Hillsborough Primary school
Maths Content and progression

Number and Place Value

Progression of skills Overview

Number: Number and Place value						
Counting						
EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Count reliably with numbers from 1-20	count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number			count backwards through zero to include negative numbers	interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero	use negative numbers in context, and calculate intervals across zero
	count, read and write numbers to 100 in numerals; count in multiples of twos, fives and tens	count in steps of 2, 3, and 5 from 0, and in tens from any number, forward or backward	count from 0 in multiples of 4, 8, 50 and 100;	count in multiples of 6, 7, 9, 25 and 1000	count forwards or backwards in steps of powers of 10 for any given number up to 1000 000	
Say which is 1 **more** or 1 **less** than a given number (to 20)	given a number, identify one more and one less		find 10 or 100 more or less than a given number	find 1000 more or less than a given number		
Comparing Numbers						
Order numbers 1 to 20	use the language of: equal to, more than, less than (fewer), most, least	compare and order numbers from 0 up to 100; use <, > and = signs	compare and order numbers up to 1000	order and compare numbers beyond 1000	read, write, order and compare numbers to at least 1000 000 and determine the value of each digit	read, write, order and compare numbers up to 10 000 000 and determine the value of each digit
				compare numbers with the same number of decimal places up to two decimal places		
Identifying, Representing and Estimating numbers						

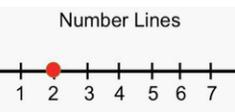| EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	identify and represent numbers using objects and pictorial representations including the number line	identify, represent and estimate numbers using different representations, including the number line	identify, represent and estimate numbers using different representations	identify, represent and estimate numbers using different representations		

Reading and Writing Numbers including Roman Numerals						
EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	read and write numbers from 1 to 20 in numerals and words.	read and write numbers to at least 100 in numerals and in words	read and write numbers up to 1 000 in numerals and in words		read, write, order and compare numbers to at least 1000 000 and determine the value of each digit	read, write, order and compare numbers up to 10 000 000 and determine the value of each digit
			tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks	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.	read Roman numerals to 1000 (M) and recognise years written in Roman numerals.	

Understanding Place Value						
		recognise the place value of each digit in a two-digit number (tens, ones)	recognise the place value of each digit in a three-digit number (hundreds, tens, ones)	recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones)	read, write, order and compare numbers to at least 1000 000 and determine the value of each digit recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents	read, write, order and compare numbers up to 10 000 000 and determine the value of each digit
				find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as units, tenths and hundredths		identify the value of each digit to three decimal places and multiply and divide numbers by 10, 100 and 1000 where the answers are up to three decimal places

Rounding						
				round any number to the nearest 10, 100 or 1000	round any number up to 1000 000 to the nearest 10, 100, 1000, 10 000 and 100 000	round any whole number to a required degree of accuracy
				round decimals with one decimal place to the nearest whole number.	round decimals with two decimal places to the nearest whole number and to one decimal place	solve problems which require answers to be rounded to specified degrees of accuracy

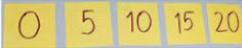|						
			Problem Solving			
EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
		use place value and number facts to solve problems	solve number problems and practical problems involving these ideas.	solve number and practical problems that involve all of the above and with increasingly large positive numbers	solve number problems and practical problems that involve all of the above	solve number and practical problems that involve all of the above

Year 1.

