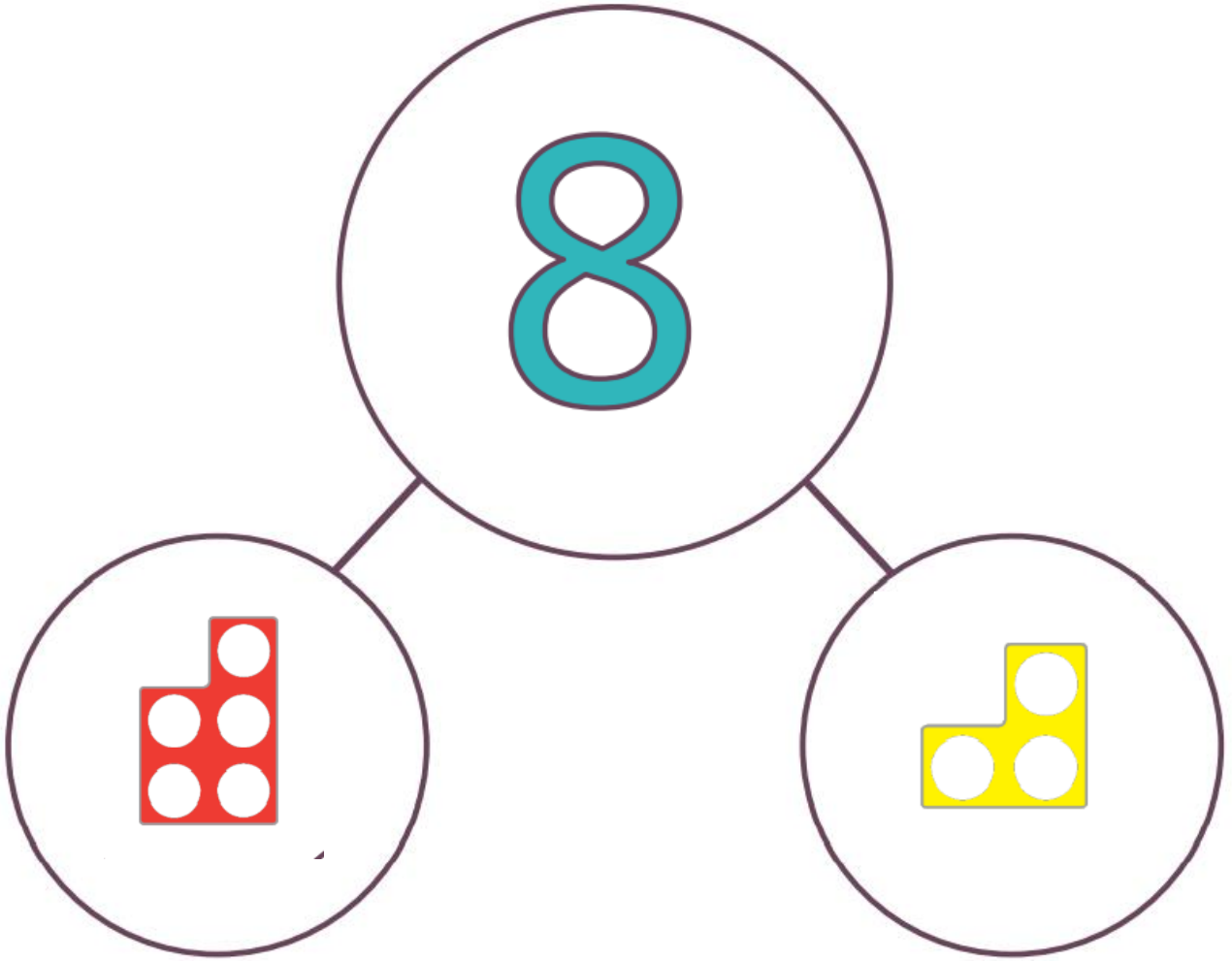
HAVE A GO

Complete the part-whole model.



8 - ? = 5

5 = 8 - ?

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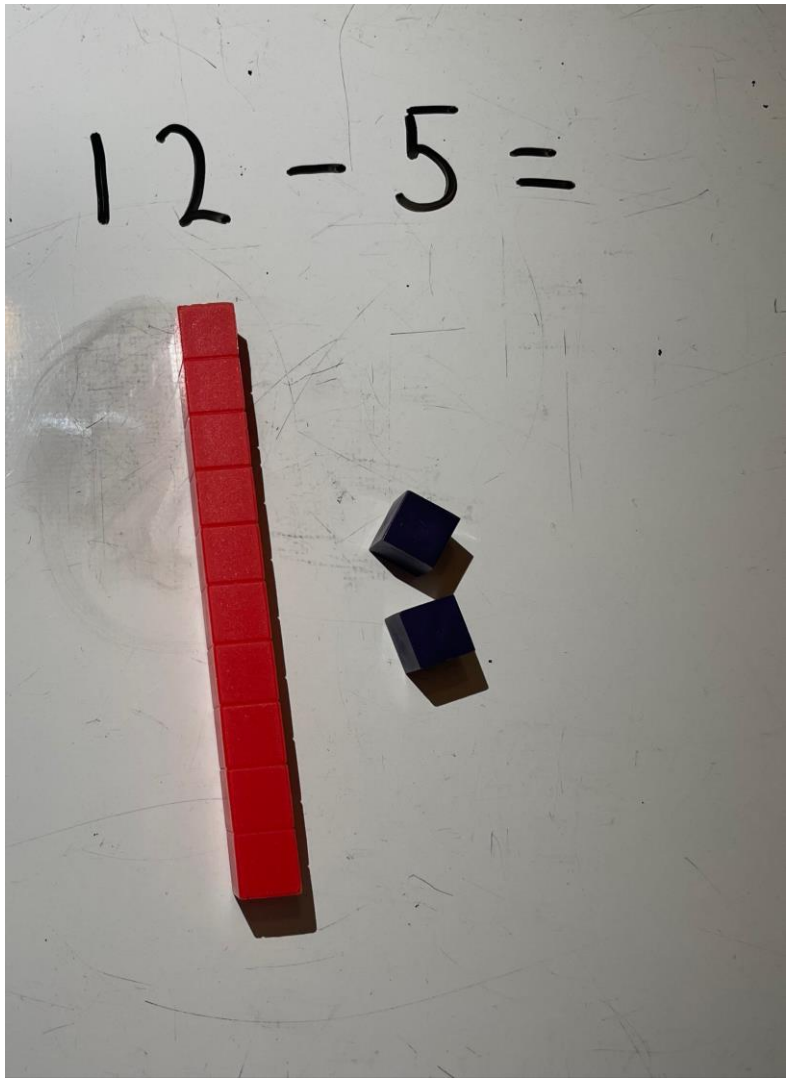
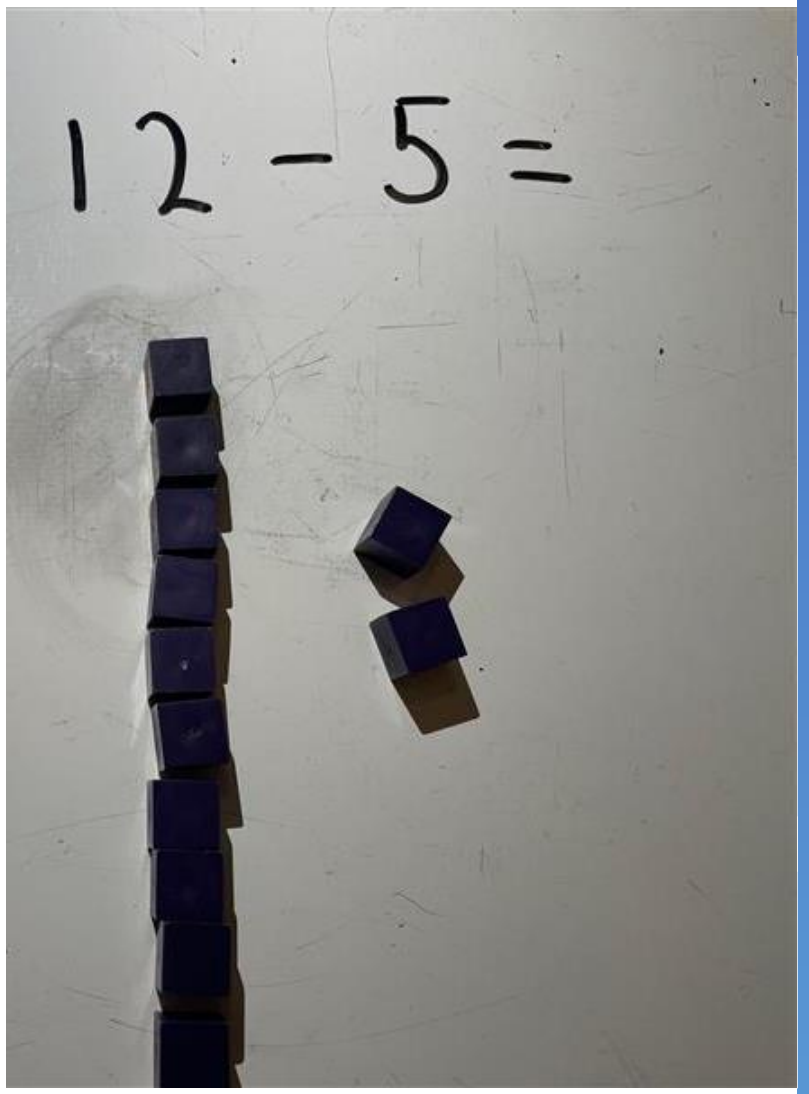
Subtraction: Progression in strategies

