Roche CP School Maths Policy

Area of Maths = Addition

Definition: Addition is to join two or more numbers (addends) or quantities to get one number called the sum or total. *Jenny Eather AMDFK*
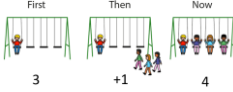
KEY STAGE 2 ONLY TO INCLUDE ADDENDS.
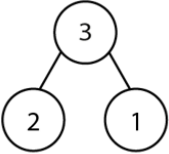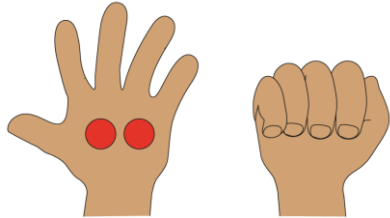
addend   addend   total
3 + 7 = 10

Vocabulary: add, plus, combine, total, sum, join, increase, addend, more than, greater than

Basic structure: addend + addend = sum / total

Sum / total = addend + addend

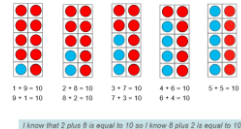| Declarative knowledge	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Addition + Subtraction Automatically recall… **Blue highlight = Roche's Specific Expectations** **Red font = Roche's Priorities for Revisiting**	Number bonds to 5 + some to 10. **Steps 1-8** Double facts (within 10). **Step 9** Odd and even numbers up to 10.	Number bonds of 10 Number bonds to 20 **Steps 10-14** Odd and even numbers up to 20. Know that **addition is commutative** and subtraction is not.	Addition and subtraction facts within 20. **Steps 10-14** Know that **addition is commutative** and subtraction is not.	Number bonds to 100 in multiples of 10 and 5.	Number bonds to 100 in ones. Number bonds to1000 in multiples of 100s and 50s.	Add numbers mentally with increasingly large numbers. (100s, 1000s + 10,000s) Number bonds to 1000 in multiples of 25s + 10s.	

Year 1						
Year group	NC L.O.	**Practical**	**Pictorial**	**Abstract**	**Problem Solving**	**Reasoning**
		Make it! **SAY IT**	**Show it/Draw it!** **SAY IT**	**Read/Write it!** **SAY IT**		
1	Non-stat guidance 1AS–1 Compose numbers to 10 from 2 parts. Additive structures, including part-wholes and first, then, now statements and models. Read, write and interpret mathematical statements involving addition (+) and equals (=) signs. Demonstrate an understanding of the	Place 2 different sets of objects on the desk and ask pupils to describe what is on the table as "there are X red objects and X blue objects. There are X objects altogether.	Complete the sentences. There are ____ blue backpacks, there are ____ yellow backpacks, there are ____ backpacks overall. First Then Now 3 +1 4 Bar models Part-whole models	Write a number sentence to describe the birds above. Write a number sentence to describe the blocks above. 3 / 2 1 7 / 1 6	There are 5 counters altogether. Can you guess how many counters are hiding? Collect five objects and hide some from your friend. Can they say how many are hiding?	Look at the two pictures above. What is the same? What is different?

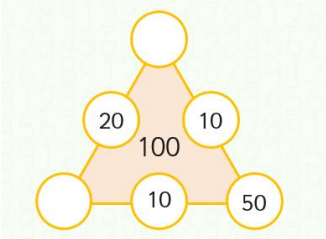|						
	commutative law (e.g. 3 + 2 = 5, therefore 2 + 3 = 5).					
1	2020 Guidance	1NF–1 Develop fluency in addition and subtraction facts within 10. Year 1 document - Pages 17 - 23 1AS–1 Compose numbers to 10 from 2 parts, and partition numbers to 10 into parts, including recognising odd and even numbers. Year 1 document – Pages 23 – 28 1AS–2 Read, write and interpret equations containing addition (+), subtraction (-) and equals (=) symbols, and relate additive expressions and equations to real-life contexts. Year 1 document - Pages 29 – 35 **These units will run through all of the Y1 addition and subtraction objectives and will also be part of morning maths.**				
1	Recall at least four of the six number bonds for 10 and reason about associated facts (e.g. 6 + 4 = 10 , therefore 4 + 6 = 10 and 10 – 6 = 4) A few discrete lessons and then drip through the year. *Solve one-step problems that involve addition using concrete objects and pictorial representations , and missing number problems such as 7 = ? - 9.*	Tens frames Double-sided counters Dienes Numicon to 10 Coins (1p to make 10p)	Pictorial representations of tens frames, numicon, coins, dienes	0 + ? = 10 1+ ? = 10 2 + ? = 10	Here's a set of Numicon from 1 to 10, how many Numicon pairs can you put together to make 10? (Number bond sandwich) – look for odd and even patterns.	Mrs Gardner thinks there is only 2 ways to record this number sentence: 8 + 2 = 10 2 + 8 = 10 True or False? Prove it! (False 10 = 2 + 8 and 10 = 8 + 2)

1	2020 Guidance	1AS–1 Compose numbers to 10 from 2 parts, and partition numbers to 10 into parts, including recognising odd and even numbers.				
		Year 1 document – Pages 23 – 28				
		This will run through all of the Y1 addition and subtraction objectives and will also be part of morning maths.				
1	Represent and use number bonds within 20.

Recap bonds withing / to 10 and then progress up to 20

Solve one-step problems that involve addition using concrete objects and pictorial representations, and missing number problems such as 7 = ? - 9. | Objects

Fingers (for 10s, partners for 20s)

Coins (1p and 10p)

Numicon

Dienes

Unifix cubes

Bar model with cubes / dienes

Hoops and Bean bags for Part Part Whole

Remember to Move the equals sign | Number line with numbers on

20 rectangle (a hundred square cut)

Images

Ruler/Counting stick

Chn draw

Add facts table

Remember to Move the equals sign | Counting on (to get to 10 or 20)

Abstract bar models, just numbers.

Part, Part, Whole Diagrams

Missing number problems

Remember to Move the equals sign

Fluency - Patterns

Number fans | How many different ways can you make 15?

Spot patterns in Add facts table e.g., colour all then numbers that make 9, can you see a pattern? Record them in a sequence. Can you record that with objects (Bar model)? | I think there are 8 different ways of making the number 14 using addition, am I correct? Do some of your calculations look similar?

Recap commutative law during reasoning. |
| 1 | 2020 Guidance | 1AS–2 Read, write and interpret equations containing addition (+), subtraction (-) and equals (=) symbols, and relate additive expressions and equations to real-life contexts. |||||
| | | Year 1 document - Pages 29 - 35 |||||

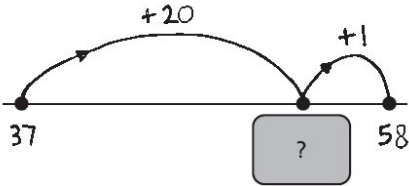| Year group	NC L.O.	Practical	Pictorial	Abstract	Problem Solving	Reasoning
1	Add one-digit and two-digit numbers to 20, including zero. *This should mainly be single digit + single digit that bridge 10, such as 6 + 8, 5 + 7* *Solve one-step problems that involve addition using concrete objects and pictorial representations, and missing number problems such as 7 = ? - 9.*	Fingers (for 10s, partners for 20s) Coins (1p, 10p, 20p) Numicon Dienes Unifix cubes Bar model with cubes / dienes Remember to Move the equals sign	Number line with numbers on 20 rectangle (a hundred square cut) Images Ruler/Counting stick Chn draw Add facts table Remember to Move the equals sign	Counting on Abstract bar models, just numbers. Missing number problems Part Part Whole model Recording of addition Remember to Move the equals sign	Adding calculations and ordering groups of calculations. Mark my work Contextual problems e.g. I have 8 eggs, how many more do I need to fill an egg box with twelve spaces. Missing digit problems e.g. 1□ + 4 = 17 with resources to help. Use these 3 number cards to make an addition number sentence. How many ways are there?	I have some number cards: 3, 5, 2, 0, 7 Which two number cards sum to a number greater than 10? James says: If I add any of the two cards together I will get a number larger than the number on either card. Is he correct? Why? I can't make a number greater than 18 by adding two single-digit numbers. True or false? Prove it! Could I make a number greater than 18 if I had three digits to add together? Give three examples.
1	Solve one-step problems that involve addition and missing numbers using concrete objects and pictorial representations.					

