Roche CP School Maths Policy

Area of Maths = Place Value

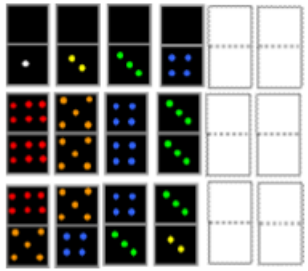
Definition: Place value is the value of a digit depending on its place in a number.	**Vocabulary:** Ones, tens, hundreds, thousands, ten thousands, hundred thousands, million, tenths, hundredths, thousandths, digit, number, numeral, forwards, backwards, count, read, write, greater than, less than, equal, more, less, decimal point, compare, order, estimate, round, number line,

Colour code: **Blue fill** = 2020 non-statutory guidance linked to objective

Green fill = Opportunities to introduce / consolidate shape, space and measure concepts.

Declarative knowledge	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Place Value	One ten is equivalent to ten ones.	One ten is equivalent to ten ones. Declare numbers 0-20 as odd or even	One ten is equivalent to ten ones. One hundred is equivalent to ten tens and one hundred ones. Declare numbers 0-100 as odd or even.	One hundred is equivalent to ten tens and one hundred ones. An amount of hundreds can be expressed as an amount of tens e.g 200 = twenty tens One thousand is equivalent to ten hundreds, one hundred tens and one thousand ones. Roman Numerals: I = 1 V = 5 X = 10 Declare numbers 0-1,000 as odd or even.	One thousand is equivalent to ten hundreds, one hundred tens and one thousand ones. Roman Numerals: I = 1 V = 5 X = 10 L = 50 C = 100 Declare any given number as odd or even.	Powers of ten can be expressed as multiples of smaller powers of 10 e.g 10,000 = 1,000 x 10 = 100 x 100 = 10 x 1,000 = 10,000 x 1 Roman Numerals: I = 1 V = 5 X = 10 L = 50 C = 100 D = 500 M = 1,000 Declare any given number as odd or even.	

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**		
	Number and Place Value map 7 days: • Count to and across 20 • identify one more and one less than a number between 1 and 20 • Count, read and write numbers up to 20 in numerals and words • *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.* 7 days: • Count to and across 30 • identify one more and one less than a number between 1 and 30 • Count, read and write numbers up to 30 in numerals. • *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.* 7 days: • Count to and across 50 • identify one more and one less than a number between 1 and 50 • Count, read and write numbers up to 50 in numerals. • *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.* 7 days: • Count to and across 100 • identify one more and one less than a number between 1 and 100 • Count, read and write numbers up to 100 in numerals. • *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.*					
1	Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number	Objects Fingers Coins (1p) Numicon	Number line 100 Square Images Ruler/Counting stick	Missing no. sequences (Written + Oral) Missing no.s on a 100 square/parts of a 100 square	Sharing 2 sets of objects or images. What's the same? What's different? Close your eyes and listen to how many pennies I drop in this tin.	I am going to count on from 20, will I say the number 18? Convince me! I am going to count backwards from 20, how

	Notes: Constantly build up the numbers. *Link to topic (The big build)* *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.*	Dienes Link to PE – counting jumps, steps etc... Shapes (Circles + Ovals) Show me___ cubes. Number songs Start from different starting numbers not always from 0 or 100.	Chn draw Draw ___ circles. Sing number rhymes: (ten green bottles, five little ducks, ten fat sausages, five little aliens, five speckled frogs etc.) Counting ITP Start from different starting numbers not always from 0 or 100.	Missing no.s on a number line. Pattern finding Start from different starting numbers not always from 0 or 100.	What number does Count Crow finish on if I start on 23 and count back?  What are the next 2 numbers in these set of dominoes? Read: One is a Snail, Ten is a Crab by April Pulley Sayre.	many steps will it take to reach 0? Look at my number sequence: 23, 24, 25, 27, 28, 29. Spot the mistake! I think I dropped X amount of pennies in the tin. Right, Wrong or Not Sure. How do you know?
	Shape space and measure opportunities: Adding sides to a shape					
	2020 Guidance	1NPV–1 Count within 100, forwards and backwards, starting with any number. Year 1 document – Page 11-13				
1	Given a number, identify one more and one less. *Notes: Stick with the numbers you've been counting to.* *Progression:* *1: 0-20* *2: 0-30* *3: 0-50* *4: 0-100* *Identify and represent numbers*	Objects Fingers Coins Numicon Dienes Roll a Dice	Arrow cards Number line Number cards 100 Square Images Ruler/Counting stick Chn draw Make a number using no. card. What is one more and one less?	Calculations e.g. 21 + 1 = ? 32 – 1 = ? ? = 43 + 1 ? = 17 – 1 ? + 1 = 31 ? – 1 = 29 ? is one more than 56 ? is one less than 59	? is one more than? ? is one less than? (Children fill in their own nos.) Tom thought of a number. One more than her number is 34. What was her number? Sam thought of a number. 10 less than his number is 67. What was his number? True or False? One more than 6 is the same as 1 less than 8? How do you know? Harry says 1 less is the same as take away 1. One more is the same as adding 1. Is he right?	I think 1 less than 29 is 30. Am I right? Prove it! Pattern finding: 17 + 1 = 18 + 1 = 19 + 1 = What pattern do you notice? Can you complete the next 5? Emily says: I am 1 year older than my sister. My sister is one year older than my brother. My brother is 7. How old am I? Use the number cards 0-10.