Practical





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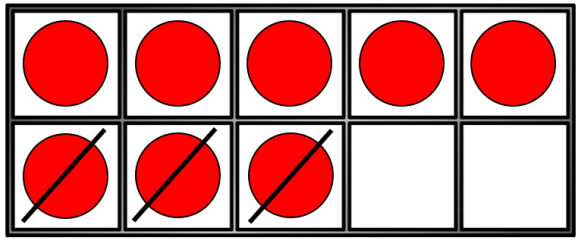
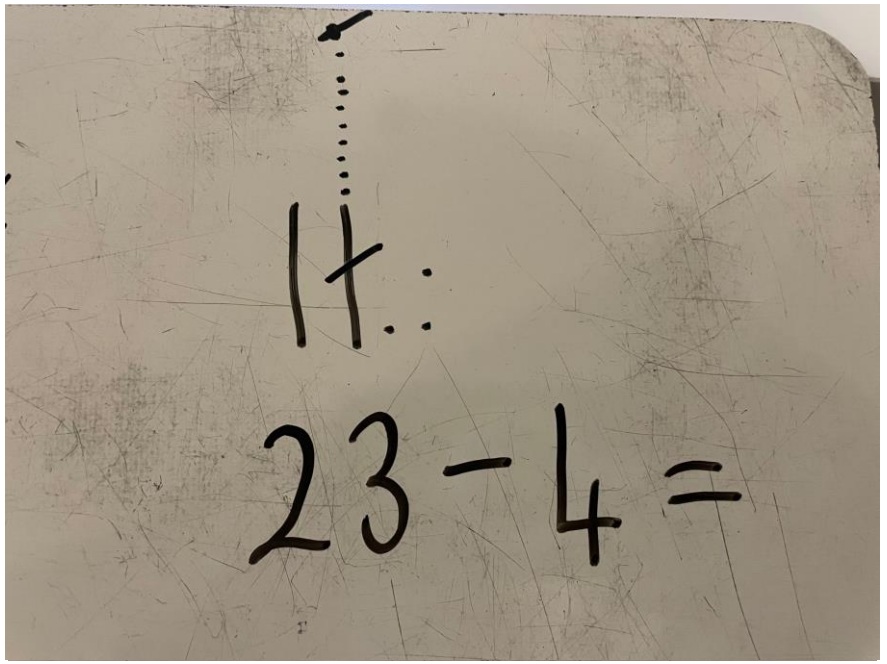
Subtraction: Progression in strategies

Crossing out



8 − 3 = ☐



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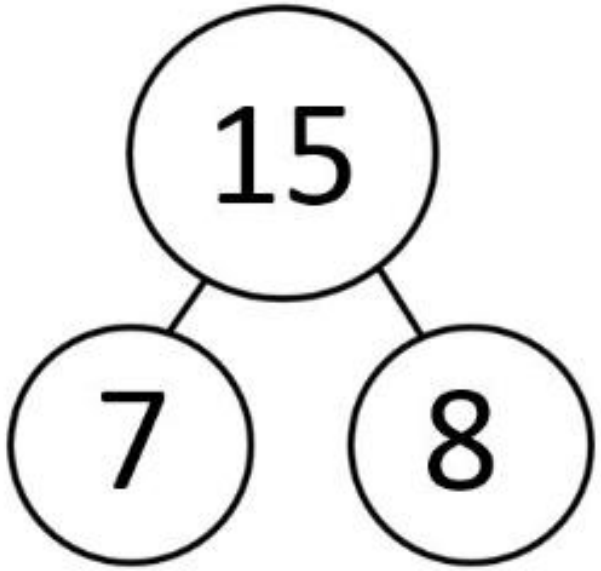
How can we use the part-whole model now?



7 + 8 = 15

15 = 7 + 8

8

15 – 8

– 8

Fact family

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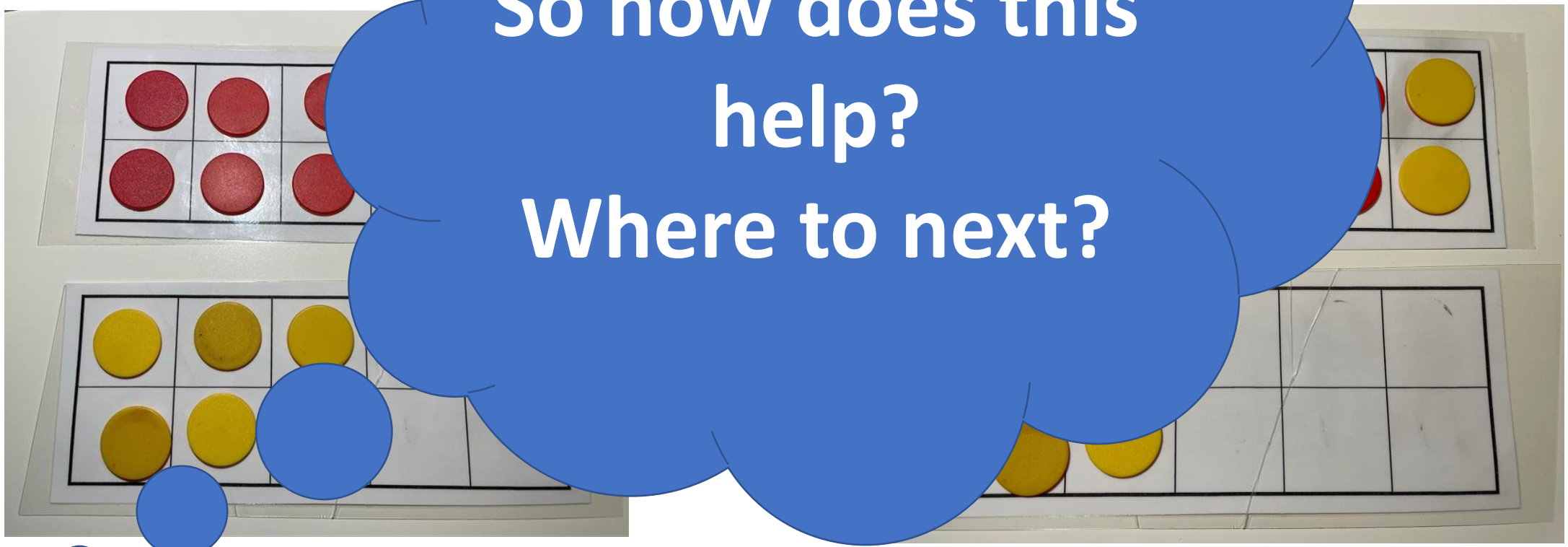
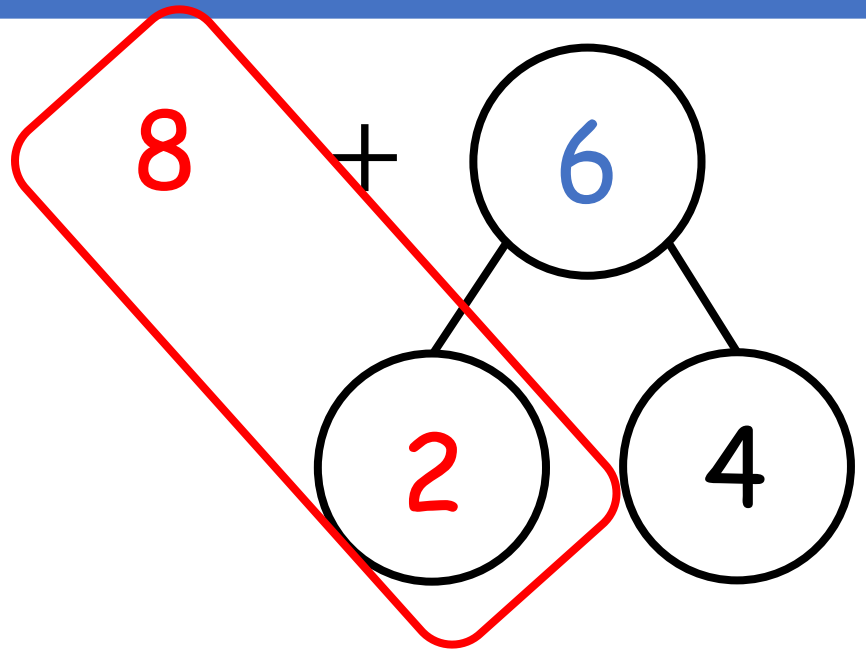
Addition : Progression in strategies