Year 2

Year group	NC L.O.	Practical	Pictorial	Abstract	Problem Solving	Reasoning
		Make it! **SAY IT**	**Show it/Draw it!** **SAY IT**	**Read/Write it!** **SAY IT**		

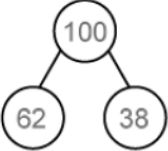| 2	Add numbers using concrete objects, pictorial representations and mentally, including a two-digit number and ones. Solve problems with addition using concrete objects and pictorial representations including those involving numbers, quantities and measures. Solve problems with addition applying their increasing knowledge of mental and written methods. Show that addition of two numbers can be done in any order (commutative)	Fingers Coins up to £1 Numicon Dienes Unifix cubes Bar model with cubes / dienes Remember to move the equals sign	Blank Number line 100 square Abacus PV chart Metre ruler Images Ruler/Counting stick Chn draw Arrow cards Remember to move the equals sign	Counting on Abstract bar models, just numbers. Missing number problems Part Part Whole model Recording of addition no. sentences Remember to move the equals sign Column method for layout only!	Word and contextual problems Missing number in different forms, bar, objects, column Calculations that include greater than and less than symbols Money questions, cost of multiple items	I think, prove it. Odd / Even reasoning e.g. and odd plus an odd will sum to an odd; always, sometimes, never true? Adding two consecutive numbers will always give me an odd number; always, sometimes, never true?
2	2020 Guidance	2AS–3 Add and subtract within 100 by applying related one-digit addition and subtraction facts: add and subtract only ones or only tens to/from a two-digit number. Year 2 document - Pages 23 - 26				

| 2 | Add numbers using concrete objects, pictorial representations and mentally, including a two-digit number and tens | Fingers

Coins up to £1 (Particularly 10ps)

Numicon

Dienes

Unifix cubes

Bar model with cubes / dienes

Remember to move the equals sign | Blank Number line

100 square

Abacus

PV chart

Metre ruler

Images

Ruler/Counting stick

Chn draw

Arrow cards

Remember to move the equals sign | Counting on

Abstract bar models, just numbers.

Missing number problems

Recording of addition no. sentences

Part Part Whole model

Remember to move the equals sign

Column method for layout only! | Word and contextual problems

Can you complete these triangles so that each side totals 100?

Missing number in different forms, bar, objects, column, on a hundred square.

Calculations that include greater than and less than symbols

Money questions, multiples of 10 more than a number e.g. an apple cost 45p, a banana costs 20p more, how much does a banana cost?

Write numbers in the shapes to make this correct.

Mr Moore says we can have 10 more minutes for golden time. We usually have 15 minutes, how long will we get today? | Caitlyn says:

If you add 10 to a two-digit number you'll always get a two-digit total.

Is Caitlyn always, sometimes or never correct? Explain your answer.

Miss Tonkin thinks when you add multiples of 10 the ones always stay the same. Is she correct? How do you know? |
| | Solve problems with addition using concrete objects and pictorial representations including those involving numbers, quantities and measures.

Solve problems with addition and applying their increasing knowledge of mental and written methods.

Show that addition of two numbers can be done in any order (commutative) | | | | | |

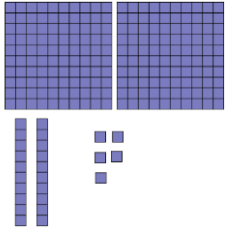| 2 | 2020 Guidance | 2AS–3 Add and subtract within 100 by applying related one-digit addition and subtraction facts: add and subtract only ones or only tens to/from a two-digit number. Year 2 document - Pages 23 - 26 |

| 2 | Add numbers using concrete objects, pictorial representations and mentally, including two two-digit numbers.

Solve problems with addition using concrete objects and pictorial representations including those involving numbers, quantities and measures.

Solve problems with addition and applying their increasing knowledge of mental and written methods.

Show that addition of two numbers can be done in any order (commutative) | Fingers

Coins up to £1

Numicon

Dienes

Unifix cubes

Bar model with cubes / dienes

Remember to move the equals sign | Blank Number line

100 square

Abacus

PV chart

Metre ruler

Images

Ruler/Counting stick

Chn draw

Arrow cards

Remember to move the equals sign | Counting on

Abstract bar models, just numbers.

Missing number problems

Part Part Whole model

Recording of addition no. sentences

Remember to move the equals sign

Column method for layout only! | Spot the odd one out from different representations

Missing digit calculations with different representations

Contextual problems e.g. lengths of objects,

Calculations that include greater than and less than symbols

Money questions e.g. an apple cost 45p and a banana costs 28p. How much do the cost together?

Here are 4 number cards

4, 6, 7, 3

Using the following boxes find the combination that will give you

a. The largest total

b. The smallest total

☐☐ + ☐☐

You can only use each card once | If I add two two-digit numbers together they will always sum to a two-digit number. Always/Sometimes/Never

What's the same? What's different?

20 + 20 = 40   40 = 20 + 20

20 + 21 = 41   41 = 21 + 20

20 + 22 = 42   42 = 22 + 20

20 + 23 = 43   43 = 23 + 20

20 + 24 = 44   44 = 24 + 20

20 + 25 = 45   45 = 25 + 20

Look at each number sentence.

Put a tick (✓) if it is correct.

Put a cross (✗) if it is **not** correct.

8 × 2 = 8 + 8   ☐

3 × 10 = 3 + 3 + 3   ☐

5 × 4 = 5 + 5 + 5 + 5   ☐ |
|---|---|---|---|---|---|
| 2 | 2020 Guidance | 2AS–4 Add and subtract within 100 by applying related one-digit addition and subtraction facts: add and subtract any 2 two-digit numbers. Year 2 document - Pages 27 - 29 | | | |

2	[EXS] [KEY] Add any 2 two-digit numbers using an efficient strategy, explaining their method verbally, in pictures or using apparatus (e.g. 48+35). Solve problems with addition using concrete objects and pictorial representations including those involving numbers, quantities and measures. Solve problems with addition and applying their increasing knowledge of mental and written methods. Show that addition of two numbers can be done in any order (commutative)	Dienes Unifix cubes Bar model with cubes / dienes Remember to move the equals sign	Number lines Hundred square	Missing number problems Part Part Whole model Recording of addition no. sentences Bar model	Katie drew a number line to help her find the answer to 37 + 21 What number is hidden under the card?	Use these signs: $-$ $+$ $=$ You can use each sign more than once. Write signs in the boxes to make these correct. 25 ☐ 19 ☐ 6 15 ☐ 15 ☐ 0
2	2020 Guidance	2AS–4 Add and subtract within 100 by applying related one-digit addition and subtraction facts: add and subtract any 2 two-digit numbers. Year 2 document - Pages 27 - 29				

| 2 | Add numbers using concrete objects, pictorial representations and mentally, including adding three one-digit numbers

Solve problems with addition using concrete objects and pictorial representations including those involving numbers, quantities and measures.

Solve problems with addition and applying their increasing knowledge of mental and written methods.

Show that addition of two numbers can be done in any order (commutative) | Fingers

Coins up to £1

Numicon

Dienes

Unifix cubes

Bar model with cubes / dienes

Remember to move the equals sign | Blank Number line

100 square

Abacus

PV chart

Metre ruler

Images

Ruler/Counting stick

Chn draw

Arrow cards

Remember to move the equals sign | Counting on

Abstract bar models, just numbers.

Missing number problems

Recording of addition no. sentences

Remember to move the equals sign

Column method for layout only! | Adding value of coins (1p 2p 5p)

Find out how many different ways of making 10 using 3 digits. You **may/may not** use the same digit more than once.

Context questions e.g. Sarah had 2 cats, 3 dogs and 9 fish. How many pets did she have altogether?

Write two numbers to make this calculation correct.

☐ + ☐ = 19

Now write three numbers to make this calculation correct.