NC Objective	Learning Objectives	Pre-learning	Methods from Calculation Policy	Key Questions for GDS
Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number	Count forwards and backwards from any given number. **Vocabulary** number numeral twenty-one, twenty-two ... one hundred forwards backwards equal to most, least many multiple of equal to half-way between above, below odd even	**Count reliable with numbers from 1-20**	Counting games to 20, then to 50 and then to 100. Number rhymes and number games to 20, then to 50 and then to 100. Counting games back to 0 from 20, then 50 and then 100. Counting on beyond 100. Counting back starting with a number greater than 100. Concrete Pictorial 6 7 8 9 Abstract Finish the sequence: 1, 2, 3, 4, 5, 6, 7 10, 9, 8, 7, 6, 5 33, 32, 31, 30,29	What comes next in each set of dominoes? Do we have to start from 0 or 1 when counting? Are the numbers getting greater or smaller? How do you know? What comes before / after this number? What happens when we reach 10? 20? 30?
count in multiples of twos, fives and tens	Count in multiples of 2 / 5 and 10s.	Counting games to 20, then to 50 and then to 100. Number rhymes and number games to 20, then to 50 and then to 100. Counting games back to 0 from 20, then 50 and then 100.	Orally counting on in 2s, 5s and then 10s Link to pairs of: socks; shoes; arms; feet, etc. Then 5 fingers, etc. Concrete	How can you sort the objects? Are there different ways of sorting? How can we sort a larger number of objects more easily?
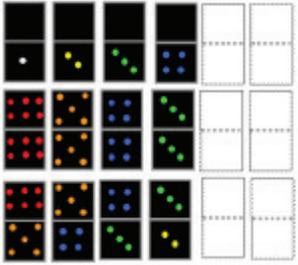
	 Multiples Count Pattern Two's Five's Ten's Objects		Children should count concrete objects before moving them around. Pictorial __Abstract__ Continue the pattern: 2, 4, 6, 8, 10, 12, 14, 16	What is the best way to count the objects? How many objects are there in total? Can you see any patterns when you count in pairs (2s) / 5s / 10s? Will ..... appear on the number line? There are 2 flowers in each pot. How many flowers in 10 pots?
given a number, identify one more and one less	Know what one more of a given number is. Know what one less of a given number is. Identify which numbers is one more and one less. **Vocabulary** One less One more Equal Count Backwards Forwards	Say which is 1 more or 1 less than a given number (to 20). 	Counting on and back at pace between 0 and 100. Counting on and back at pace from any starting place between 0 and 100. Use number lines with pupils and show what one more and one less actually means. Asking quick fire questions, such as, what is one more than 16? What is one less than 78? etc. Concrete Pictorial How many fingers if I put one down? 9 Abstract Fill in the box	What does one more / one less mean? Will the number get greater or smaller? How can we show one more / less? Do we need to start from 0 each time? Which number shows one more / less? How do you know? A number line has been cut up. Can you find the missing numbers?

use the language of: equal to, more than, less than (fewer), most, least	To compare numbers. To begin to understand and use the <, > and = signs. **Vocabulary** More than Less than Equal compare	As above	As above	How can you tell which has most or least? What do the terms greater than /more and less than / fewer mean? How can you describe these two numbers? What can you use to show one number is greater than the other?
identify and represent numbers using objects and pictorial representations including the number line	To be able to order numbers. To describe the position of a number (ordinal numbers) To use a number line to help with ordering, counting etc.., To begin to partition numbers into Ts and Os using objects. **Vocabulary** Counting Forwards Backwards	Children should become familiar with the different resources and how to use them e.g. counters, base ten number line etc base ten Number Lines 1 2 3 4 5 6 7 1 2 3 4 5 6	Children should Using Base 10, show me a number: a) More than 5 b) Less than 8 c) Equal to 3 + 1 Using 10 counters, show me the most counters you can. Show me the least counters you can. Show me more than 7 counters. Point to the number 9 on the number line. Count on from 3 to 7; say each number as you count on.	How many different ways can you show / represent the number.....? How many 10s are used in this number? How do you know ....is greater than / less than ...? When might I use the phrase first place / last place? Which number comes first / second etc.. in the There are 3 tubs, a red one, a green one and a blue one. They have 10 cubes between them. The blue tub has one more cube in it than the red tub. The red tub has three fewer cubes than the green tub. How many cubes are in each tub?

| count, read and write numbers to 100 in numerals;
read and write numbers from 1 to 20 in numerals and words. | To read and write numbers to 20.
To read and write numbers to 20 in words. | Recap counting numbers | Chant as a group, starting with 0 sequence moving up in 10s, then 5s and then 2s.

Chant as a group, starting with 100 sequence moving down in 10s, then 5s and then 2s.

Chant as a group, starting with any number sequence moving up in 10s, then 5s and then 2s

Chant as a group, starting with any number sequence moving down in 10s, then 5s and then 2s

Use cards between 0 and 20, then 50 and then 100 and get pupils to call out their names rapidly.

Can you read the number **twelve** and write in the box? 12
Can you read the number fifty- nine and write in the box? 59

Finish the sequence
10. 20 ,30, 40
2, 4, 6, 8, 10
27, 28, 29, 30 | How is the number ....
Written?
How can we represent the number ...?
Can you match the words up with the numerals? |
| | **Vocabulary**
Numerals
Sequence
Counting
Forwards
Backwards | | | |

Year 2.