	using objects and pictorial representations including the number line, and use the language of: equal to, more than, less than (fewer), most, least.				Prove it!	How many ways can you complete the gaps below? ____ is 1 more than _____ ____ is 1 more than _____ ____ is 1 more than _____ ____ is 1 less than _____ ____ is 1 less than _____ ____ is 1 less than _____
	Shape space and measure opportunities: Add a side / take a side from a shape and join the remaining, what shape do you have now?					
	2020 Guidance	1NPV–2 Reason about the location of numbers to 20 within the linear number system, including comparing using < > and = Year 1 document – Pages 13-16				
1	Count, read and write numbers to 100 in numerals. Read and write numbers from 1 to 20 in numerals and words. *Notes: Do the writing part in spellings / spelling bee* *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.*	Objects Fingers Numicon Dienes Coins + Notes Idea – Practical carousel for writing e.g. sand, crayons, paint, chalk, graffiti walls etc...	Arrow cards Number line 100 Square Images Ruler/Counting stick Chn draw Flash cards – digits to 100 + words to 20	Spelling words – drip feed throughout the year. Annual Spelling Bee – One of the 6 dedicated to words. Wordsearch.	Can you match up the statements to the boxes? nine 5 seven A smaller number than 6. An odd number. A bigger number than 8.	I think these all represent the number 11. Am I right? eleven 11 10 + 1 20 – 8 

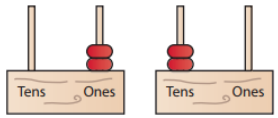
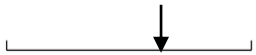
1	Count in multiples of twos, fives and tens. Identify and represent numbers using objects and pictorial representations including the number line, and use the language of: equal to, more than, less than (fewer), most, least.	Objects Fingers Numicon Dienes Coins (2p, 5p, 10p, £5+£10 notes) Shapes (Semi-circle, pentagons and decagons.)	Number line 100 Square Images – E.g. How many socks are there altogether? Ruler/Counting stick Chn draw	Missing no. sequences (Written + Oral) Missing no's on a 100 square/parts of a 100 square Pattern finding	Does the number 20 appear when you count in 2s, 5s and 10s? There are 5 flowers per pot. How many flowers would there be in 6 pots? A number line has been cut up can you find the missing number. In the story Noah's Ark, the animals went in 2 by 2. If there were 2 of every animal below, how many animals were there altogether? 	Which number is the odd one out? Prove it! Max says if he starts on number 5 and counts on he will say the number 26. Is he right? Prove it! True or False? I am going to count in multiples of 2. I will say the number 9?
	Shape space and measure opportunities: Counting in coins for 10p, 2p and 5p					
	2020 Guidance	1NF–2 Count forwards and backwards in multiples of 2, 5 and 10, up to 10 multiples, beginning with any multiple, and count forwards and backwards through the odd numbers. Year 1 document – Pages 19-23				
1	This is a Year 2 objective, but we want Year 1 to do it	Coins (1p + 10p) Numicon	Arrow cards Number cards	No. sentences e.g. 40 + 4 = ?	Using 2 of these number cards can you make…	What's the same, what's different? 45 54 Given the chn verbal and/or

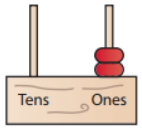
	as well. Recognise the place value of each digit in a two-digit number (tens, ones). *Identify and represent numbers using objects and pictorial representations including the number line, and use the language of: equal to, more than, less than (fewer), most, least.*	Dienes PV Chart Counters/Cubes Objects	Abacus Dienes images Chn draw	24 = ? + 4 44 = 40 + ? Make the biggest/smallest no. using these digits. Comparing and making a mixture of different forms of number representations. (Practical + Pictorial!) Part Part Whole	 The greatest number? An odd number? A multiple of 5?	written statements to put under always true, sometimes true, never true. E.g. A number with 9 ones is always smaller than a number with 1 ten.
1	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.	When you are coming to your last week of P.V. please check this objective on its own.	Idea: Comparing digits, words, practical objects, pictorial representations, own drawings and using the equals sign to show their understanding of the links between numbers and place value.	Write more than, less than or equal to in between the images below. 	 What is the largest and smallest 2-digit no. you can make? Can you make an odd number? Can you make a number greater than 60? Can you make a number between 20 and 40?	Look at these 2 numbers: 45 and 54. What is the same? What is different? A number with 8 ones is always bigger than a number with 6 ones. Always, sometimes, never true?

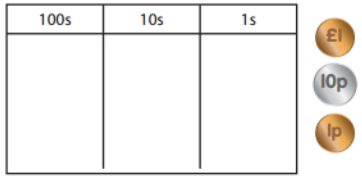
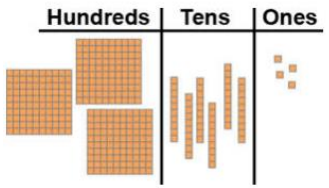
Year 2						
Year group:	**NC L.O.**	**Practical**	**Pictorial**	**Abstract**	**Problem Solving**	**Reasoning**
2		**Make it!** **SAY IT**	**Show it/Draw it!** **SAY IT**	**Read/Write it!** **SAY IT**		
2020 Guidance running through all NPV objectives: 2NPV–2 Reason about the location of any two-digit number in the linear number system, including identifying the previous and next multiple of 10. Pages 14-16						
2	Count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and backward. *Notes: Only a couple of days, then drip feed for the rest of the year. Don't forget odd and even here, there's lots of focus on this for GD standards.* *Identify, represent and estimate numbers using different representations, including the number line.*	Objects Fingers Coins (1p, 2p, 5p, 10p, £5 + £10 Notes) Numicon Dienes Shapes (Semi-Circles, triangles, pentagons)	Number line 100 Square Images Ruler/Counting stick	Missing no. sequences (Written + Oral) Missing no.s on a 100 square/parts of a 100 square Missing no.s on a number line. Pattern finding	Sam is counting in 2's, Luke is counting in 3's. Will they ever say the same numbers? A person walks 10miles a day. How many days will it take to walk 90miles?	True or False? When I count in 5s the ones will always end in 0 and 5. Spot the mistake in this number sequence: 65, 75, 85, 90, 95, 105
	Shape space and measure opportunities: Counting in coins for 10p, 2p and 5p. Counting the sides on triangles for 3's, pentagons for 5's.					
2	Read and write numbers to at least 100 in numerals and	Objects Fingers	Arrow cards Number line	Spelling words – drip feed throughout the year. Annual Spelling Bee – One of the 6	Can you complete a wordsearch finding numbers as words? Match up the numbers and	I write the number forty-seven as 407. Is this correct? Prove it!