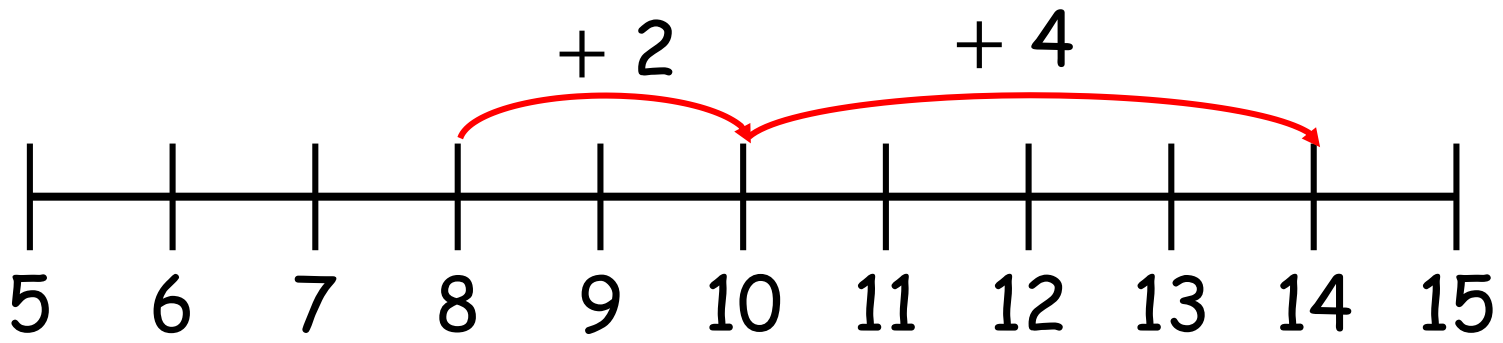
Make 10 first…



So how does this help?
Where to next?



8 + 6 = 14



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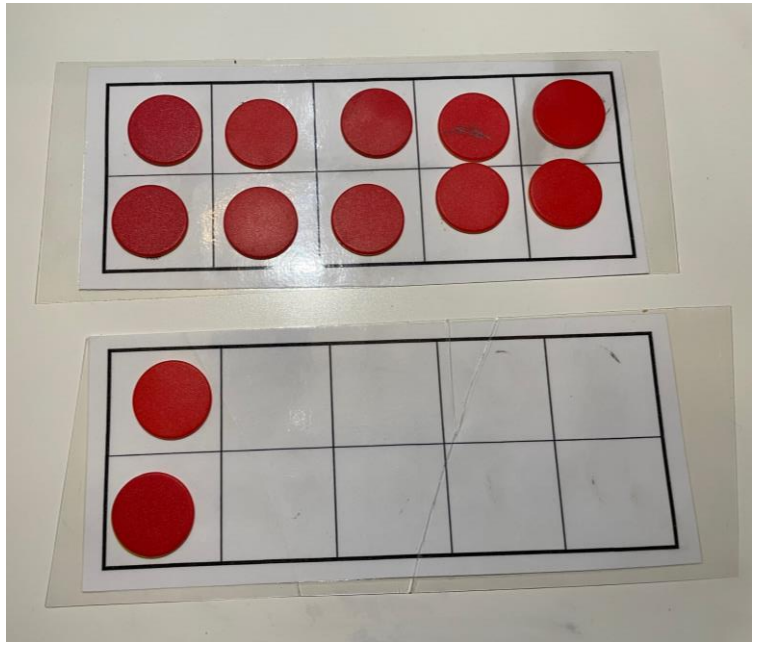
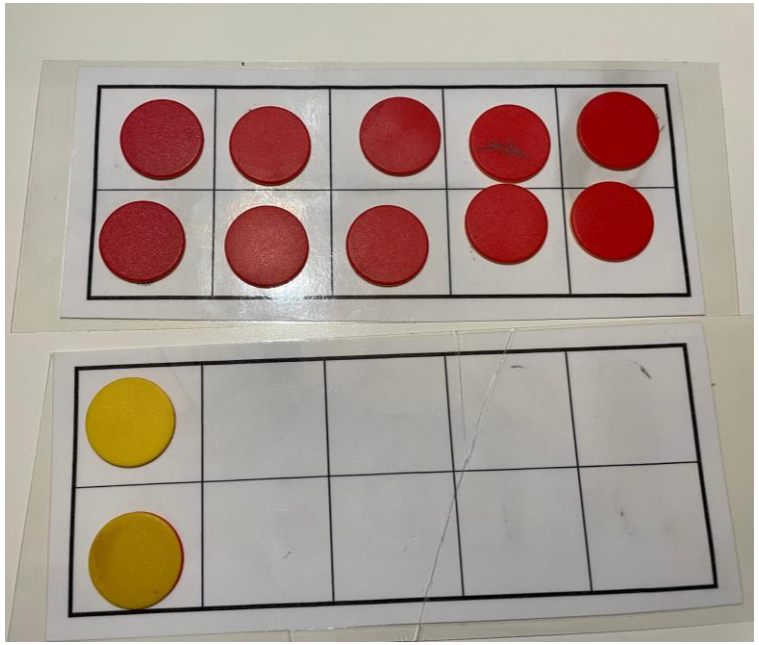
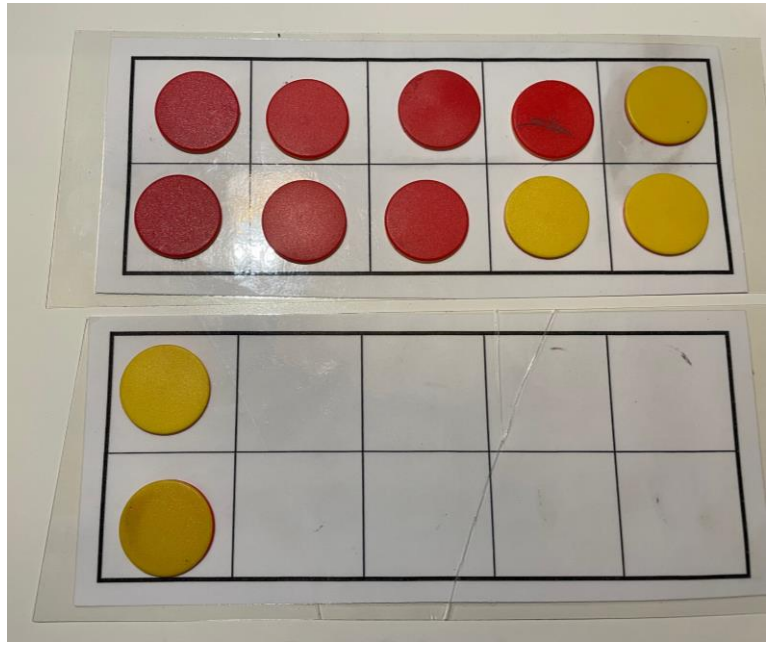
Addition : Progression in strategies