☐ + ☐ + ☐ = 19 | Adding 3 consecutive numbers will always give you an even number; always, sometimes, never true?

Adding 3 odd numbers together will always give you an even number; always, sometimes, never true? |

Year 3

Year group	NC L.O.	Practical	Pictorial	Abstract	Problem Solving	Reasoning
		Make it! **SAY IT**	**Show it/Draw it!** **SAY IT**	**Read/Write it!** **SAY IT**		
3	2020 Guidance 3AS–1 Calculate complements to 100, for example: 46 + ? = 100	Dienes Coins (For change) PV counters	Hundred square Pictorial hundred diene Bar models Part-whole models 100 → 62, 38	Missing number questions Bonds sheets for pattern-spotting (Already prepared)	A dressmaker had 1m of ribbon. Then she used 22cm of it. How many centimetres of ribbon does she have left? A toy shop sells ping-pong balls for 65p each. If I use a £1 coin to pay for a ping-pong ball, how much change will I get, in pence? Mr Jones has 100 stickers. 47 of them are gold and the rest are silver. How many are silver?	Mr Moore says: *"Finding bonds to 100 is easy, you make the ones digits add up to ten and the tens digits add up to 10.* *For example 43 + 67 = 100 because 3 + 7 = 10 and 4 + 6 = 10."* Explain why Mr Moore is **wrong**.
3	[Key] Add numbers mentally, including three-digit number and hundreds.	Fingers Numicon Dienes Coins – particularly £1 Multi-link cubes Bar model with cubes / dienes	Blank number line 100 square Abacus PV chart Metre ruler Images Ruler/Counting stick Chn draw	Counting on Abstract bar models, just numbers. Missing number problems Part Part Whole model Remember to move the equals sign	Word and contextual problems Missing number in different forms, bar, objects, on a hundred square. Missing number squares e.g. Make 1000: (table: blank, blank, blank / blank, 600, 300 / 500, blank, 20)	If I count up in hundreds from 125 will I get to 725? Explain your reasoning. James completed the question below and his teacher marked it as incorrect: 345 + 100 = 355 Can you explain the mistake James has made?

		Remember to move the equals sign PV Chart for placing objects	Remember to move the equals sign Arrow cards		Mr Moore adds a hundred diene to the number below: What is Mr Moore's new number? Write the four number facts that this bar model shows. 540 300	240 ☐ + ☐ = ☐ ☐ + ☐ = ☐ ☐ – ☐ = ☐ ☐ – ☐ = ☐	

Shape space and measure opportunities: Adding pounds to an amount of money. Adding metres to a number of centimetres.

3	2020 Guidance	3NF–1 Secure fluency in addition and subtraction facts that bridge 10, through continued practice. Year 3 document – pages 25-27 3NF–3 Apply place-value knowledge to known additive and multiplicative number facts (scaling facts by 10), for example: 80 + 60 = 140; 140 - 60 = 80. 30 x 4 =120; 120 ÷ 4 = 30. Year 3 document – pages 30 - 32				
3	[Key] Add numbers mentally, including three-digit number and tens. (Recap 2 digit and tens)	Fingers Numicon Dienes Coins – particularly 10ps Multi-link cubes Bar model with cubes / dienes	Blank number line 100 square Abacus PV chart Metre ruler Images Ruler/Counting stick	Counting on Abstract bar models, just numbers. Missing number problems Part Part Whole model	Word and contextual problems Missing number in different forms, bar, objects, on a hundred square. Calculations that include greater than and less than symbols Money questions, multiples of 10 more than a number e.g. a laptop cost £555, A TV costs £20 more, how much does a TV cost?	Sarah says: "If I have a tens Diene and then keeps placing more tens Dienes next to it eventually I'll make 100." Do you agree with Sarah? Why? Why not? Mrs Campbell says: If I have the number 276 and I keep adding tens to it the tens column will change but the ones column and hundreds column will **always stay the same**.

		Remember to move the equals sign PV Chart for placing objects	Chn draw Remember to move the equals sign Arrow cards	Remember to move the equals sign	Mr Moore says we can have 10 more minutes for Science. We usually have 115 minutes, how long will we get today?	Is Mrs Campbell correct? Explain why / why not. Thomas says "I have a money jar just for £10 notes and I have £145 saved in side it." If Thomas' jar does only have £10 notes in it is it possible for him to have £145? Explain your answer.

	Shape space and measure opportunities: Adding multiples of 10p to an amount of money.

3	2020 Guidance	3NF–1 Secure fluency in addition and subtraction facts that bridge 10, through continued practice. Year 3 document – pages 25-27 3NF–3 Apply place-value knowledge to known additive and multiplicative number facts (scaling facts by 10), for example: 80 + 60 = 140; 140 - 60 = 80. 30 x 4 =120; 120 ÷ 4 = 30. Year 3 document – pages 30 - 32

3	[Key] Add numbers mentally, including three-digit number and ones. (Recap 2 digit and ones)	Fingers Numicon Dienes Coins for 2digit and 1 digit. Multi-link cubes Bar model with cubes / dienes Remember to move the equals sign PV Chart for placing objects	Blank number line 100 square Abacus PV chart Metre ruler Images Ruler/Counting stick Chn draw Remember to move the equals sign Arrow cards	Counting on Abstract bar models, just numbers. Missing number problems Part Part Whole model Remember to move the equals sign	Word and contextual problems e.g. I have 123 pencils. James gives me 8 more. How many do I have now? Missing number in different forms, bar, objects, column Calculations that include greater than and less than symbols Money questions, cost of multiple items	I think.... Odd / Even reasoning e.g. an odd plus an odd will sum to an odd; always, sometimes, never true? Prove it! Mrs Welch thinks when you add a one digit number to any 3 digit number, only the ones change. True or False? How do you know?

3	2020 Guidance	3NF–1 Secure fluency in addition and subtraction facts that bridge 10, through continued practice. Year 3 document – pages 25-27				
3	Add numbers with up to three digits, using formal written methods of columnar addition. (Recap 2 + 2 digits)	Coins Numicon Dienes Multi-link cubes Bar model with cubes / dienes Counters with PV charts Remember to move the equals sign	Number line 100 square Abacus PV chart Metre ruler Images Ruler/Counting stick Chn draw Arrow cards Remember to move the equals sign	Counting on Abstract bar models, just numbers. Missing number problems Part Part Whole model Recording of addition (See Written Method Calculation Policy) Remember to move the equals sign	I earnt £150 pocket money last year and £22 this month. How much money have I earnt in total? Show the children six partition addition calculations. Which one have no carry digits? I want to build a Lego model that needs 400 pieces. I have 137 bricks in one tub and 357 bricks in another tub. Do I have enough?	Sam is adding two numbers in a counters place value chart: Hundreds place / Tens place / Ones place Show children a partitioned calculation for the above diagram with an error in, is it correct? Can you explain the error?
	Shape space and measure opportunities: Solve simple problems in a practical context involving addition of money of the same unit, including giving change.					
3	2020 Guidance	3NF–1 Secure fluency in addition and subtraction facts that bridge 10, through continued practice. Year 3 document – pages 25-27. 3NF–3 Apply place-value knowledge to known additive and multiplicative number facts (scaling facts by 10), for example: 80 + 60 = 140; 140 - 60 = 80. 30 x 4 =120; 120 ÷ 4 = 30. Year 3 document – pages 30-32. 3AS–2 Add and subtract up to three-digit numbers using columnar methods. Year 3 document – pages 36 – 39.				