	in words *Identify, represent and estimate numbers using different representations, including the number line.*	Numicon Dienes Coins + Notes Idea – Practical carousel for writing e.g. sand, crayons, paint, chalk, graffiti walls etc...	100 Square Images Ruler/Counting stick Chn draw Flash cards – digits to 100 + words to 100	dedicated to words. SATs style questions.	words – what number is missing a partner? What is the word to go with it?	The number 60 is written as sixteen. True or False?
2	Recognise the place value of each digit in a two-digit number (tens, ones). *Notes: Look at the KS1 maths framework for the 'combinations' objective* *Example 23 = 2 tens and 3 ones which is the same as 1 ten and 13 ones which is the same as 23 ones.* *Identify, represent and estimate numbers using different representations, including the number line.* *Read and write numbers to at least 100 in numerals and in words*	Coins (1p + 10p, £10 notes) Numicon Dienes PV Chart Counters/Cubes Objects	Arrow cards Number cards Abacus Dienes images Chn draw	No. sentences e.g. 40 + 4 = ? 24 = ? + 4 44 = 40 + ? Give the chn a couple of digit cards. Make the biggest/smallest no. Comparing and making a mixture of different forms of number representations. (Practical + Pictorial!) Part Part Whole	Jude has 29p. She only has 10p and 1p coins. How many different combinations can you come up with? My number has 2 tens and 7 ones. What is my number? Colour in the box which has the smaller number. Then work out the message at the bottom. E.g. 45 | 54 A | O	When I count in 10s, the ones always stay the same. Do you agree? Explain. Who has more? Mr Young has 19 pennies and Mrs Wheeldon has 2 10ps. How do you know?

	2020 Guidance	2NPV–1 Recognise the place value of each digit in two-digit numbers, and compose and decompose two-digit numbers using standard and non-standard partitioning. Year 2 document, pages 12-13				
2	Use greater than, less than and = signs. *Compare and order lengths, mass, volume/capacity and record the results using symbols for greater than, less than and =.* *Identify, represent and estimate numbers using different representations, including the number line.* *Read and write numbers to at least 100 in numerals and in words*	Foam Tiles Objects Coins + Notes Numicon Dienes Scales Practical measurement activities Comparing different practical representations	Symbol cards Number cards Images Arrow cards/PV Charts Abacus	Comparing 2 different forms of number representations. E.g. 2 tens and 22 ones. Comparing number sentences. Comparing Measurements. (On occasions make them find the information they are comparing.)	Lots of variety of questions for children to use the symbols e.g. 3 tens and 2 one ___ 2 tens and 3 ones 4 + 4 + 4 ___ 3 x 4 45g ____ 45kg 10 + 2 ___ 10 - 2 7 tens ___ 70 ones	I think these number sentences are correct: 34 = 4 tens and 3 ones 5 lots of 10 ≥ 40 60 ones ≤ 5 tens Am I right? Prove it!
	Shape space and measure opportunities: Comparing sides on 2D shapes. Comparing faces on 3D shapes. Comparing length, mass, volume / capacity and time durations					

2	Compare and order numbers from 0 up to 100. ***Notes: Compare for the start of the objective, then order.*** *Identify, represent and estimate numbers using different representations, including the number line.* *Read and write numbers to at least 100 in numerals and in words*	Foam Tiles Objects Coins + Notes Numicon Dienes Practical measurement activities Comparing different forms	Number cards Images Arrow cards Abacus Number line	Sequence of no.s to order. Comparing a mixture different forms of number representations. Order no.s and put them on a number line.	Can you order these numbers? Is there a pattern? What would the next 2 numbers be? Can you place these numbers on a number line? 5, 12, 25	 Which is the bigger number? How do you know? These numbers are the  same. True or False?
	Shape space and measure opportunities: Comparing sides on 2D shapes. Comparing faces on 3D shapes. Comparing length, mass, volume / capacity and time durations					
2	Identify, represent and estimate numbers using different representations, including the number line. KEY PART OF L.O. TO TEACH	Estimation focus: Real contexts first! E.g. temperature, time, objects in a jar, age, PE link etc... Objects	Images Number line	Number line with missing intervals.	Show 1 cube in a jar. How many cubes would fill the jar? Estimating on a number line 0-100 using clues e.g. The number is over half way. It is an even number. The number is less than 55 etc...	The arrow is pointing to 40 on the number line 0-100:  True or False? Circle the correct estimate activities.
	Shape space and measure opportunities: Estimating lengths, weights, volumes and capacities on scales, including scales without numbered intervals.					
2	Use place value and number facts to solve problems. *Identify, represent and estimate*	Use practical resources to back up the chn solving the P.V. problems. You will need to teach	Use pictorial resources to back up the chn solving the P.V. problems.	On Twinkl there are Maths Challenge cards for P.V.	Sarah thinks of a number. It is even and has 5 tens. What numbers **can** it be? What numbers **can't** it be? How many different numbers can	Mr Young is more than 50 years old, but less than 70 years old. His tens digit is an even number. His age is in the 2, 3, 5 and10 X Table. How old is he? How do you

	numbers using different representations, including the number line. *Read and write numbers to at least 100 in numerals and in words*	problem solving skills here even though they should be applying the knowledge from the above objectives.	 How many different numbers can you make using 2 beads on this abacus? Now 3 beads?		you make using 5 counters on a PV Chart? Using digit cards. One person makes the smallest number and then another makes the largest number. What is the difference between the numbers? Can you make an even number?	know?