NC Objective	Learning Objectives	Pre-learning	Methods from Calculation Policy	Key Questions for GDS
count in steps of 2, 3, and 5 from 0, and in tens from any number, forward or backward	Count in steps of 2, 3, and 5 from 0, and in tens from any number, forward or backward **Vocabulary** threes, fours and so on count on forwards count back backwards	Orally counting on in 2s, 5s and then 10s Link to pairs of: socks; shoes; arms; feet, etc. Then 5 fingers, etc. Concrete Children should count concrete objects before moving them around. Pictorial Abstract Continue the pattern: 2, 4, 6, 8, 10, 12, 14, 16	With the whole group, count in 10s to 100, forward and backward, with increasing speed. Now do the same with counting in 2s, 3s and 5s. Start from any number and see how quickly they can pick this up. Link to any familiar number rhymes or songs involving number. Link to times tables. Talk about even and odd numbers in relation to counting in 2s. Concrete Pictorial Abstract Count forwards in 10's - 17, 27, 37 Count backwards in 10's -64, 54, 44 Count forwards in 2's -34, 36, 38 Count backwards in 2's -62, 60, 58 Count forwards in 5's -67, 72, 77 Count backwards in 5's -91, 86, 81 Count forwards in 3's -57, 60, 63 Count backwards in 3's -87, 84, 81	If I count in 3's starting from 12, will I say the number 19? How do you know? Sid is counting in 2's, Luke is counting in 3's. Sid says 'If we add our numbers together as we count we can make a new pattern.' What pattern do they make? What happens if Sid counts in 5's and Luke counts in 10's? Harry has made a sequence of numbers using six number cards. Here are three of the cards: can you think of two sequences Harry could have made?

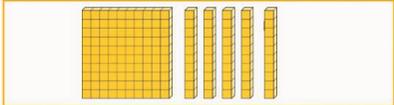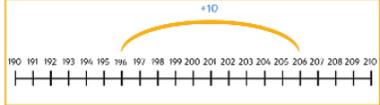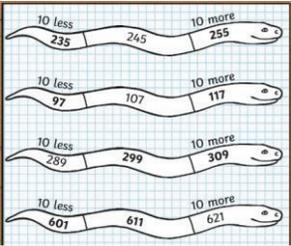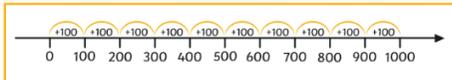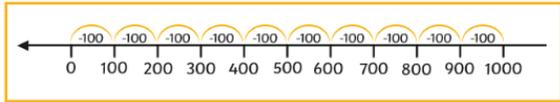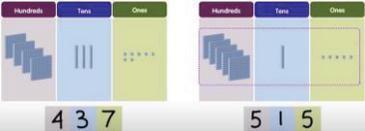|				
compare and order numbers from 0 up to 100; use <, > and = signs	compare and order numbers from 0 up to 100; use <, > and = signs **Vocabulary** Equal to... Compare Least Most > greater than < less than hundreds	Revisit the concept of one more, one less and equal. 9 and 7- Which is more? 2 and 5-Which is less? Are these the same? How do you know this? 10 and 	Ensure all pupils are familiar with the signs < > and =. Link to previous work when these signs have been used. Revise counting games to 20, then to 50 and then to 100. Find rhymes, especially number rhymes, where numbers go down as well as up. Improvise with these number games, eg, 100 green bottles with 10 or 5 accidentally falling each time. Show how the signs work within a number sentence. 5<3 54>32 66=66 Order the numbers from smallest to largest: 23, 32, 27, 30, 19, 41 Ans -19, 23, 27, 30, 32, 41	Bill has written a list of 2 digit numbers. The digits of each number add up to 5. None of the digits are 0. Can you find all the numbers Bill could have written? Write the numbers in order from smallest to largest. What numbers could go in the grid below? The number in the grid is even. Which number must it be?
identify, represent and estimate numbers using different representations, including the number line	Identify, represent and estimate numbers using different representations **Vocabulary** one-, two- or three-digit number place, place value stands for, represents exchange twenty-first, twenty-second ...	Children should Using Base 10, show me a number: a) More than 5 b) Less than 8 c) Equal to 3 + 1 Using 10 counters, show me the most counters you can. Show me the least counters you can. Show me more than 7 counters. Point to the number 9 on the number line. Count on from 3 to 7; say each number as you count on.	Chn should become familiar and secure using a number line, counting forward and counting backwards. They should be able to identify numbers up to two digits on a number line. Also, they should estimate the position of number on a number line. Place these numbers on the number line. 93 95 98 100 Put the number 45 on a number line	How many different ways can you show me the number 28? Match each number line to the clue that describes it. - The number is over half way along the number line. - The number is bigger than 50. - The number is between 20 and 40.
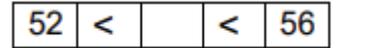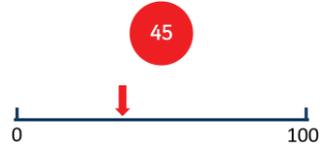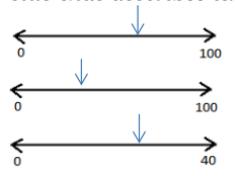
| read and write numbers to at least 100 in numerals and in words | Read and write numbers to at least 100 in numerals and in words

Vocabulary
Hundred | Chant as a group, starting with 0 sequence moving up in 10s, then 5s and then 2s.