Year 4

Year group	NC L.O.	Practical	Pictorial	Abstract	Problem Solving	Reasoning
		Make it! **SAY IT**	**Show it/Draw it!** **SAY IT**	**Read/Write it!** **SAY IT**		
4	Add numbers with up to 4 digits using the formal written methods of columnar addition where appropriate [KEY] Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why.	Coins Dienes Move the equals sign Measuring jug /scale Counters with PV charts Numicon Remember to move the equals sign	Blank number line 100 square Abacus PV chart Arrow cards Bar Model Metre ruler Images Ruler/Counting stick Measuring jug / scale Chn draw	Abstract bar models, just numbers. Missing number problems Recording of addition/columnar methods (See Written Method Calculation Policy) Part Part Whole model Moving the equals sign	Fill in the empty boxes to make the equations correct. 7 ☐ 1 + ☐ 3 ☐ = 999 7 ☐ ☐ 1 + ☐ 3 ☐ = 1000 • Desani adds three numbers together that total 7,170 They all have 4 digits. They are all multiples of 5 What could the numbers be? Prove it.	James says "If I add two four-digit whole numbers together my total will always have four digits" Do you agree? Explain your answer. Gillian says "If I add two four-digit whole numbers together it is not possible for the total to have 6 digits" Is Gillian correct? Can you prove her to be right or wrong? Ali and Sarah calculate 420 + 221 + 280 using different strategies. This is Sarah's strategy: 420 + 221 + 280 420 + 221 = 641 641 + 280 = 921 Answer = 921 This is Ali's strategy: 420 + 221 + 280 420 + 280 = 700 700+ 221 = 921 Answer = 921 Which do you prefer? Explain your reasoning. Now calculate 370 + 242 + 130 using your preferred strategy.

Write down the four relationships you can see in the bar model.

2300	1240
3540	

☐ + ☐ = ☐

☐ + ☐ = ☐

☐ − ☐ = ☐

☐ − ☐ = ☐

- A game to play for two people.
  The aim of the game is to get a number as close to 5,000 as possible.
  Each child rolls a 1-6 die and chooses where to put the number on their.
  Once they have each filled their grid, they add up their totals to see who is the closest.

	?	?	?	?
+	?	?	?	?

- All of the digits below are either a 3 or a 9. Can you work out each digit?

  7,338 = ???? + ????

Shape space and measure opportunities:	Add amounts of money to give change, using both £ and p in practical contexts
	Calculate the perimeter of simple 2-D shapes

| 4 | 2020 Guidance | 4NF–3 Apply place-value knowledge to known additive and multiplicative number facts (scaling facts by 100), for example: 8 + 6 = 14 and 14 - 6 = 8 so 800 + 600 = 1400 and 1400 - 600 = 800. 3 x 4 = 12 and 12 / 4 = 3 so 300 x 4 = 1200 and 1200 / 4 = 300. Year 4 document – Pages 32 - 35 |

Year 5

Year group	NC L.O.	Practical	Pictorial	Abstract	Problem Solving	Reasoning
		Make it! **SAY IT**	**Show it/Draw it!** **SAY IT**	**Read/Write it!** **SAY IT**		
5	[KEY] Add whole numbers with more than 4 digits, including using formal written methods (columnar addition). [KEY] Add numbers mentally with increasingly large numbers.	Coins Dienes Move the equals sign Measuring jug /scale Counters with PV charts Numicon Remember to move the equals sign	Blank number line 100 square Abacus PV chart Arrow cards Bar Model Metre ruler Images Ruler/Counting stick Measuring jug / scale Chn draw	Abstract bar models, just numbers. Missing number problems Recording of addition/columnar methods (See Written Method Calculation Policy) Part Part Whole model Moving the equals sign	65,000 | 35,000 Two car salesmen are in a competition to sell £25, 000 worth of cars in a week. James sells £14,567 worth of cars and Mark sells £9,976 worth of cars. How much did they sell in total? Did they hit their £25,000 target? A five digit number and a four digit number have a total of 25,365 Give me three possible pairs of numbers that could make this total.	There is a mistake in the following calculation. 2451 +<u>562</u> 8071 Explain the mistake and then make a correction to find the correct answer. My answer is 5,398 What's the question? Create 3 addition calculations. Did you use a strategy? Explain it.
	Shape space and measure opportunities:		Measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres Calculate different measures, including money in pounds and pence Solve comparison, **sum** and difference problems using information presented in bar charts, pictograms, tables and other graphs			
5	2020 Guidance	5NF–2 Apply place-value knowledge to known additive and multiplicative number facts (scaling facts by 1 tenth or 1 hundredth), for example: 8 + 6 = 14, 0.8 + 0.6 = 1.4, 0.08 + 0.06 = 0.14; 3 X 4 = 12, 0.3 X 4 = 1.2; 0.03 X 4 = 0.12. Year 5 document – Pages 37 - 40				

Year 6		
6	2020 Guidance	6AS/MD–2 Use a given additive or multiplicative calculation to derive or complete a related calculation, using arithmetic properties, inverse relationships, and place-value understanding.

Area of Maths = Subtraction

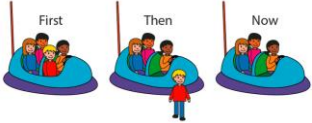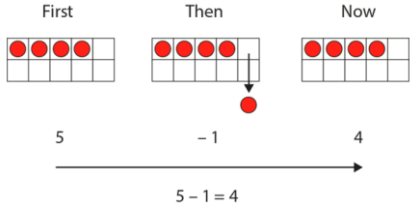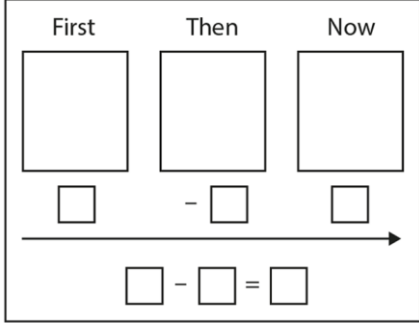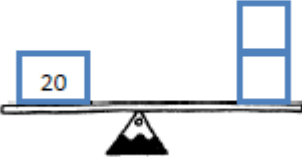| Definition: Subtraction is to take one quantity away from another. *Jenny Eather AMDFK*	Vocabulary: subtract, take away, decrease, remove, find the difference. Basic structure: minuend – subtrahend = difference (KS2 only)

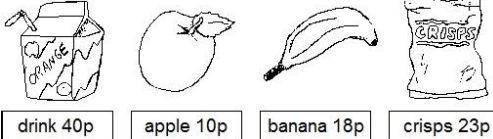| Declarative knowledge	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Subtraction Automatically recall… **Blue highlight = Roche's Specific Expectations** **Red font = Roche's Priorities for Revisiting**	Number bonds to 5 + some to 10. **Steps 1-8** Subtraction facts within 5 + some to 10.	Number bonds of 10 (Subtraction facts) Number bonds to 20 (Subtraction facts) **Steps 10-14** Odd and even numbers up to 20. Know that addition is commutative and **subtraction is not.**	Subtraction facts within 20. **Steps 10-14** Know that addition is commutative and **subtraction is not.**	Number bonds to 100 in multiples of 10 and 5.	Number bonds to 100 in ones. Number bonds to1000 in multiples of 100s and 50s.	Subtract numbers mentally with increasingly large numbers. (100s, 1000s + 10,000s) Number bonds to 1000 in multiples of 25s + 10s.	

Year 1

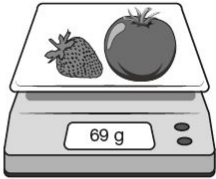| Year group:	NC L.O.	Practical	Pictorial	Abstract	Problem Solving	Reasoning
		Make it! **SAY IT**	**Show it/Draw it!** **SAY IT**	**Read/Write it!** **SAY IT**		
1	Non-stat guidance 1AS–1 Compose numbers to 10 from 2 parts. Subtraction structures (reduction), including part-wholes and first, then, now statements and models. Read, write and interpret mathematical statements involving subtraction (-) and equals (=) signs. *Solve one-step problems that involve subtraction using concrete objects and pictorial*	Numicon (Place the minuend down, subtrahend on top, what is the difference?	 Can you describe what is happening in the picture above? Can you write a number sentence to match? 5 – 1 = 4	Can you draw these calculations using tens frames? 4 – 1 = 6 – 2 = 9 – 5 =	Can you write your own subtraction story using first, then, now? 	Look at this image. Mr Moore says: "This shows that 3 + 0 = 3" Mrs Gardner says: "This shows that 3 – 0 = 3" Who is correct?