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	Count from 0 in multiples of 4, 8, 50 and 100.	Objects – for representing numbers. E.g. hand is normally 5, but would be 50, octopus, spiders etc... Coins (50p + £1, £50 notes) Numicon Dienes Shapes -Quadrilaterals + Octagons 1m ruler Roman numerals	Number line 100 Square Images Ruler/Counting stick	Missing no. sequences (Written + Oral) Missing no.s on a 100 square/parts of a 100 square Missing no.s on a number line. Pattern finding	I see 28 cows' legs in a field. How many cows did I see?	If I count in multiples of 4, I will get to 40, 60, 80 and 100. **True or False?**
	Shape space and measure opportunities: Counting in quadrilaterals. Counting in octagons. Counting in 50 pence. Counting in pounds and pence.					
3	Recognise the place value of each digit in a three-digit number (hundreds, tens, and ones). *Identify, represent and estimate numbers using different representations.*	Coins (1p + 10p, £1, £10 notes) Numicon Dienes PV Chart Counters/Cubes	Arrow cards Number cards Abacus Dienes images Chn draw Images e.g. money	No. sentences e.g. 400 + 40 + 4 = ? 243 = ? + 40 + 3 984 = 900 + ? + 4 Give the chn 3-digit cards. Make the biggest/smallest no. Extend by giving them		Mrs Welch thinks this number is 364. Mrs Grigg thinks this number is 300 + 60 + 4. Who is correct? Is there another 

				more but they still only make a 3-digit no. Comparing and making a mixture of different forms of number representations. (Practical + Pictorial!)		way you can record it?
	2020 Guidance	3NPV–1 Know that 10 tens are equivalent to 1 hundred, and that 100 is 10 times the size of 10; apply this to identify and work out how many 10s there are in other three-digit multiples of 10. Y3 document, pages 13-15. 3NPV–2 Recognise the place value of each digit in three-digit numbers, and compose and decompose three-digit numbers using standard and non-standard partitioning. Y3 document, pages 15-17.				
3	Read and write numbers up to 1000 in numerals and in words. *Identify, represent and estimate numbers using different representations.*	Place Value Chart Fingers Numicon Dienes Coins + Notes Idea – Practical carousel for writing e.g. sand, crayons, paint, chalk, graffiti walls etc...	Arrow cards Number line 100 Square Images Abacus Ruler/Counting stick Chn draw Flash cards – digits to 1000 + words to 1000	Spelling words – drip feed throughout the year. Annual Spelling Bee – One of the 6 dedicated to words. SATs style questions. Can you write the number 348 in words? Matching up words, digits and pictorial images for no.s 1-1000.	What misconceptions can children make when writing the numbers: 13, 4, 40, 8? How can we learn to spell them correctly?	Using 5 counters, how many numbers can you make in the PV Chart? How do you know you have got them all? Is there a systematic way? Mrs Welch wrote the number 452 in words: four hundred and fifty-two. Convince me she is correct!

<table>
<tr>
<td>3</td>
<td>Find 10 or 100 more or less than a given number.

Identify, represent and estimate numbers using different representations.</td>
<td>Dienes

Coins 10p £1/£10 notes

Numicon

Place Value Charts

Measures – e.g. a jug in 100ml intervals, 1m stick, thermometer

Roman Numerals (10)</td>
<td>Images

Chn drawing

Abacus

Measures – e.g. a jug in 100ml intervals

Ruler/Counting stick

Place Value Charts</td>
<td>Number sentences e.g. 65 = 55 + ? 34 – 10 = ?

Missing numbers – Link Inverse

Greater Than/Less Than questions

Missing numbers in a number sequence.

Number line questions.

Completing number patterns</td>
<td>Time problems in including 10 and 100minutes.

10 less than 2 x 10

100 less than 385 + 15

10 more than 199

10 less than 201</td>
<td>Explain what happens to the number 420 every time you add or subtract 10?

Explain what happens to it if you add or subtract 100?

Is my table correct?

<table>
<tr><th>100 less</th><th>Starting no.</th><th>100more</th></tr>
<tr><td>134</td><td>234</td><td>334</td></tr>
<tr><td>647</td><td>547</td><td>447</td></tr>
<tr><td>18</td><td>183</td><td>283</td></tr>
</table>
</td>
</tr>
<tr>
<td></td>
<td colspan="6">Shape space and measure opportunities: Finding 10 / 100 mm/cm/metres more or less than a given length. Finding 100ml for or less than a given volume.</td>
</tr>
<tr>
<td>3</td>
<td>Compare and order numbers up to 1000.

3 lessons on comparing, then 3 lessons on ordering.

You must use greater than and less than symbols in your questions.