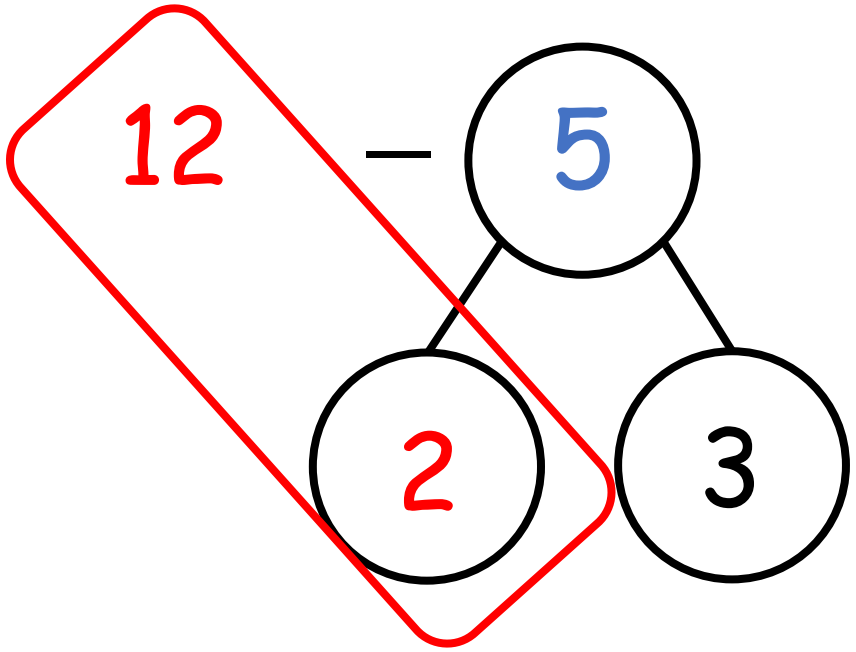
: Partitioning

Make 10 first… **12 - 5 =**

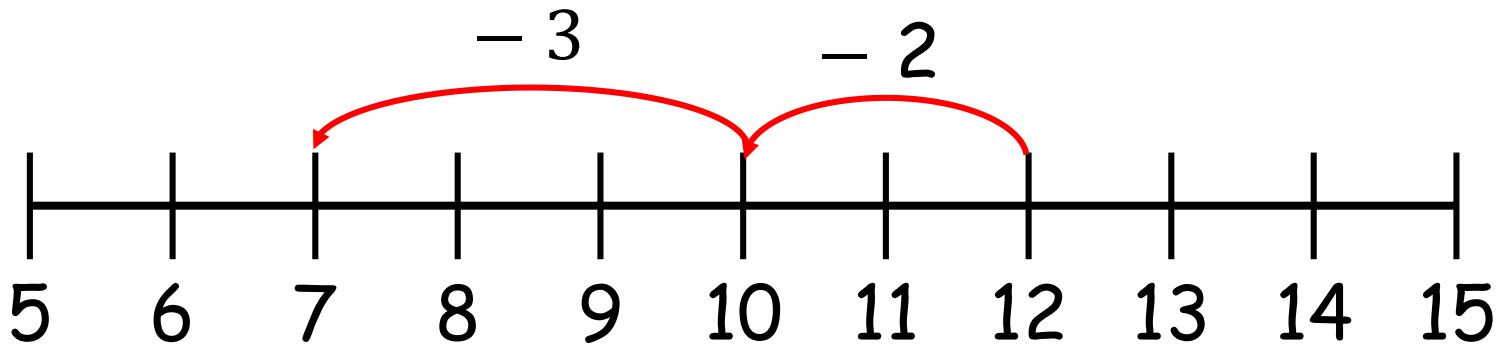








12 - **5** =



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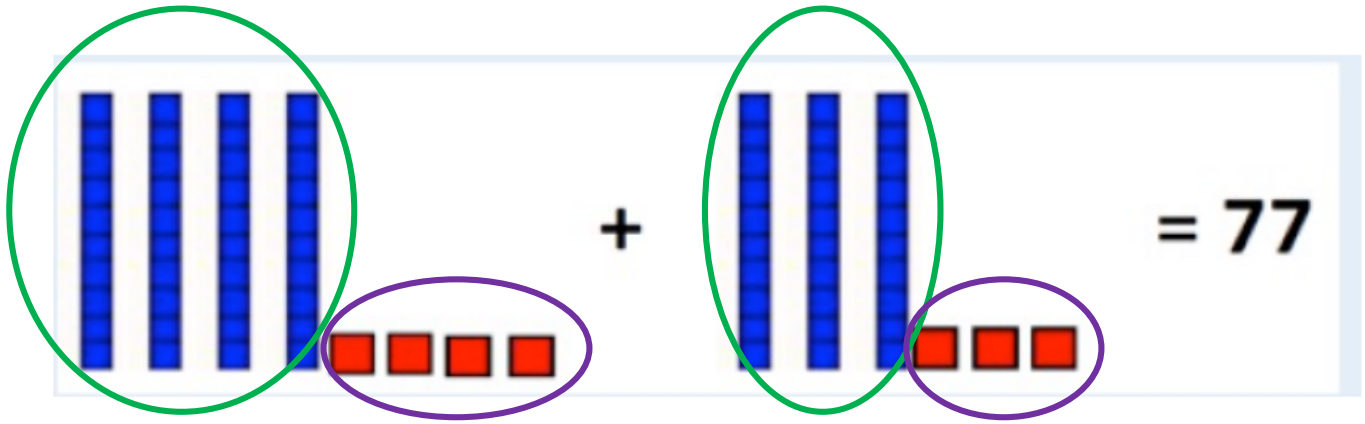
Addition : Progression in strategies

Partitioning



44 + 33 =

HAVE A GO

Use dienes and partitioning to calculate :
5 6 + 2 2 =

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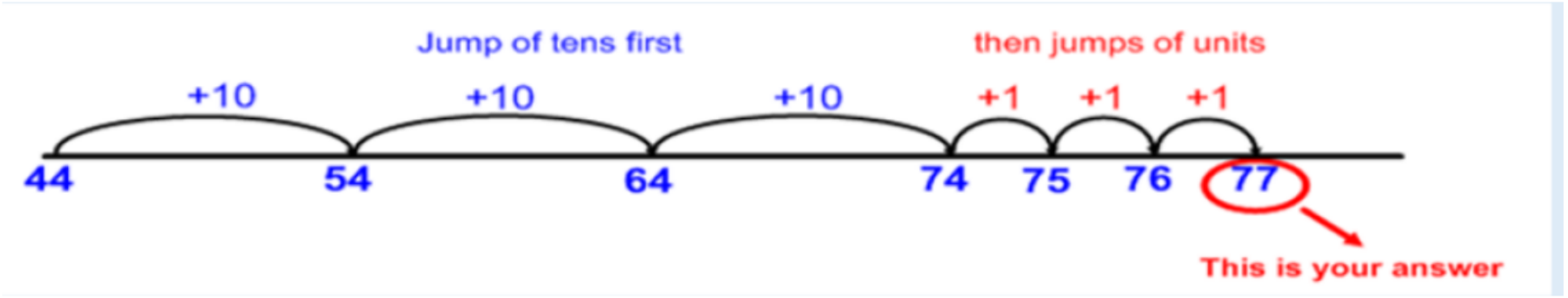
Addition : Progression in strategies

Partitioning

44 + 33 =



HAVE A GO

Use your empty number line and partitioning to calculate :
24 + 35 =

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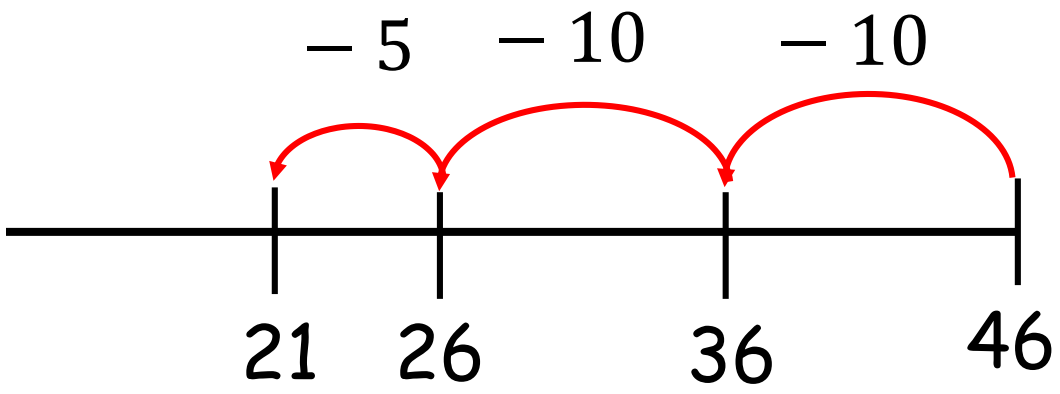
Subtraction: Progression in strategies

Stage 3 : Partitioning



46 + **25** =

HAVE A GO

Use partitioning and your empty number line to calculate :
5 3 - 3 5 =

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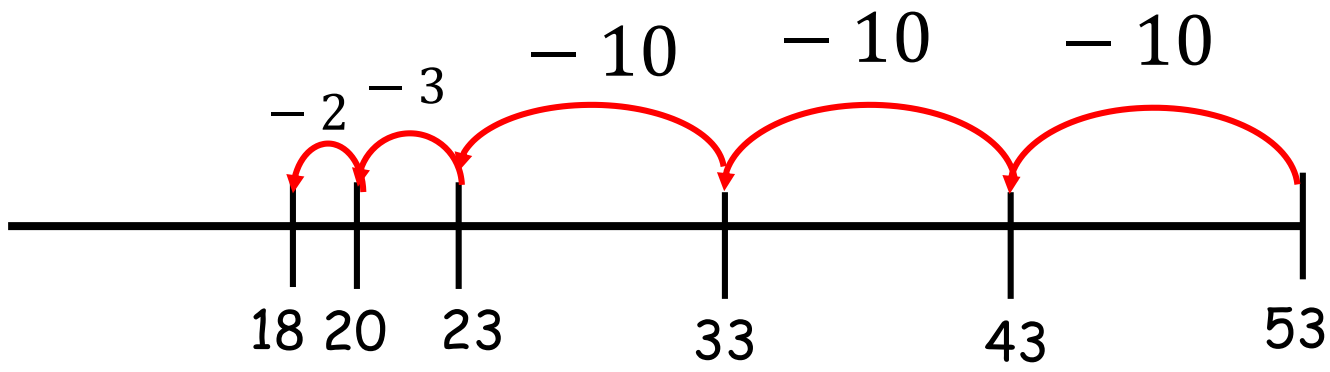
Subtraction: Progression in strategies