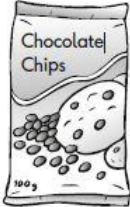|						
	representations, and missing number problems such as 11 = ? + 9.					
1	Represent and use number bonds and related subtraction facts within 20. *Solve one-step problems that involve subtraction using concrete objects and pictorial representations, and missing number problems such as 11 = ? + 9.*	Objects Fingers (for 10s, partners for 20s) Coins (1p and 10p) Numicon Dienes Unifix cubes Bar model with cubes / dienes Hoops and Bean bags for Part Part Whole Remember to Move the equals sign	Number line with numbers on 20 rectangle (a hundred square cut) Images Ruler/Counting stick Chn draw Add facts table Remember to Move the equals sign	Counting back (to get to 0 or 10) Abstract bar models, just numbers. Missing number problems Moving the equals sign	How many different ways can you make 10 using subtraction? Procedural variation: 20 – 10 = 10 19 – 9 = 10 18 – 8 = 10 Here's a set of Numicon. Make the numbers 14, 17 and 20. What do you need to take away from these to get to ten? Can you write these as calculations? Look at the numbers. 15 7 16 8 Use two of these numbers to make this correct. ☐ – ☐ = 7	Fill in the missing numbers. 11 + ☐ = 20 20 - ☐ = 11 Can you make two more number sentences using the same three numbers? How many ways can you complete the see-saw? 20 Touch on commutative law during reasoning

| 1 | Subtract one-digit and two-digit numbers within 20, including zero. *Solve one-step problems that involve subtraction using concrete objects and pictorial representations, and missing number problems such as 11 = ? + 9.* | Objects

Fingers (for 10s, partners for 20s)

Coins (1p and 10p)

Numicon

Dienes

Unifix cubes

Bar model with cubes / dienes

Hoops and Bean bags for Part Part Whole

Remember to Move the equals sign | Number line with numbers on

20 rectangle (a hundred square cut)

Images

Ruler/Counting stick

Chn draw

Add facts table

Remember to Move the equals sign | Counting on

Abstract bar models, just numbers.

Missing number problems

Recording of subtraction

Moving the equals sign | Subtracting and ordering groups of calculations.

Mark my work

Contextual problems e.g. I have 8 eggs, how many more do I need to fill an egg box with twelve spaces.

Missing digit problems e.g. 1□ + 4 = 17 with resources to help

Complete this subtraction table: | I have some number cards:

13, 15, 12, 10, 17

Which two number cards have a difference of 4?

James says: If I subtract any one of the cards from another I will get a number smaller than the number on either card.

Is he correct? Try it with counters to prove your answer.

Mark my work, explain the errors

11 – 2 = 10, explain why this is wrong

I think the following is true:

15 – 4 = 11

Is this correct? Prove your answer using resources?

If I subtract an odd number from another odd number I will always get an odd number.

Is this statement true? Prove your answer using resources.

. |

Year 2						
Year group :	NC L.O.	Practical	Pictorial	Abstract	Problem Solving	Reasoning
2		**Make it!** **SAY IT**	**Show it/Draw it!** **SAY IT**	**Read/Write it!** **SAY IT**		
2	2020 Guidance	2NF–1 Secure fluency in addition and subtraction facts within 10, through continued practice. Year 2 document – Pages 16 - 17				
2	Subtract numbers using concrete objects, pictorial representations, and mentally, including a two-digit number and ones. Solve problems with subtraction using concrete objects and pictorial representations, including those involving numbers, quantities and measures. Solve problems with subtraction applying their increasing knowledge of mental and written methods.	Fingers Coins up to £1 Numicon Dienes Unifix cubes Bar model with cubes / dienes Remember to move the equals sign	Blank Number line 100 square Abacus PV chart Metre ruler Images Ruler/Counting stick Chn draw Arrow cards Remember to move the equals sign	Counting on Abstract bar models, just numbers. <table><tr><td colspan="2">25</td></tr><tr><td>7</td><td></td></tr></table> Missing number problems Recording of subtraction Column method (just for layout.) Moving the equals sign	There are 20 balloons. 7 balloons fly away. How many balloons are left? Ben puts 15 buttons on a table. He hides some of them under his hand. How many buttons is Ben hiding? Bethan has 6p. She wants to buy a drink.	Odd / Even reasoning e.g. an odd number subtract another odd number will have an even difference; always, sometimes, never true? "The difference between two even numbers will always be odd" True or false? I am thinking of a two digit number, if I subtract ones from it, I will only need to change the ones digit. True or false? Explain your answer.

					How much more money does she need?	
	Show that subtraction of one number from another **cannot** be done in any order (non-commutative)				drink 40p apple 10p banana 18p crisps 23p	
2		2AS–3 Add and subtract within 100 by applying related one-digit addition and subtraction facts: add and subtract only ones or only tens to/from a two-digit number. Year 2 document - Pages 23 - 26				
2	Subtract numbers using concrete objects, pictorial representations, and mentally, including a two-digit number and tens Solve problems with subtraction using concrete objects and pictorial representations, including those involving numbers, quantities and measures Solve problems with subtraction applying their increasing knowledge of mental and written methods. Show that subtraction of	Fingers Coins up to £1 (Particularly 10ps) Numicon Dienes Unifix cubes Bar model with cubes / dienes Remember to move the equals sign	Blank Number line 100 square Abacus PV chart Metre ruler Images Ruler/Counting stick Chn draw Arrow cards Remember to move the equals sign	Counting on Abstract bar models, just numbers. 37 20 Missing number problems Recording of subtraction Column method (just for layout.) Moving the equals sign	Word and contextual problems Missing number in different forms, bar, objects, column, on a hundred square. 19 is 10 less than ☐ Calculations that include greater than and less than symbols Money questions, multiples of 10 more than a number e.g. an apple cost 45p, a banana costs 20p less, how much does a banana cost?	Harry says "I have 45 pence in my pocket. If I give out 10p to each of my friends eventually my pocket will be empty" Do you agree with Harry? Explain your answer.

2	one number from another **cannot** be done in any order (non-commutative)					
2	2020 Guidance	2AS–3 Add and subtract within 100 by applying related one-digit addition and subtraction facts: add and subtract only ones or only tens to/from a two-digit number. Year 2 document - Pages 23 - 26				
2	[Key] Subtract numbers using concrete objects, pictorial representations, and mentally, including two two-digit numbers. Solve problems with subtraction using concrete objects and pictorial representations, including those involving numbers, quantities and measures Solve problems with subtraction applying their increasing knowledge of mental and written methods. Show that subtraction of one number from another **cannot** be done in any order	Fingers Coins up to £1 Numicon Dienes Unifix cubes Bar model with cubes / dienes Remember to move the equals sign	Blank Number line 100 square Abacus PV chart Metre ruler Images Ruler/Counting stick Chn draw Arrow cards Remember to move the equals sign	Counting on Abstract bar models, just numbers. 44 23 Missing number problems Recording of subtraction Column method (just for layout.) Moving the equals sign	The strawberry weighs **24** grams. 24 g The strawberry and tomato together weigh **69** grams. 69 g What does the tomato weigh?	If I subtract one two-digit number from another the difference will always be a two-digit number. Always/Sometimes/Never Ben works out the answer to this 57 – 16 = Ben gets the answer 11. Ben thinks he is incorrect. Can you check his answer and explain where he went wrong?