Identify, represent and estimate numbers using different representations.</td>
<td>Foam Tiles

Coins + Notes

Numicon

Dienes

Practical measurement activities

Comparing different forms/representations</td>
<td>Number cards

Images

Arrow cards

Abacus

Number line</td>
<td>Sequence of no.s to order.

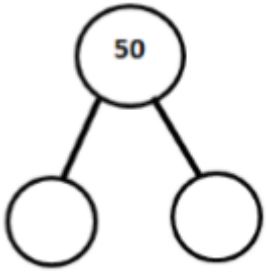
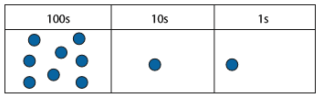
Comparing a mixture different forms of number representations.

Order no.s and put them on a number line.</td>
<td>Put one number in each box to make the list of numbers in the order of smallest to largest:

<table>
<tr><th>H</th><th>T</th><th>O</th></tr>
<tr><td>3</td><td></td><td>2</td></tr>
<tr><td></td><td>7</td><td>5</td></tr>
<tr><td>6</td><td>1</td><td></td></tr>
</table>
</td>
<td>True or False? You must look at the ones first when ordering numbers.

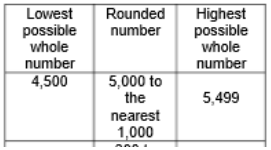
Which number is the odd one out? Why?</td>
</tr>
<tr>
<td></td>
<td colspan="6">Shape space and measure opportunities: Compare and order lengths / weights / volumes and capacities. Compare and order perimeters. Compare and order durations of time.</td>
</tr>
<tr>
<td>3</td>
<td>Identify, represent and estimate</td>
<td>Estimation focus:

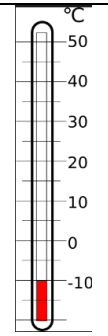
Real contexts first! E.g.</td>
<td>Images</td>
<td>Number line with missing intervals.</td>
<td>Show 1 cube in a jar. How many cubes would fill the jar?</td>
<td>I think there are 200 children in this school. Jack thinks</td>
</tr>
</table>

	numbers using different representations. KEY PART OF L.O. TO TEACH	temperature, time, objects in a jar, age, PE link etc... Objects Practical Measurement opportunities.	Number line		Have 3 different number lines. Can the children work out how to put the same number on each one? What do you need to look at carefully before placing the number?	there are 500 children in this school. Who is more accurate? Prove it!
	Shape space and measure opportunities: Estimating lengths, weights, volumes and capacities on scales, including scales without numbered intervals.					
	2020 Guidance	3NPV–3 Reason about the location of any three-digit number in the linear number system, including identifying the previous and next multiple of 100 and 10. Y3 document, pages 18-20				
3	Solve number problems and practical problems involving working with and estimating numbers up to 1000 in a variety of units. *Identify, represent and estimate numbers using different representations.*	Use practical resources to back up the chn solving the P.V. problems. Remember to include estimation. You will need to teach problem solving skills here even though they should be applying the knowledge from the above objectives.	Use pictorial resources to back up the chn solving the P.V. problems. Remember to include estimation.	Twinkl have PV Challenge Cards	Twinkl have PV Challenge Cards Using numbers cards for questions.  How many different ways can you complete this part part whole model?	Twinkl have PV Challenge Cards  Mrs Grigg thinks she has made the largest number. Is she correct? What happens if you split the counters equally? What happens if you put all the counters in one box?

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	Count in multiples of 6, 7, 9, 25 and 1000. *Notes; 5th-9th September*	Objects – for representing numbers. E.g. etc..kg/g l/ml, insect legs, etc... Numicon Dienes Shapes –hexagons, heptagons, nonagons Jugs with 25, 100 and 1000 intervals Roman numerals	Number line 100 Square Images Ruler/Counting stick	Missing no. sequences (Written + Oral) Missing no.s on a 100 square/parts of a 100 square Missing no.s on a number line. Pattern finding	I have 8 hexagons. How many sides is that? I have 5 packets of pencils, each containing 25. How many pencils have I got?	
	Shape space and measure opportunities: Counting sides of hexagons, heptagons. Counting seconds in minutes and minutes in hours – 6x associated facts. Counting coins in 25p to make an amount of pounds. Calculate perimeter of regular shapes with given dimensions.					
4	Recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones). *Identify, represent and estimate numbers using different representations.*	Dienes PV Chart	Arrow cards Number cards Abacus Dienes images PV Chart Chn draw Images e.g. money	No. sentences e.g. 2000 + 400 + 40 + 4 = ? 2473 = ? + 400 + 70 + 3 4984 = ? 900 + ? + 4 Give the children 4-digit cards. Make the biggest/smallest no. Extend by giving them more but they still only make a 4-digit no. Comparing and making a mixture of different forms of	Give them: 5434 ≤ ? Extend to give them specific no. cards to use. Can you make 3456 using a variety of practical and pictorial resources?	**Odd one out.** Show the chn 2303 in several different representations. Which one is the odd one out? What is the same and what is different? 7454 and 7654