Use partitioning and your empty number line to calculate :
5 3 - 3 5 =



53 + **35** =

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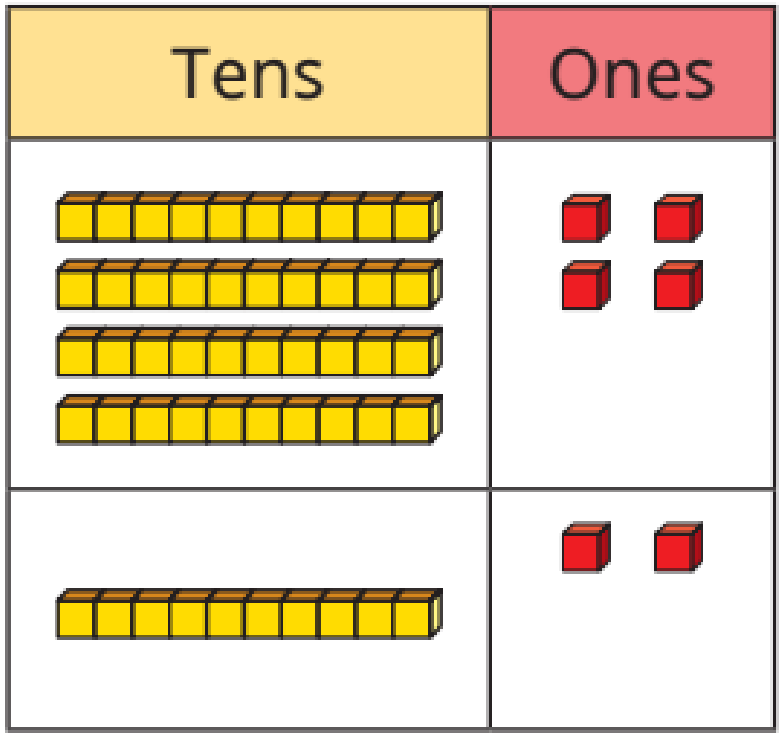
Column addition



Recording addition and subtraction in columns supports place value and prepares for formal written methods with larger numbers.

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Reasoning and Problem Solving

Using some of the strategies, have a go at some of these…

HAVE A GO

Is the number sentence true or false?

10 + 70 = 800

How do you know?

Ben has **20** stickers.

Sam has **30** stickers.

Ajay has **50** stickers.

How many stickers do they have **altogether**?

This number sentence equals 18

1	+	1	7	=	1	8

Now write a **different** number sentence that equals 18

Write **one digit** in each empty box.

	+	1		=	1	8

10 + 8 = 14 + ☐

Tom has the number 13. Sue's number is 5 greater than Tom's.
What is Sue's number?

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Key Points at KS1

Children should be able to…

- Subitise.
- Recall number bonds for all numbers and be able to apply them when solving addition and subtraction problems… if I know … what else do I know?
- Have a good understanding of the associated vocabulary to aid application of strategies.
- Recognise inverse relationships between + & -

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What does the National Curriculum say for Year 3 about number and place value?

Statutory requirements

Pupils should be taught to:

count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number

recognise the place value of each digit in a three-digit number (hundreds, tens, ones)

compare and order numbers up to 1000

identify, represent and estimate numbers using different representations

read and write numbers up to 1000 in numerals and in words

solve number problems and practical problems involving these ideas.

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Small Steps

- Hundreds
- Represent numbers to 1,000
- 100s, 10s and 1s (1)
- 100s, 10s and 1s (2)
- Number line to 1,000
- Find 1, 10, 100 more or less than a given number
- Compare objects to 1,000
- Compare numbers to 1,000
- Order numbers
- Count in 50s

NC Objectives

Identify, represent and estimate numbers using different representations.

Find 10 or 100 more or less than a given number.

Recognise the place value of each digit in a three-digit number (hundreds, tens, ones).

Compare and order number up to 1,000.

Read and write numbers up to 1,000 in numerals and in words.

Solve number problems and practical problems involving these ideas.

Count from 0 in multiples of 4, 8, 50 and 100

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Notes and Guidance

Children 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

What is the same and what is different about Base 10 and place value counters?

Why do we not call this number 300506?

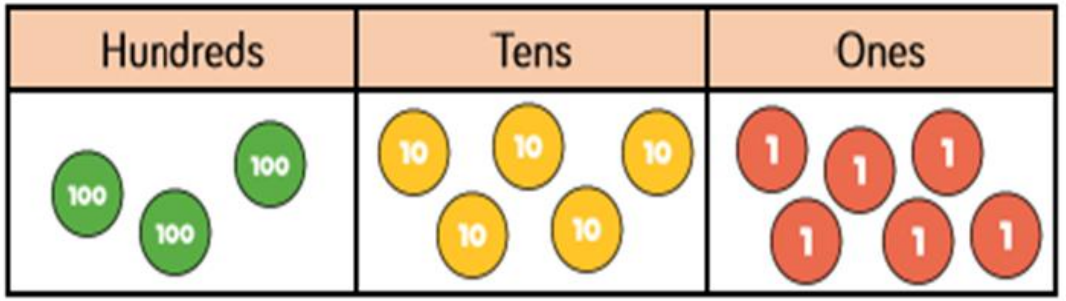
What number would be shown if 1/10/100 was added?

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

What do we need to do if there is a zero in the number we are representing?

Varied Fluency

- What number is shown on the place value chart?

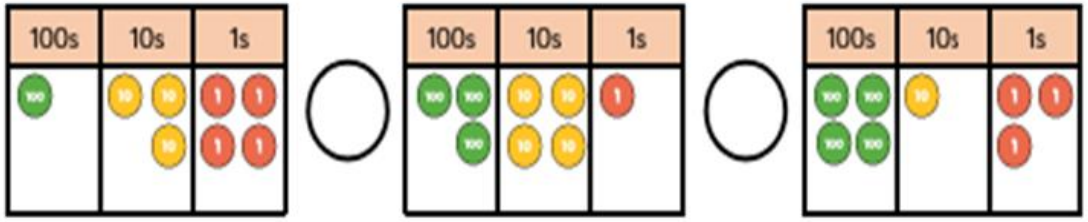


If one more 10 is added, what number would be shown?

- Use place value counters and a place value grid to represent the numbers:

615 208 37

- Use <, > or = to make the statement correct.



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Reasoning and Problem Solving

True or False?

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

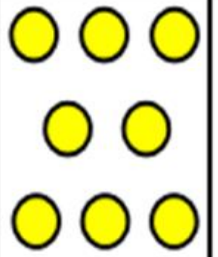
True, because if you start with zero and add 100 you get an even number, and you are adding another even so the number will always be even.

Sort these statements into always, sometimes or never.

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

- Never
- Always
- Sometimes

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

Hundreds	Tens	Ones
		

Do you agree? Explain why.

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

What other numbers could you make?

Whitney is incorrect because there are eight counters in the hundreds column so they represent eight hundreds. The number is 800

The smallest number that can be made is 8

Other possible numbers include:
80
170
350
etc.

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754

What can you tell me about this number?

Can you partition this number? Use the resources available.

CHALLENGE: Think outside of the box! How else could it be partitioned?

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What does the National Curriculum say for Year 4 about number and place value?

Statutory requirements

Pupils should be taught to

count in multiples of 6, 7, 9, 25 and 1000

find 1000 more or less than a given number

count backwards through zero to include negative numbers

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

order and compare numbers beyond 1000

identify, represent and estimate numbers using different representations

round any number to the nearest 10, 100 or 1000

solve number and practical problems that involve all of the above and with increasingly large positive 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.

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Small Steps

- Roman Numerals to 100
- Round to the nearest 10
- Round to the nearest 100
- Count in 1,000s
- 1,000s, 100s, 10s and 1s
- Partitioning
- Number line to 10,000
- 1,000 more or less
- Compare numbers
- Order numbers
- Round to the nearest 1,000
- Count in 25s
- Negative numbers

NC Objectives

Count in multiples of 6, 7, 9, 25 and 1,000.

Find 1,000 more or less than a given number.

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

Order and compare numbers beyond 1,000.

Identify, represent and estimate numbers using different representations.

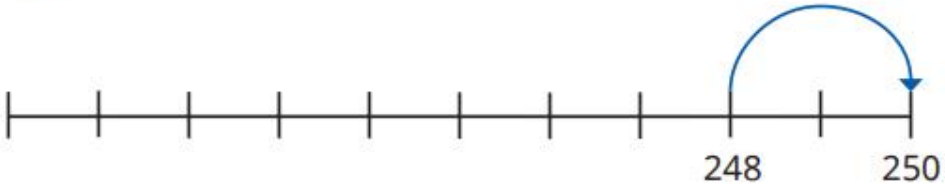
Round any number to the nearest 10, 100 and 1,000.