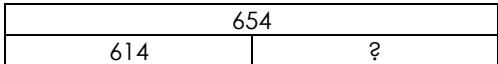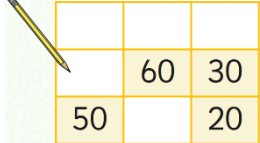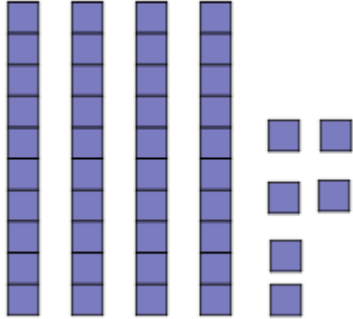| 2	(non-commutative)					
2	2020 Guidance	2AS–4 Add and subtract within 100 by applying related one-digit addition and subtraction facts: add and subtract any 2 two-digit numbers. Year 2 document - Pages 27 - 29				
2	[EXS] [KEY] Subtract any 2 two-digit numbers using an efficient strategy, explaining their method verbally, in pictures or using apparatus (e.g. 72-17). Solve problems with addition using concrete objects and pictorial representations including those involving numbers, quantities and measures. Solve problems with addition and applying their increasing knowledge of mental and written methods. Show that addition of two numbers can be done in any order (commutative)	Dienes Unifix cubes Bar model with cubes / dienes Remember to move the equals sign	Number lines Hundred square	Missing number problems Part Part Whole model Recording of addition no. sentences Bar model	Ben has £19 A game costs £25 How much more money does Ben need to buy the game? Jungle Game £25 There are 100g of chocolate chips in the bag. Sita uses 25g. Ben uses 35g. How many grams of chocolate chips are left in the bag? Chocolate Chips	Use these signs: — + = You can use each sign more than once. Write signs in the boxes to make these correct. 25 ☐ 19 ☐ 6 15 ☐ 15 ☐ 0

| 2 | 2020 Guidance | 2AS–4 Add and subtract within 100 by applying related one-digit addition and subtraction facts: add and subtract any 2 two-digit numbers. Year 2 document - Pages 27 - 29 | | | | |

Year 3

Year group:	NC L.O.	Practical	Pictorial	Abstract	Problem Solving	Reasoning
		Make it! **SAY IT**	**Show it/Draw it!** **SAY IT**	**Read/Write it!** **SAY IT**		
3	[Key] Subtract numbers mentally, including three-digit number and hundreds.	Coins, subtracting £1 Numicon Dienes Multi-link cubes Bar model with cubes / dienes Moving the equals sign	Number line 100 square Abacus PV chart Metre ruler Images Ruler/Counting stick Chn draw Moving the equals sign	Counting back Abstract bar models, just numbers. Missing number problems Recording of addition Place value cards Moving the equals sign	Word and contextual problems Missing number in different forms: bar, objects, on a hundred square. <table><tr><td colspan="3">995</td></tr><tr><td>300</td><td>200</td><td>?</td></tr></table> James makes the number 464 using arrow cards. He wants to take away one hundred from his number and make the answer using arrow cards. Circle the arrow card that he needs. 3 30 300 What is Mr Moore's new number?	True or false: If I count back in hundreds from 350 I will say 100. Explain your answer. James completed the question below and his teacher marked it as incorrect: 733 - 200 = 713 Can you explain the mistake James has made?
	Shape space and measure opportunities: Adding pounds to an amount of money. Adding metres to a number of centimetres.					

3	2020 Guidance	3NF–1 Secure fluency in addition and subtraction facts that bridge 10, through continued practice. Year 3 document – pages 25-27. 3NF–3 Apply place-value knowledge to known additive and multiplicative number facts (scaling facts by 10), for example: 80 + 60 = 140; 140 - 60 = 80. 30 x 4 =120; 120 ÷ 4 = 30. Year 3 document – pages 30 – 32.				
3	[Key] Subtract numbers mentally, including three-digit number and tens.	Coins particularly 10p Numicon Dienes Multi-link cubes Bar model with cubes / dienes Moving the equals sign	Number line 100 square Abacus PV chart Metre ruler Images Ruler/Counting stick Chn draw Moving the equals sign	Counting back Abstract bar models, just numbers. Missing number problems Recording of addition Place value cards Moving the equals sign	Word and contextual problems Missing number in different forms: bar, objects, on a hundred square. Missing number squares e.g. Make 100: Calculations that include greater than and less than symbols Money questions, multiples of 10 more than a number e.g. a laptop costs £354, a printer costs £90 less, how much does a printer cost?	Sarah has the following Dienes Sarah says "If I keep taking away tens I will end up with zero" Is Sarah correct? Explain your answer. Show them a couple of calculations - What answer is not correct – how do you know?

Missing number table:

654	
614	?

Make 100 square:

	60	30
50		20

Shape space and measure opportunities: Subtracting multiples of 10p to an amount of money.						
3	2020 Guidance	3NF–1 Secure fluency in addition and subtraction facts that bridge 10, through continued practice. Year 3 document – pages 25-27 3NF–3 Apply place-value knowledge to known additive and multiplicative number facts (scaling facts by 10), for example: 80 + 60 = 140; 140 - 60 = 80. 30 x 4 =120; 120 ÷ 4 = 30. Year 3 document – pages 30 – 32.				

| 3 | [Key] Subtract numbers mentally, including three-digit number and ones. (Recap 2 digit and ones) | Fingers

Numicon

Dienes

Coins for 2digit and 1 digit.

Multi-link cubes

Bar model with cubes / dienes

Moving the equals sign

PV Chart for placing objects | Number line

100 square

Abacus

PV chart

Metre ruler

Images

Ruler/Counting stick

Chn draw

Moving the equals sign

Place value cards | Counting back

Abstract bar models, just numbers.

Missing number problems

Moving the equals sign | Word and contextual problems

Missing number in different forms, bar, objects, column

Calculations that include greater than and less than symbols

Money questions, cost of multiple items

There are 231 rulers in the school cupboard. Miss Goatman takes 4 and Mrs Welch takes 8. How many rulers are left in the cupboard? | I think, prove it.

True or false:

Odd number – Odd number = Odd number

Even number – Odd number = Odd number

Even number – Even number = Even number

Even number – Odd number = Even number

Explain your choices and give an example for each statement.

Here are two questions:

239 – 7 = ?   237 – 9 = ?

Which one is more difficult? Explain your reasons. |
| 3 | 2020 Guidance | 3NF–1 Secure fluency in addition and subtraction facts that bridge 10, through continued practice. Year 3 document – pages 25-27

3NF–3 Apply place-value knowledge to known additive and multiplicative number facts (scaling facts by 10), for example: 80 + 60 = 140; 140 - 60 = 80. 30 x 4 =120; 120 ÷ 4 = 30. Year 3 document – pages 30-32 | | | | |

3	Subtract numbers with up to three digits, using formal written methods of columnar subtraction.	Coins
		
		Numicon
		
		Dienes
		
		Multi-link cubes
		
		Bar model with cubes / dienes
		
		Moving the equals sign
		
		Counters with PV charts
			Number line
			
			100 square
			
			Abacus
			
			PV chart
			
			Metre ruler
			
			Images
			
			Ruler/Counting stick
			
			Chn draw
			
			Arrow cards
			
			Moving the equals sign
				Counting back
				
				Abstract bar models, just numbers.
				
				Missing number problems
				
				Recording of subtraction
				
				Moving the equals sign
					I earn £345 pocket money last year but spent £85 this week. How much money have I got left?
					
					A book has five stories in it. This is the contents page.
					
					Contents
					page
					Rocket Ship 5
					Night Journey 17
					Secret Palace 25
					Jack 41
					Deep Water 59
					
					Deep Water finishes on page 68
					
					Which is the longest story?
						Sam saved £342 in his bank account. He spent £282. He makes the calculation below to give him a remaining amount of £140.
						
						   3 4 2
						- 2 8 2
						   1 4 0
						
						Do you agree with Sam's calculation?
						
						Why / Why not?
						
						If you think it is incorrect, can you correct it?

Shape space and measure opportunities: Solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change

3	2020 Guidance	3NF–1 Secure fluency in addition and subtraction facts that bridge 10, through continued practice. Year 3 document – pages 25-27. 3NF–3 Apply place-value knowledge to known additive and multiplicative number facts (scaling facts by 10), for example: 80 + 60 = 140; 140 - 60 = 80. 30 x 4 =120; 120 ÷ 4 = 30. Year 3 document – pages 30 – 32. 3AS–2 Add and subtract up to three-digit numbers using columnar methods. Year 3 document – pages 36 – 39.