				number representations. (Practical + Pictorial!)		
	2020 Guidance	4NPV–1 Know that 10 hundreds are equivalent to 1 thousand, and that 1,000 is 10 times the size of 100; apply this to identify and work out how many 100s there are in other four-digit multiples of 100. Y4 document, pages 12-14. 4NPV–2 Recognise the place value of each digit in four-digit numbers, and compose and decompose four-digit numbers using standard and non-standard partitioning. Y4 document, pages 15-16. 4NPV–3 **Reason about the location of any four-digit number in the linear number system, including identifying the previous and next multiple of 1,000 and 100,** ~~and rounding to the nearest of each.~~ Y4 document, pages 16-21				
4	Find 1000 more or less than a given number. *Identify, represent and estimate numbers using different representations.*	Dienes Place Value Charts Measures – e.g. a jug in 1000ml intervals, 1m stick, thermometer Roman Numerals (10 + 100)	Images Chn drawing Abacus Measures – e.g. a jug in 1000ml (1 litre) intervals, 1000g intervals (1kg) Ruler/Counting stick Place Value Charts	Number sentences e.g. 1465 = 465 + ? 3494 – 1000 = ? Missing numbers – Link Inverse Greater Than/Less Than questions Missing numbers in a number sequence. Number line questions. Circle the number that is 1000 more than 2678 3678 1678 3768	Measure problems 1000 for grams, millilitres and millimetres. If I start counting in 1000 from 3278, what will the 5th number be? What will the 10th number be? Is there a quick way of working these out?	If I add 1000 more the only PV column that changes is the ones. **True or False?**
	Shape space and measure opportunities: Conversions of length from millimetres to metres and metres to kilometres. Conversions of mass from g to Kg. Conversion of volume / capacity from litres to millilitres.					
4	Order and compare numbers beyond 1000. *Notes: Remember greater than and less than symbols. Compare first, then order.*	Foam Tiles Dienes Practical measurement activities Comparing different forms/representations	Number cards Images Arrow cards Abacus Number line	Sequence of no.s to order. Comparing a mixture different forms of number representations. Order no.s and put them on a number	I have ordered these numbers largest to smallest: 2345 2135 2035 1826 What number could you put between the 1st and 2nd? What is the highest number that could next?	Captain Conjecture thinks that to order numbers you look for the biggest number wherever its place. What do you think? Is he correct? How do you know?

	Identify, represent and estimate numbers using different representations.			line.		
	Shape space and measure opportunities: Order and compare units of length, mass and volume / capacity that have a scale factor of 1000. Compare and order the perimeter of shapes where all sides are given.					
4	Round any number to the nearest 10, 100 or 1000. *Identify, represent and estimate numbers using different representations.*	Contexts to why we round! E.g. number of buses needed for a trip, money to pay, link to previous work on estimation, food examples etc... PV Chart	Number line with intervals on. Ruler	Complete the table Simple rounding questions. Round 56 to the nearest 10. Extension round one number to the nearest 10, 100 and 1000.	Given a number what is the lower possible answer and highest possible answer that you could round it to? E.g.  	Hattie thinks 675 rounded to the nearest 10 is 680. Is she correct? What would happen if she rounds 674 to the nearest 10? Would it still be 680?
	Shape space and measure opportunities: Round units of measure to required degrees of accuracy. Round centimetres to the nearest metre. Round millimetres to the nearest metre. Round metres to the nearest kilometre. Round grams to the nearest kilogram. Round millilitres to the nearest litre.					
	2020 Guidance	4NPV–3 Reason about the location of any four-digit number in the linear number system, including identifying the previous and next multiple of 1,000 and 100, **and rounding to the nearest of each**.				
4	Identify, represent and estimate numbers using different representations. KEY PART OF L.O. TO TEACH	Estimation focus: Real contexts first! E.g. temperature, time, objects in a jar, age, PE link etc... Objects Practical Measurement opportunities.	Images Number line	Number line with missing intervals. Blank number lines to estimate where totals go.	Show 1 cube in a jar. How many cubes would fill the jar? How can you get an accurate estimate?	Tom estimates there are 2000 sweets in this jar. Sally estimates there are 200 sweets in this jar and Matt estimates there are 20 sweets in this jar. Who is the most accurate and why?  What would your estimate be?
	Shape space and measure opportunities: Estimating lengths, weights, volumes and capacities on scales, including scales without numbered intervals.					

4	Count backwards through zero to include negative numbers.	Set the context – Video on BBC. Thermometer. Physical movements on a large number line. Pass an object for counting. Human number line using w/bs, hats, no. cards etc...	Lift images e.g. ground floor = 0. Number cards	Missing numbers in sequences. Missing numbers on number line. 1 more 1 less.	I am in a hotel and I am currently on level 23. I need to get to -2 where the chefs work. How many levels will I go down?	 Mrs Gardner measures the temperature at several times in a day. At 9am it is 18˚C. By lunchtime it has dropped by 12 ˚C and by 6pm it has dropped by a further 9 ˚C. She calculates the temperature to be 4 ˚C. Is she correct? Prove it!
	Shape space and measure opportunities: Reading scales on thermometers.					
4	Solve number and practical problems that involve rounding, ordering and exploring negative numbers and with increasingly large positive numbers. *Notes: This will be mostly covered in the previous NPV objectives, use this to combine objectives with problems.* *Identify, represent and estimate numbers using different representations.*	Use practical resources to back up the chn solving the P.V. problems. Remember to include rounding, ordering and exploring negative no.s. You will need to teach problem solving skills here even though they should be applying the knowledge from the above objectives.	Use pictorial resources to back up the chn solving the P.V. problems. Remember to include rounding, ordering and exploring negative no.s.	Twinkl have PV Challenge Cards	Using numbers cards. How many ways can you show 2340? E.g. How many tens = 234. Twinkl have PV Challenge Cards	Twinkl have PV Challenge Cards

4	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. *One day, then drip feed in arithmetic starters and dates.* *Identify, represent and estimate numbers using different representations.*	Practical representations of the numerals.	Matching no. cards and roman numeral cards.	Ordering Roman Numerals Comparing Roman Numerals using GT and LT Putting Roman Numerals on a number line Looking for patterns within the Roman Numerals. Complete the table. Writing the date in Roman Numerals often.	Game e.g. spinners and read the numbers in Roman numerals. BINGO Order these answers from greatest to smallest: LV + XXII = LXXI + XXXVIII= LXV + XXXII =	Are there any patterns with the multiples of 10? Investigate.
	Shape space and measure opportunities: Reading time on clocks with Roman Numeral displays.					