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

Key learning

- Work out the additions.
  - 237 + 1
  - 237 + 2
  - 237 + 3
  - 237 + 4
  - 237 + 5

- Use the number lines to find the jump to the next multiple of 10

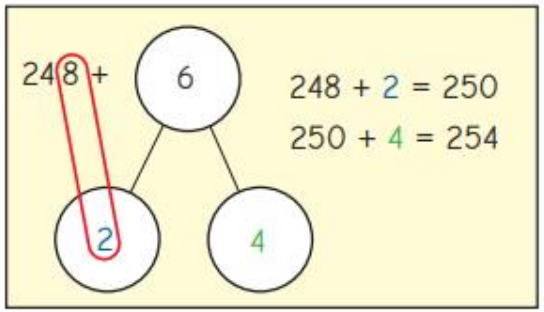


- Work out the additions.

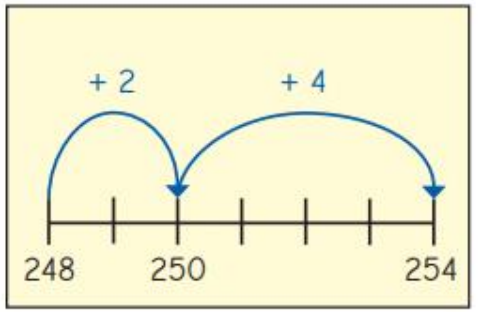
250 + 3	730 + 1	510 + 5
248 + 5	723 + 8	506 + 9

- Tom and Mo are working out 248 + 6

Tom



Mo



Talk about each method with a partner.

Whose method do you prefer?

Use that method to work out the additions.

248 + 9	638 + 3	579 + 6	589 + 4

- Eva is working out 856 + 7

I know that
6 + 7 = 13, so my tens will increase by 1 and I will have 3 ones.
856 + 7 = 863

Use Eva's method to work out the additions.

865 + 5	438 + 4	713 + 9	564 + 8

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Year 4 times table check

- The new Year 4 multiplication tables check has become statutory.

Your child will need to take a short online test to make sure their times tables knowledge is at the expected level.

What is the Year 4 multiplication tables check?

The multiplication tables check is an online test for pupils in Year 4. Pupils are asked to answer 25 questions on times tables from two to 12. They are given six seconds per question, with three seconds rest between each question, so the test should last less than five minutes.

Questions about the six, seven, eight, nine, and 12 times tables are likely to come up most often, as these are the hardest for most children to learn. It's a good idea to focus on these tricky times tables with your child.

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Year 4 times table check

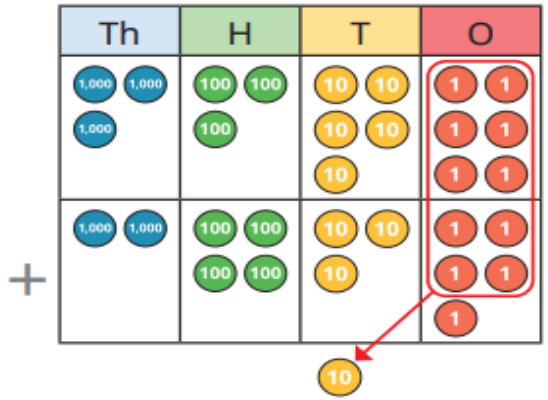
Have a go!

X	0	1	2	3	4	5	6	7	8	9	10	11	12
0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6	7	8	9	10	11	12
2	0	2	4	6	8	10	12	14	16	18	20	22	24
3	0	3	6	9	12	15	18	21	24	27	30	33	36
4	0	4	8	12	16	20	24	28	32	36	40	44	48
5	0	5	10	15	20	25	30	35	40	45	50	55	60
6	0	6	12	18	24	30	36	42	48	54	60	66	72
7	0	7	14	21	28	35	42	49	56	63	70	77	84
8	0	8	16	24	32	40	48	56	64	72	80	88	96
9	0	9	18	27	36	45	54	63	72	81	90	99	108
10	0	10	20	30	40	50	60	70	80	90	100	110	120
11	0	11	22	33	44	55	66	77	88	99	110	121	132
12	0	12	24	36	48	60	72	84	96	108	120	132	144

Add two 4-digit numbers – one exchange

Key learning

- Kim uses counters to find the total of 3,356 and 2,435

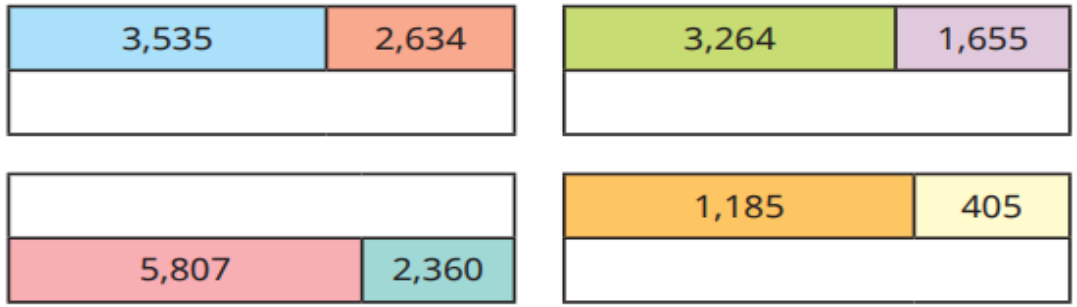


	Th	H	T	O
	3	3	5	6
+	2	4	3	5
	5	7	9	1
			1	

Use Kim's method to work out the additions.

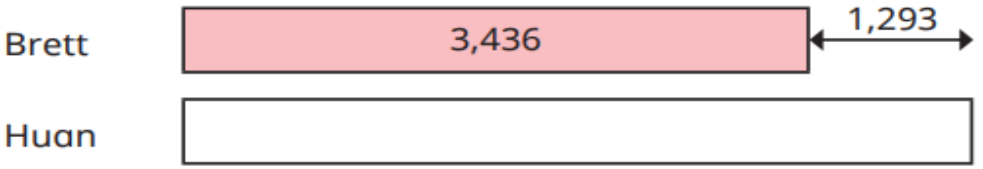
3,356 + 2,437	3,356 + 2,473	3,356 + 2,743

- Complete the bar models.

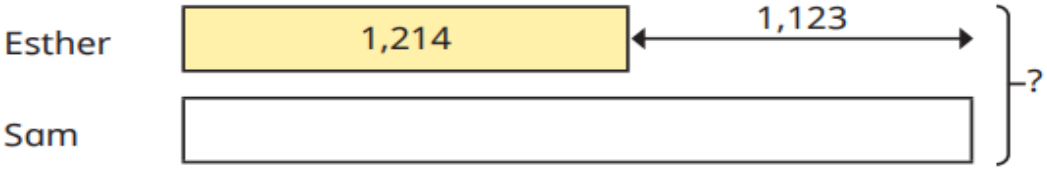


- Find the sum of 6,825 and 1,344

- Brett has 3,436 marbles.
  Huan has 1,293 more marbles than Brett.
  How many marbles does Huan have?



- Esther has 1,214 stickers.
  Sam has 1,123 more stickers than Esther.
  How many stickers do they have altogether?



- Eva has 1,434 pennies.
  Tom has 1,158 more pennies than Eva.
  How many pennies does Tom have?

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What does the National Curriculum say for Year 5 about number and place value?

Statutory requirements

Pupils should be taught to:

read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit

count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000

interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero

round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000

solve number problems and practical problems that involve all of the above

read Roman numerals to 1000 (M) and recognise years written in Roman numerals.

Small Steps

- Numbers to 10,000
- Roman Numerals to 1,000
- Round to nearest 10, 100 and 1,000
- Numbers to 100,000
- Compare and order numbers to 100,000
- Round numbers within 100,000
- Numbers to a million
- Counting in 10s, 100s, 1,000s, 10,000s, and 100,000s
- Compare and order numbers to one million
- Round numbers to one million
- Negative numbers

NC Objectives

Read, write, order and compare numbers to at least 1,000,000 and determine the value of each digit.