Year 4

Year group:	NC L.O.	Practical	Pictorial	Abstract	Problem Solving	Reasoning
		Make it! **SAY IT**	**Show it/Draw it!** **SAY IT**	**Read/Write it!** **SAY IT**		
4	Subtract numbers with up to 4 digits using the formal written methods of columnar addition where appropriate. [KEY] Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why.	Coins Dienes Bar model Move the equals sign Measuring jug /scale Abacus Arrow Cards	Number line 100 square Abacus PV chart Arrow cards Metre ruler Images Ruler/Counting stick Measuring jug / scale Chn draw	Abstract bar models, just numbers. Missing number problems Recording of subtraction Place value cards Part part whole model Moving the equals sign Columnar methods	Complete this bar model using only subtraction: | 4000		
---	---	---
2000	?	634	 Mrs George has 2098 pencils in the office cupboard. Mr Moore takes 133 pencils. How many does Mrs George have now? As Mr Moore leaves with his pencils Mrs Powell comes into the office and takes 44 pencils. How many pencils does Mrs George have now? Ms Palk has £4,012 in her class budget and Mrs Gardner has £6,257 in her class budget What is the **difference** between the two budgets?	Harry says: "When you do a subtraction the difference is always smaller than the number you start with, for example 29 – 15 = 14, 14 is smaller than 29." Is Harry always, sometimes or never true? Explain your answer. Complete the calculation ⬚04 - 2⬚1 34⬚

					Fill in the missing numbers. $352 + \boxed{} = 480$ $70 + 99 + \boxed{} = 270$ $\boxed{} - 55 = 84$ $\boxed{} - 3000 = 600$		
	Shape space and measure opportunities: Add amounts of money to give change, using both £ and p in practical contexts Calculate the perimeter of simple 2-D shapes						
4	2020 Guidance	4NF–3 Apply place-value knowledge to known additive and multiplicative number facts (scaling facts by 100), for example: 8 + 6 = 14 and 14 - 6 = 8 so 800 + 600 = 1400 and 1400 - 600 = 800. 3 x 4 = 12 and 12 / 4 = 3 so 300 x 4 = 1200 and 1200 / 4 = 300. Year 4 document – Pages 32 - 35					

Year 5						

Year group :	NC L.O.	Practical	Pictorial	Abstract	Problem Solving	Reasoning
		Make it! **SAY IT**	**Show it/Draw it!** **SAY IT**	**Read/Write it!** **SAY IT**		
5	[KEY] Subtract whole numbers with more than 4 digits, including using formal written methods (columnar subtraction). [KEY] Subtract numbers mentally with increasingly large numbers. Solve subtraction multi-step problems in contexts, deciding which operations and	Coins Dienes Bar model Move the equals sign Measuring jug /scale Abacus	Number line 100 square Abacus PV chart Arrow cards Metre ruler Images Ruler/Counting stick Measuring jug / scale Chn draw	Abstract bar models, just numbers. Missing number problems Recording of addition Moving the equals sign Part part whole model Columnar	A five digit number and a four digit number have a difference of 4,365 Give me three possible pairs of numbers. Adam earns £48 650 a year. He has to take a pay cut of £16 125. How much is his new salary?	My answer is 6,786 What's the question? Create 3 subtraction calculations. Did you use a strategy? Explain it. There are mistakes in the following calculations. Explain the mistake, then make a correction to find the correct answer. 782 623 -435 - 332 353 311 A stadium has a capacity of 60 000 It needs to sell 35 000 tickets for a concert to go ahead. The concert sells out, but then 45 250 people are taken ill and want their money

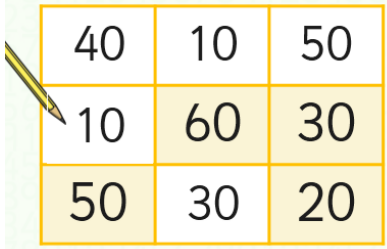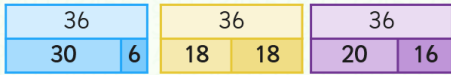|						back. Will the concert be able to go ahead? Explain your answer.
	methods to use and why.					
	Shape space and measure opportunities:		Measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres Calculate different measures, including money in pounds and pence Solve comparison, sum and **difference** problems using information presented in bar charts, pictograms, tables and other graphs			
5	2020 Guidance	5NF–2 Apply place-value knowledge to known additive and multiplicative number facts (scaling facts by 1 tenth or 1 hundredth), for example: 8 + 6 = 14, 0.8 + 0.6 = 1.4, 0.08 + 0.06 = 0.14; 3 X 4 = 12, 0.3 X 4 = 1.2; 0.03 X 4 = 0.12. Year 5 document – Pages 37 - 40				

Area of Maths = Addition and Subtraction combined

Year 1

Year group:	NC L.O.	Practical	Pictorial	Abstract	Problem Solving	Reasoning
		Make it! **SAY IT**	**Show it/Draw it!** **SAY IT**	**Read/Write it!** **SAY IT**		
1	Demonstrate an understanding of inverse relationships involving addition and subtraction (e.g. if 3 + 2 = 5, then 5 - 2 = 3). (Addition and Subtraction)	Coins Dienes Move the equals sign Tens frames Numicon	Drawing more counters / crossing out counters. Filling tens frames.	Missing calculations: 10 - ____ = 4 _____ - 6 = 11 9 + _____ = 15 Fill in the missing numbers. 5 = 5 + 0 5 = 4 + ☐ 5 = 3 + ☐ 5 = 2 + ☐ 5 = 1 + ☐ 5 = 0 + ☐ Fill in the missing numbers to make each pair of cards total 17 One pair is done for you.	Put numbers in the shapes to add to 12 ○ + △ = 12 Complete the bar models. 17 / 6 12 / 4 Write the fact family for each bar model. Use the numbers 8, 7 and 15 to draw your own bar model. Write the fact family for your bar model.	

				10 7 9 ▢ ▢ 6		

Year 2						
Year group:	NC L.O.	Practical	Pictorial	Abstract	Problem Solving	Reasoning
		Make it! **SAY IT**	**Show it/Draw it!** **SAY IT**	**Read/Write it!** **SAY IT**		

| 2 | Solve problems with addition and subtraction using concrete objects and pictorial representations, including those involving numbers, quantities and measures. | Coins

Dienes

Move the equals sign

Unifix

Numicon | Blank Number line

100 square

Abacus

PV chart

Arrow Cards

Bar Model

Metre ruler

Images

Ruler/Counting stick

Chn draw

Move the equals sign | Missing Number problems.

Pattern finding E.g. 2 + 6 = 8 and 20 + 60 = 80

Move the equals sign

Greater than less than signs | Make 100 and/or tricky triangles.

How many ways can you split a bar model to make 20: (Example below is with a different number.)

The number 36 can be split in many different ways:

36 / 30 / 6 — 36 / 18 / 18 — 36 / 20 / 16

There are 76 cars in the car park.

18 more cars go into the car park.

Then 35 cars go out.

How many cars are in the car park now? | Kim says, If I know that 3 + 7 = 10. I know 30 + 70 = 100. True or False. Prove it! |
| 2 | [Key] Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems. | Coins

Dienes

Move the equals sign

Unifix

Numicon | Blank Number line

Bar Model

100 square

Abacus

PV chart

Arrow Cards

Metre ruler

Images | Missing number calculations.

Fact families

Move the equals sign | Mark my Work (Use the inverse to check.)

I think of a number…. What was my number to start?

Addition and Subtraction pyramids | Charlie says: To work out a missing number you just do the inverse operation. E.g. For 23 + ? = 30 you would do 30 x 23 = ?

True or False – How do you know? |

			Ruler/Counting stick Chn draw Move the equals sign			

Year 3

Year group:	NC L.O.	Practical	Pictorial	Abstract	Problem Solving	Reasoning
		Make it! **SAY IT**	**Show it/Draw it!** **SAY IT**	**Read/Write it!** **SAY IT**		

| 3 | Estimate the answer to a calculation and use inverse operations to check answers. | Coins

Dienes

Move the equals sign | Number line

100 square

Abacus

PV chart

Arrow Cards

Metre ruler

Images

Ruler/Counting stick

Chn draw

Move the equals sign | Move the equals sign.

32 + 59

My Estimate: □ + □

Calculate the addition below then use an inverse calculation to check it:

(Use the formal method your class are used to.)