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	Read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit. (Recap and move on P.V.)	Place Value Chart	Place Value Chart Arrow cards Number line 100 Square Images Abacus Counting stick Chn draw Flash cards Symbol cards	Ordering of numbers. Comparing using symbols. Representing numbers in different ways by reading examples and coming up with examples of their own. Matching different number representations Spelling words – drip feed throughout the year. Annual Spelling Bee – One of the 6 dedicated to words. SATs style questions. Can you write the number 3 488 532 in words? Paired work – e.g. number card to read to a partner who then writes it. Check back! Complete the table.		Which digit represents the highest number? 4 738 179 Martha has partitioned this number: 34 565 30 000 + 4000 + 500 + 60 + 5 Is she correct? Why?
	Shape space and measure opportunities: Order and compare units of length, mass and volume / capacity. Compare and order the perimeter and area of shapes.					

<table>
<tr><td>5</td><td>Count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000.</td><td>Physical movements on a large number line.

Pass an object for counting.

Human number line using w/bs, hats, no. cards etc...</td><td>Number line

100 Square

Images

Counting stick

Loop Cards</td><td>Missing no. sequences (Written + Oral)

Missing no's on parts of a numbers grid.

Missing no.s on a number line.

Pattern finding</td><td>Josh counts forwards and backwards in 10s from 275. Which of these numbers will he say?

2350 15 240 13 365 1005

What pattern have you noticed?</td><td> 

Correct this sequence. Why do you think Sally made a mistake?</td></tr>
<tr><td></td><td colspan="6">Shape space and measure opportunities: Counting in metric units of measure, mixing different units for a given measure e.g 3,456g + 1kg, 2.5m + 100cm

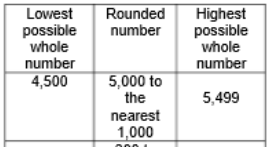
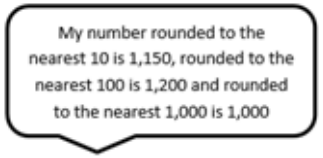
Finding perimetres of rectilinear shapes, where side lengths are powers of 10, including mixed units of measure.</td></tr>
<tr><td>5</td><td>Round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000.</td><td>Recap, contexts to why we round! E.g. number of buses needed for a trip, money to pay, population, football fans attendance, link to previous work on estimation, food examples etc...

PV Chart</td><td>Number line with intervals on.</td><td>Complete the table

Simple rounding questions. Round 56965 to the nearest 10.

Extension round one number to the nearest 10, 100, 1000, 10 000 and 100 000.</td><td>Lower possible answer.

Highest possible answer. E.g.

  </td><td> 

What could my number be? Could it be more than one number?

All numbers that end in a 4 will round down to the nearest multiple? Is this statement correct?</td></tr>
<tr><td></td><td colspan="6">Shape space and measure opportunities: Round units of measure to required degrees of accuracy. Round centimetres to the nearest metre. Round millimetres to the nearest metre. Round metres to the nearest kilometre. Round grams to the nearest kilogram. Round millilitres to the nearest litre.</td></tr>
<tr><td>5</td><td>Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero.</td><td>Recap the context – Video on BBC.

Thermometer.

Physical movements on a large number line.

Pass an object for counting.

Human number line using w/bs, hats, no.</td><td>Lift images e.g. ground floor = 0.

Number cards

Counting stick

Number line</td><td>Missing numbers in sequences.

Missing numbers on number line.

1 more 1 less.

10 more and 10 less.

Comparing and ordering negative and positive numbers.</td><td>If I am in a lift and I need to get from level 18 to -5, how many levels will I go down?

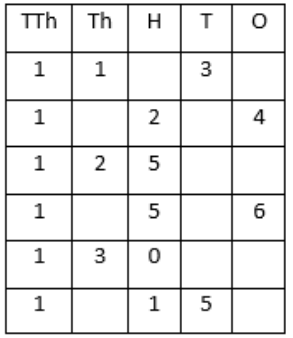
If I start on level 12 and go down 20 levels in the lift, what level will I end up at?

Temperature problems.

Negative bank account problems.</td><td>Tim counts down in multiples of 5 from 25. Will he say -10? Will he say -22? How do you know?</td></tr>
</table>

		cards etc... Remember it is negative AND positive numbers.		Simple addition and subtraction calculations.		
	Shape space and measure opportunities: Reading scales on thermometers.					
5	Solve number problems and practical problems that involve numbers up to 1000000, negative numbers, rounding or jumping in steps.	Use practical resources to back up the chn solving the P.V. problems. Remember to include rounding, negative no.s and sequences. You will need to teach problem solving skills here even though they should be applying the knowledge from the above objectives.	Use pictorial resources to back up the chn solving the P.V. problems. Remember to include rounding, negative no.s and sequences.	Twinkl have PV Challenge Cards and PowerPoints.	Using numbers cards. Twinkl have PV Challenge Cards and PowerPoints.	Twinkl have PV Challenge Cards and PowerPoints.