Count forwards or backwards in steps of powers of 10 for any given number up to 1,000,000

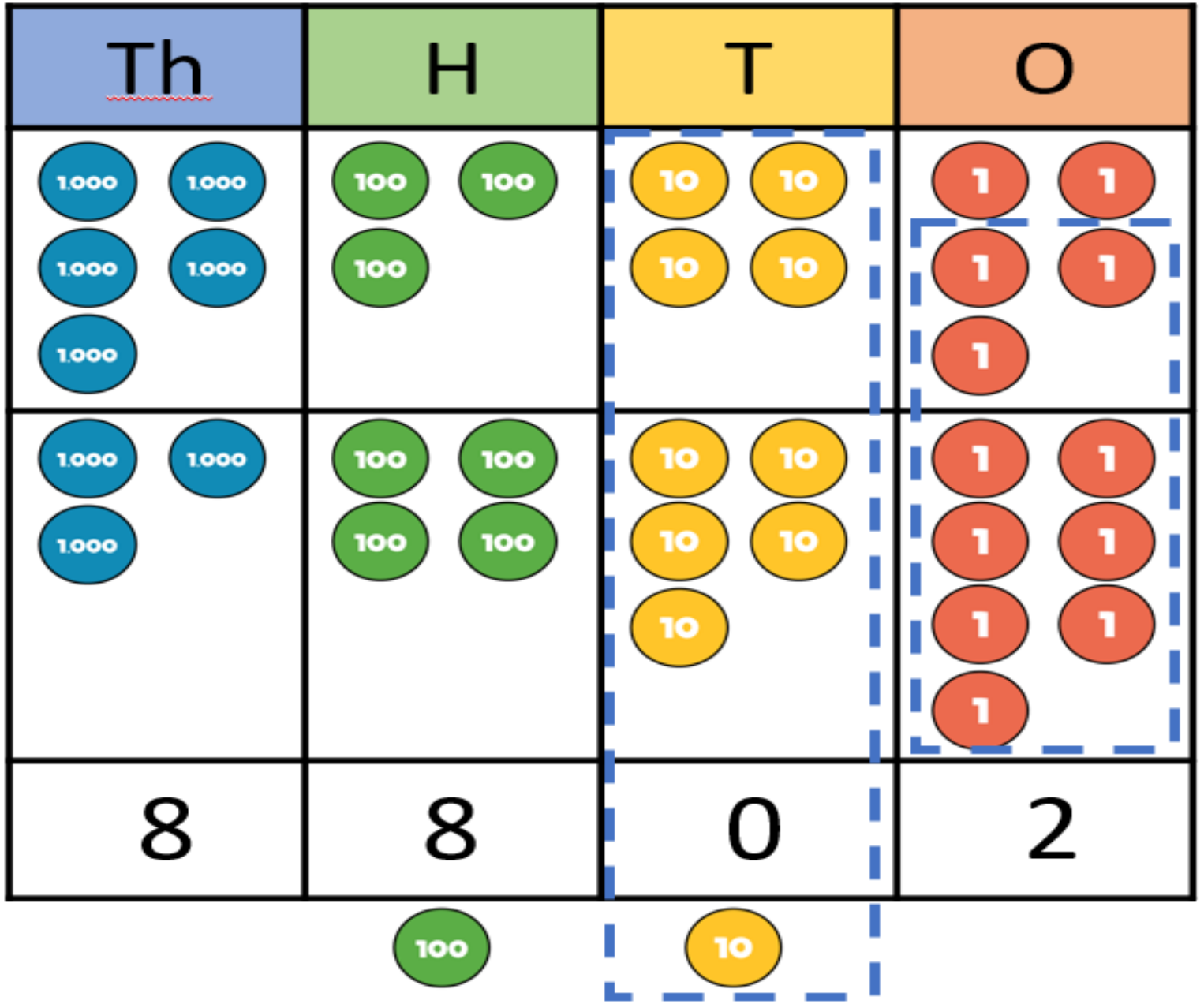
Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers including through zero.

Round any number up to 1,000,000 to the nearest 10, 100, 1,000, 10,000 and 100,000

Solve number problems and practical problems that involve all of the above.

Read Roman numerals up to 1,000 (M) and recognise years written in Roman numerals.

	Th	H	T	O
	5	3	4	5
+	3	4	5	7
	8	8	0	2
		1	1	



Notes and Guidance

Children use concrete manipulatives and pictorial representations to recap representing numbers up to 10,000

Within this step, children must revise adding and subtracting 10, 100 and 1,000

They discuss what is happening to the place value columns, when carrying out each addition or subtraction.

Mathematical Talk

Can you show me 8,045 (any number) in three different ways?

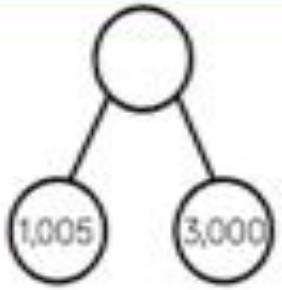
Which representation is the odd one out? Explain your reasoning.

What number could the arrow be pointing to?

Which column(s) change when adding 10, 100, 1,000 to 2,506?

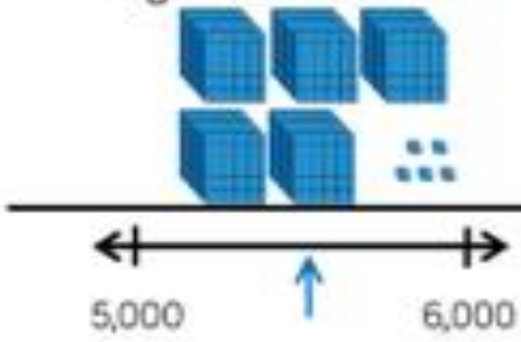
Varied Fluency

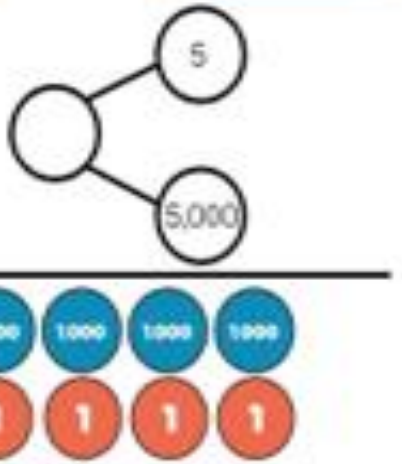
Match the diagram to the number.



4,005 | 4,500 | 4,050

Which diagram is the odd one out?





Complete the table.

	Add 10	Add 100	Add 1,000
2,506			
7,999			
		6,070	

Activity 3

Numbers to 10,000

Complete the table.

	Add 10	Add 100	Add 1,000
			9,492
		5,456	
	1,578		

Activity 3

Numbers to 10,000

Complete the table.

	Add 10	Add 100	Add 1,000
8,382	8,392	8,492	9,492
5,346	5,356	5,456	6,456
1,568	1,578	1,678	2,678

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What does the National Curriculum say for

Statutory requirements

Pupils should be taught to:

read, write, order and compare numbers up to 10 000 000 and determine the value of each digit

round any whole number to a required degree of accuracy

use negative numbers in context, and calculate intervals across zero

solve number and practical problems that involve all of the above.

Overview

Small Steps

- Numbers to ten million
- Compare and order any number
- Round any number
- Negative numbers

NC Objectives

Read, write, order and compare numbers up to 10,000,000 and determine the value of each digit.

Round any whole number to a required degree of accuracy.

Use negative numbers in context, and calculate intervals across zero

Solve number and practical problems that involve all of the above.

Notes and Guidance

Children need to read, write and represent numbers to ten million in different ways.
Numbers do not always have to be in the millions – they should see a mixture of smaller and larger numbers, with up to seven digits. The repeating patterns of ones, tens, hundreds, ones of thousands, tens of thousands, hundreds of thousands could be discussed and linked to the placement of commas or other separators.

Mathematical Talk

Why is the zero in a number important when representing large numbers?

What strategies can you use to match the representation to the correct number?

How many ways can you complete the partitioned number?

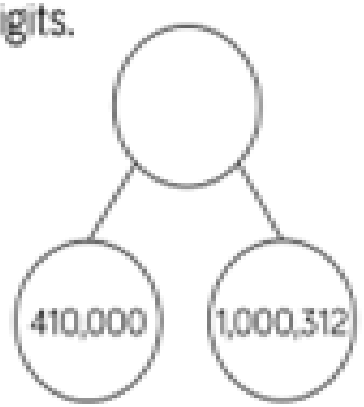
What strategy can you use to work out Teddy's new number?

Varied Fluency

Match the representations to the numbers in digits.

One million, four hundred and one thousand, three hundred and twelve.

M	HTh	TTh	Th	H	T	O
•		• • •	•	• •	•	• •



1,401,312 | 1,041,312 | 1,410,312

Complete the missing numbers.

6,305,400 = _____ + 300,000 + _____ + 400

7,001,001 = 7,000,000 + _____ + _____

42,550 = _____ + _____ + _____ + 50

Teddy's number is 306,042
He adds 5,000 to his number.
What is his new number?

Reasoning and Problem Solving

Put a digit in the missing spaces to make the statement correct.

4,62 __ ,645 < 4,623,64 __

Is there more than one option? Can you find them all?

Dora has the number 824,650

She subtracts forty thousand from her number.

She thinks her new number is 820,650

Is she correct?

Explain how you know.

Use the digit cards and statements to work out my number.

- The ten thousands and hundreds have the same digit.
- The hundred thousand digit is double the tens digit.
- It is a six-digit number.
- It is less than six hundred and fifty-five thousand.

Is this the only possible solution?

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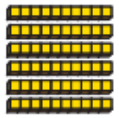
Subtraction – Year 3

Subtract two numbers (no exchange)

Maths

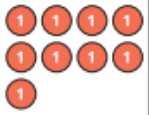
Key learning

- Work out 63 – 51

Tens	Ones
	

	T	O
	6	3
–	5	1

- Work out 769 – 147

Hundreds	Tens	Ones
		

	H	T	O
	7	6	9
–	1	4	7

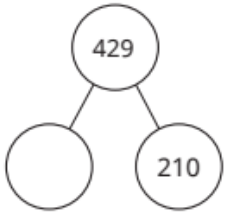
- Work out the subtractions.