  48
+ 35
――――
――――

  73
- 27
――――
――――

-

+ | John wants to buy 3 video games costing £22 each. He has a £50 note to spend.

Give an **estimated** calculation to show that John **does not** have enough money.

Check these bar models for accuracy:

\| 350 \| 350 \|
\| 600 \|

\| 250 \|
\| 137 \| 113 \|

\| 500 \|
\| 250 \| 120 \| 230 \| | Niamh estimates the answer to 489 + 109 as shown: 489 + 109 = 500

Do you agree with Niamh? Explain your answer.

Estimate how many pencils there are in Year 3 and Year 4. Explain the numbers you chose for your estimate |
| 3 | Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction. | Coins

Dienes

Move the equals sign | Number line

100 square

Abacus

PV chart

Arrow Cards

Metre ruler

Images

Ruler/Counting stick | **Missing Number**

One-digit 1 + □ = 2
Two-digit 57 - □ = 25
Three-digit □ + 953 = 1806

Complete this calculation: | Sally buys a drink for 35p and pays with a £1 coin. How much change does she receive?

There are 250 pupils in a school. 162 are in Key Stage 2 and the remainder are in Foundation Stage and Key Stage 1. How many pupils are in in Foundation Stage and Key Stage 1?

Seb has a box of 120 cubes.

He uses some of the cubes to build a tower. 77 cubes are left over. | Dev has three discs.

8 7
7

Each disc has a 7 on one side and an 8 on the other side. |

| | | | Chn draw

Move the equals sign |

Move the equals sign | How many cubes has he used?

Seb has 77 cubes left over.

He builds two more towers.

One tower uses 18 cubes and the other uses 35 cubes.

How many of his 77 cubes has he got left now? | He spins all the discs and adds the three scores together.

How many different totals can he get using the three discs?

Dev adds another disc. How many different totals can he get now? |

Year 4

Year group:	NC L.O.	Practical	Pictorial	Abstract	Problem Solving	Reasoning
		Make it! **SAY IT**	**Show it/Draw it!** **SAY IT**	**Read/Write it!** **SAY IT**		
4	[KEY] Solve addition and subtraction two-step problems in	Coins Dienes	Number line 100 square Abacus	Abstract bar models, just numbers. Missing number problems	A supermarket has 1284 loaves of bread at the start of the day. During the day, 857 loaves are sold and a further 589 loaves are delivered.	Here is a number sentence: 350 + 278 + 250 Add the numbers in different orders to find the

	contexts, deciding which operations and methods to use and why.	Move the equals sign Measuring jug /scale	PV chart Arrow Cards Metre ruler Images Ruler/Counting stick Measuring jug / scale Chn draw Move the equals sign	Recording of subtraction Part part whole model Moving the equals sign Columnar methods Work out the value of each shape ○ + △ = 16 ○ + ○ + △ = 25 ○ + △ + □ = 30	How many loaves of bread are there at the end of the day?	answer. Is one order of adding easier? Why? Sam is trying to work out his change from a twenty pound note. He spent £7 on a lunchbox and £6 on a pencil case. Explain how you would work out his change. Is there more than one method?

4	Estimate and use inverse operations to check answers to a calculation. [KEY] Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why.	Coins Dienes Move the equals sign Measuring jug /scale	Number line 100 square Abacus PV chart Arrow Cards Metre ruler Images Ruler/Counting stick Measuring jug / scale Chn draw	Abstract bar models, just numbers. Missing number problems Recording of addition Place value cards Moving the equals sign Part part whole model Columnar Word problems	• Hazel fills in this bar model | 2821	
2178		 She makes the following calculations from it. $2,821 - 2,178 = 757$ $2,821 - 757 = 2,178$ $2,178 + 757 = 2,821$ $757 + 2,178 = 2,821$ Is she correct? Explain why. Julie has 1,578 stamps. Heidi has 2,456 stamps. How many stamps do they have altogether? Show how you can check your answer using the inverse.	• With a friend, discuss before working each out which will be greater or smaller than the other. Why do you think this? What key facts did you use? $3,567 - 567$ ◯ $3,677 - 344$ $4,738 + 36$ ◯ $4,738 + 18 + 18$ $2,139 - 85 + 27$ ◯ $2,151 - 86 + 30$

Year 5

Year group:	NC L.O.	Practical	Pictorial	Abstract	Problem Solving	Reasoning
		Make it! **SAY IT**	**Show it/Draw it!** **SAY IT**	**Read/Write it!** **SAY IT**		
5	Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.	**MOVED FROM A+S in 23-24**	Number line PV chart	Abstract bar models, just numbers. Missing number problems Recording of subtraction Part part whole model Moving the equals sign Columnar methods	At the start of April, a shop had 15,000 games. The shop sold: • 7,918 games in April • 4,624 games in May. How many games did the shop have left at the end of May? One Saturday afternoon, a total of 234,869 people attended three rugby matches. • 80,978 people attended match 1 • 72,319 people attended match 2 How many people attended match 3? Adam buys 4 pens and a ruler and pays £4.75 altogether.	A drink and a box of popcorn together cost 90p. 2 drinks and a box of popcorn together costs £1.45 What does a box of popcorn cost? Explain how you got your answer.
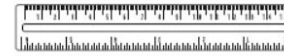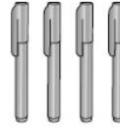
				Jack buys 2 pens and pays £1.98 altogether. How much does a ruler cost?	

| 5 | Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy.

[KEY] Add numbers mentally with increasingly large numbers.

Solve addition multi-step problems in contexts, deciding which operations and methods to use and why. | Coins

Dienes

Number line with counters (Filled and blank) | Number line (Filled and blank)

Tally chart

Images (coins, dienes, abacus, Arrow Cards)

Measuring jug / scales | Greater than and less than.

Round 4987 to the nearest a. 10 b. 100 c. 1000

12,458 rounded to the nearest [blank] is 12,000 | There are 1,231 people on an aeroplane. 378 people have not ordered an inflight meal.

How many people have ordered the inflight meal?

Give your answer to the nearest hundred.

I buy items from a shop costing £99, £104 and £47.

Roughly how much money will I need to find while I'm queuing up to pay?

Liam, Sarah and Amy buy lunch at a salad bar.

salad bar
Salads / Desserts
cheese £1.20 / banana 25p
egg 90p / apple pie 50p
tuna £1.60 / yogurt 35p

Liam has £2.50 to spend.

He buys a tuna salad and an apple pie.

How much money has he got left? | True or false.

4,999-1,999 = 5,000-2,000

Explain how you know. Did you need to do a formal method?

Martin is measuring his room for a new carpet.

It has a width of 8m and a length of 12m.

He rounds his measurements to the nearest 10 metres.

Will he have the right amount of carpet?

Explain your reasoning. |

Year 6					

Year group:	NC L.O.	Practical	Pictorial	Abstract	Problem Solving	Reasoning
		Make it! **SAY IT**	**Show it/Draw it!** **SAY IT**	**Read/Write it!** **SAY IT**		
6	[EXS] [KEY] Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.	Coins Dienes Move the equals sign Measuring jug /scale	Number line 100 square Abacus PV chart Arrow Cards Metre ruler Images Ruler/Counting stick Measuring jug / scale Chn draw	Abstract bar models, just numbers. Missing number problems Recording of addition Place value cards Moving the equals sign Part part whole model Columnar Written word problems	Adam earns £37,566 pounds a year. Sarah earns £22,819 a year. How much do they earn altogether? They have to pay £7,887 income tax per year. How much are they left with after this is taken off? The number in **A** is **twice** the number in **D**. The number in **B** is **5 less** than the number in **C**. The number in **D** is **10 more** than the number in **B**. Write the missing numbers in this diagram. A 50 B C D Emily, Ben and Nisha take part in a	Leon and Sara each started with **different** numbers. Leon added **five** to his number. Sara **subtracted** 8 from her number Leon and Sara both get the **same** answer. What numbers could they have started with? Can you give another pair? Can you find a rule to solve this problem?

				sponsored swim to collect money for charity. Emily collects £2.75 more than Nisha. Ben collects £15 Nisha collects £7 less than Ben. Altogether how much money do the three children collect?	