5	Read Roman numerals to 1000 (M) and recognise years written in Roman numerals.	Practical representations of the numerals. Roman Numerals in a context.	Matching no. cards and roman numeral cards.	Ordering Roman Numerals including dates. Comparing Roman Numerals using GT and LT Putting Roman Numerals on a number line Looking for patterns within the Roman Numerals. Complete the table. Simple Roman numeral calculations. Translate Roman Numerals with a partner and opposite way.	Game e.g. spinners and read the numbers in Roman numerals. BINGO Can you complete the Roman Numeral hundred square? Roman Numerals Tarsia Puzzle (Twinkl)	I think this date _____ represents the number _____. **True or False?** Which Roman numeral is larger? How do you know?
	Shape space and measure opportunities: Reading time on clocks with Roman Numeral displays.					

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	Read, write, order and compare numbers up to 10 000 000 and determine the value of each digit. (Recap and move on P.V.)	Place Value Chart	Place Value Chart Arrow cards Number line 100 Square Images Abacus Counting stick Chn draw Flash cards Symbol cards	Ordering of numbers. Comparing using symbols. Representing numbers in different ways by reading examples and coming up with examples of their own. Matching different number representations Spelling words – drip feed throughout the year. Annual Spelling Bee – One of the 6 dedicated to words. SATs style questions. Can you write the number 3 488 532 in words? Paired work – e.g. number card to read to a partner who then writes it. Check back! Complete the table. Make links to Roman numerals that they cover in Y3-5.	How can you represent twenty thousand three hundred and two using Numicon? Do you need anything else? Find out how many seats are in 5 football stadiums. Order them and then work out the differences between them.	 TTh | Th | H | T | O 1 1 3 1 2 4 1 2 5 1 5 6 1 3 0 1 1 5 Put a digit in each box so they are ordered smallest to largest. Can this be done several ways? Why?
	Shape space and measure opportunities: Order and compare units of length, mass and volume / capacity. Compare and order the perimeter and area of shapes.					

	Include measurements given in decimals down to thousandths. Read and estimate measurements on number lines and scales where intervals are unnumbered or missing. Compare angles given in degrees, including pictures, given angles and word descriptions, such as 'obtuse'.					
	2020 Guidance	6NPV–1 Understand the relationship between powers of 10 from 1 hundredth to 10 million, and use this to make a given number 10, 100, 1,000, 1 tenth, 1 hundredth or 1 thousandth times the size (multiply and divide by 10, 100 and 1,000). Year 6 document, pages 13-17. 6NPV–2 Recognise the place value of each digit in numbers up to 10 million, including decimal fractions, and compose and decompose numbers up to 10 million using standard and non-standard partitioning. Year 6 document, pages 17-19. 6NPV–3 **Reason about the location of any number up to 10 million, including decimal fractions, in the linear number system,** ~~and round numbers, as appropriate, including in contexts.~~ Year 6 document, pages 20-24.				
6	Round any whole number to a required degree of accuracy.	Recap, contexts to why we round! E.g. number of buses needed for a trip, money to pay, population, football fans attendance, link to previous work on estimation, food examples etc... PV Chart	Number line with intervals on.	Complete the table Simple rounding questions. Round 56965 to the nearest 10. Extension round one number to the nearest 10, 100, 1000, 10 000, 100 000 and 1 million.	Lower possible answer. Highest possible answer. What could be the missing digit if this number needed to be rounded to 2340? 233? Is there more than one answer? How many answers would there be?	Spot the mistake: Julia has £367, rounded to the nearest £100 she has £400. Rounded to the nearest £10 she has £360.
	Shape space and measure opportunities: Round units of measure to required degrees of accuracy. Round centimetres to the nearest metre. Round millimetres to the nearest metre. Round metres to the nearest kilometre. Round grams to the nearest kilogram. Round millilitres to the nearest litre. Include rounding decimal measurements to both whole number measures and measures to one decimal place.					
	2020 Guidance	6NPV–3 Reason about the location of any number up to 10 million, including decimal fractions, in the linear number system, **and round numbers, as appropriate, including in contexts.** Year 6 document, pages 20-24.				

6	Use negative numbers in context and calculate intervals across zero.	Recap the context – Video on BBC. Thermometer. Physical movements on a large number line. Pass an object for recapping counting. Human number line using w/bs, hats, no. cards etc... Remember it is negative AND positive numbers.	Lift images e.g. ground floor = 0. Number cards Counting stick Number line	Missing numbers in sequences. Missing numbers on number line. 1 more 1 less. 10 more and 10 less. Comparing and ordering negative and positive numbers. Simple addition and subtraction calculations.	Firstly, order the countries temperatures around the world without knowing their average temp. Next order the countries depending on their average temperatures. Discuss your estimates compared with actuals.	Mr Branson is going to build a Tower Block hospital. He is going to build it so it goes from level -50 to level 123. How many floors are going to be on the new hospital?
	Shape space and measure opportunities: Reading scales on thermometers.					
6	Solve number and practical problems that involve large numbers, rounding and negative numbers.	Use practical resources to back up the chn solving the P.V. problems. Remember to include rounding, negative no.s and they should be LARGE numbers. You will need to teach problem solving skills here even though they should be applying the knowledge from the above objectives.	Use pictorial resources to back up the chn solving the P.V. problems. Remember to include rounding, negative no.s and they should be LARGE numbers.	Twinkl have PV Challenge Cards and PowerPoints.	Using numbers cards. Twinkl have PV Challenge Cards and PowerPoints.	Twinkl have PV Challenge Cards and PowerPoints.

The Maths Team have got ideas from:

- Oxford Owl Mastery Cards
- Maths Hub - White Rose Resources
- Twinkl

- Maths No Problem Y1 Example Workbook
- National Curriculum non-statutory guidance 2020 document.