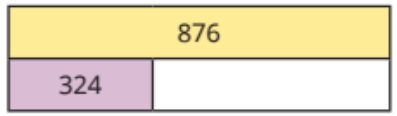
	T	O
	8	5
–	2	4

	H	T	O
	3	2	8
–	1	0	7

	H	T	O
	7	2	9
–	3	0	9

- Work out the missing numbers.





- Tom has 75 marbles.

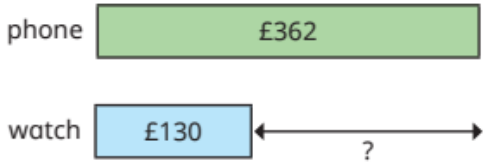
  He gives 35 marbles to Amir.

  How many marbles does Tom have left?

- A phone costs £362

  A watch costs £130

  How much more money does the phone cost than the watch?



What is the total cost of the phone and the watch?

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Subtraction – Year 3

Subtract a 2-digit number from a 3-digit number

Rose Maths

Reasoning and problem solving

Tiny is working out 526 – 31

		H	T	O	
		5	2	6	
	–	3	1		
		2	1	6	

Explain the mistake Tiny has made.

Find the correct answer.

Tiny has not put the 31 in the correct columns.

495

What are the missing digits?

13__ – 52 = 85

334 – __2 = 292

545 = 6__8 – 73

7

4

1

The rule for the function machine is "subtract 60".

input		output
567	→	497

Is Alex correct?

Explain your answer.

No

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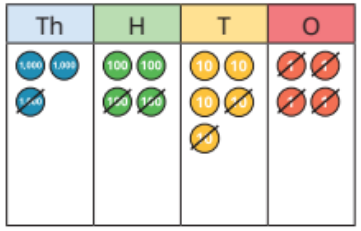
Subtraction – Year 4

Subtract two 4-digit numbers – no exchange

Rose Maths

Key learning

- Dora uses place value counters to work out 3,454 – 1,224

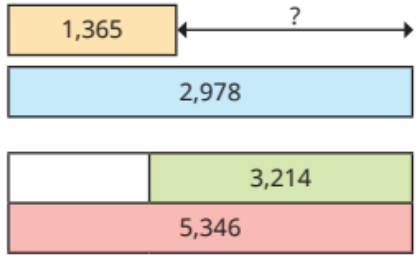


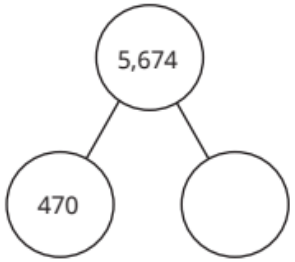
		Th	H	T	O
		3	4	5	4
	–	1	2	2	4
		2	2	3	0

Use Dora's method to work out the subtractions.

4,572 – 2,341	7,462 – 7,151	6,582 – 582	2,348 – 235

- Find the missing numbers.





- Use bar models to help you answer each question.

There are 3,597 boys and girls in a school.
2,182 are boys.
How many girls are there?

Car A travels 7,653 miles per year.
Car B travels 5,612 miles per year.
How much further does car A travel than car B per year?

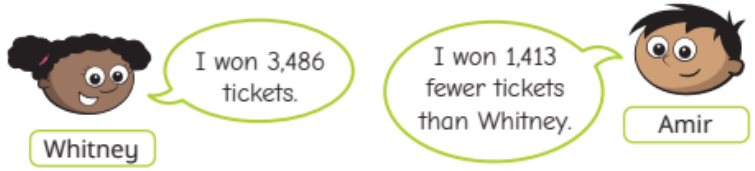
- The mass of a bag of sand is 3,576 g.

  1,250 g of sand is poured from the bag.

  What is the mass of the bag of sand now?

- Whitney and Amir are at the fair.

  At each stall, they can win tickets.



How many tickets did Amir win?

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Subtraction – Year 5

Subtract whole numbers with more than four digits

Rose Maths

Key learning

- Use the column method to work out the subtractions.

		8	4		
	–	3	6		

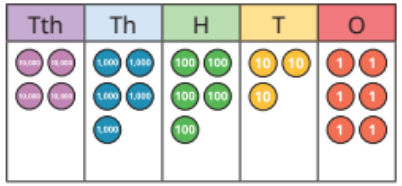
		6	3	2	
	–	4	1	7	

		4	6	8	
	–	2	9	3	

		3	1	2	5
	–	2	4	1	7

- Work out the subtraction.

  Use the place value chart and the column method to help you.



		4	5	5	3	6
	–		8	4	2	6

- There are 43,662 fans at a football match.

  31,547 of the fans are adults.

  How many of the fans are not adults?

- The population of Hereford is 63,689

  The population of Chester is 87,593

  Find the difference between the population of Hereford and the population of Chester.

- Subtract twelve thousand, three hundred and seventy from eighteen thousand, one hundred and twenty-four.

- Find the answers to the calculations.

  In each case, decide whether a mental method or written method is more appropriate.

12,000 – 2	46,312 – 15,000
35,295 – 16,359	90,000 – 23,518

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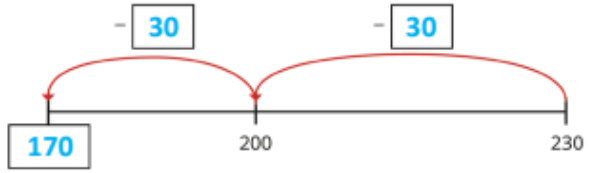
Subtraction – towards Column

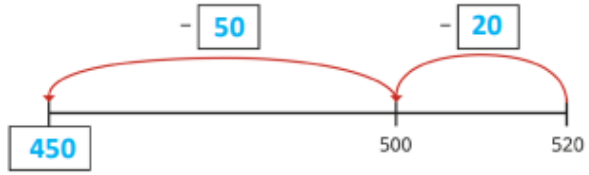
a) 170

b) 230 − 60 = 170

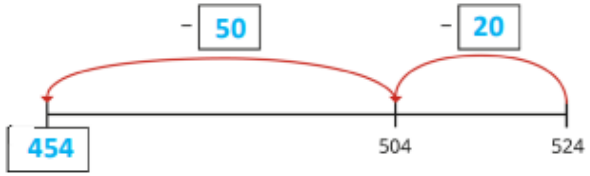


The method in part b) is more efficient, because it only involves two jumps.

a) 520 − 70 = 450



b) 524 − 70 = 454



The ones digit stays the same. The hundreds and tens digits change in the same way on both parts a) and b).

	H	T	O
	~~3~~ 4	~~1~~ 2	6
−		8	2
	3	4	4

	H	T	O
	~~4~~ 5	~~12~~ 3	~~1~~ 1
−		4	2
	4	8	9

	Th	H	T	O
	~~6~~ 7	~~1~~ 3	~~1~~ 2	~~1~~ 5
−	2	4	0	6
	4	9	1	9

	Th	H	T	O
	~~4~~ 5	~~15~~ 6	~~12~~ 3	~~1~~ 4
−	2	7	4	5
	2	8	8	9

	Th	H	T	O
	~~6~~ 7	~~10~~ 1	~~10~~ 1	~~1~~ 2
−		3	9	8
	6	7	1	4

	Th	H	T	O
	~~1~~ 2	~~10~~ 1	~~1~~ 0	3
−	1	7	4	3
		3	6	0

	7	3	1	5
−	2	1	0	4
	5	2	1	1

	7	~~2~~ 3	~~1~~ 1	5
−	3	2	4	1
	4	0	7	4

	~~6~~ 7	~~12~~ 3	~~1~~ 1	5
−	5	4	2	0
	1	8	9	5

	~~6~~ 7	~~12~~ 3	~~1~~ 1	5
−		8	4	2
	6	4	7	3

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How to help see Maths in everyday

- Measuring their height and working out how much they've grown
- On car journeys - playing number-plate games, adding and subtracting with road signs, thinking about speed by dividing distance by time
- At the shops - weighing fruit and vegetables, budgeting with pocket money, working out the relative value of products by comparing prices and weight
- In the kitchen - with weighing and measuring, and temperature and timings
- Making models and origami shapes
- Playing games together– jigsaws, monopoly, top trumps, match attacks cards

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Online resources

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Online resources

Home - MyMaths

Hit the Button - Quick fire maths practise for 6-11 year olds (topmarks.co.uk)

Times Tables Rock Stars: Play (ttrockstars.com)

NumBots | Motivational maths practice for schools and families.

Mathletics Sign In

NRICH - Mathematics Resources for Teachers, Parents and Students to Enrich Learning (maths.org)

Maths - BBC Bitesize

CENTURY | Online Learning | English, Maths and Science

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Any questions?