Chant as a group, starting with 100 sequence moving down in 10s, then 5s and then 2s.

Chant as a group, starting with any number sequence moving up in 10s, then 5s and then 2s

Chant as a group, starting with any number sequence moving down in 10s, then 5s and then 2s

Use cards between 0 and 20, then 50 and then 100 and get pupils to call out their names rapidly.

Can you read the number **twelve** and write in the box? 12
Can you read the number fifty- nine and write in the box? 59

Finish the sequence
10. 20 ,30, 40
2, 4, 6, 8, 10
27, 28, 29, 30 | Pupils should respond quickly to cards with the tens numbers on them, ie, ten, twenty, thirty, etc.
Pupils should then respond rapidly to numbers such as twenty-one, fifty-two, etc.

Half the class are given numbers in words and the other half have numbers, in turn pupils stand up from one side and the person on the other with the corresponding number has to react as quickly as possible.

Write numbers in words

Numbers as word
fifty-six, fifty-seven, fifty-eight, fifty-nine
Writing numbers
 eighty-two , eighty-four
Writing numbers
 68 , 6 tens + 9 ones, 70 , 7 tens + 1 one, 72 | Match the words to the numerals. Fill in the missing digits.
<table><tr><td>Forty four</td><td>3</td><td></td></tr><tr><td>Forty six</td><td></td><td>4</td></tr><tr><td>Sixty four</td><td>4</td><td></td></tr><tr><td>Thirty four</td><td></td><td>6</td></tr></table> |
| recognise the place value of each digit in a two-digit number (tens, ones) | Recognise the place value of each digit in a two-digit number (tens, ones)

Vocabulary
Tens
Ones
Place value
Value of a digit | Identify and know the value of single digits.
7=7 ones
9=9 ones | The oracy sessions will mostly be in the form of reminders.

Games could include rapid response to saying, e.g. 3 tens and 7 units is 37.

How many tens in a number like 48?
Rapid response is the key at this stage of the year.
 | How many 2-digit numbers can you make using 3 counters and the number grid below?
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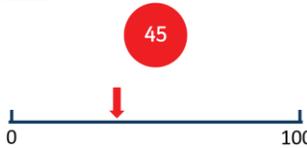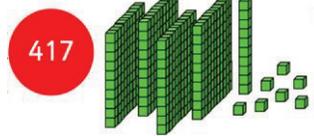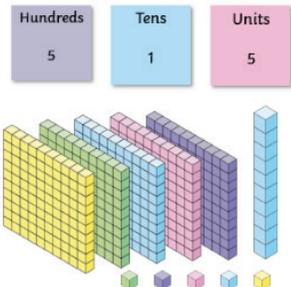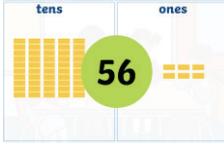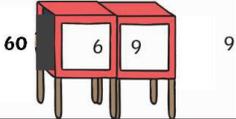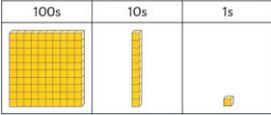|				
			Rapid response to adding one or taking one away from a given number. Rapid response to adding ten or taking away ten from a given number. Give up to 6 pupils a number between 0 and 99 and get them to organise themselves so that the smaller number is first. They can also partition 2-digit numbers 69 = 60 6 9 9	
use place value and number facts to solve problems	Use place value and number facts to solve problems Vocabulary	Covered above	Covered above	

Year 3.

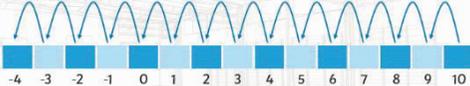| NC Objective	Learning Objectives	Pre-learning	Methods from Calculation Policy	Key Questions for GDS
count from 0 in multiples of 4, 8, 50 and 100;	Count from 0 in multiples of 4, 8, 50 and 100; **Vocabulary** eights, fifties hundreds	With the whole group, count in 10s to 100, forward and backward, with increasing speed. Now do the same with counting in 2s, 3s and 5s. Start from any number and see how quickly they can pick this up. Link to any familiar number rhymes or songs involving number. Link to times tables. Talk about even and odd numbers in relation to counting in 2s. Concrete Pictorial Abstract Count forwards in 10's - 17, 27, 37 Count backwards in 10's -64, 54, 44 Count forwards in 2's -34, 36, 38 Count backwards in 2's -62, 60, 58 Count forwards in 5's -67, 72, 77 Count backwards in 5's -91, 86, 81 Count forwards in 3's -57, 60, 63	Create a circle with a small group of pupils and starting with one pupil they have to move around adding 4 or 8 to a given number as rapidly as possible. This idea could be developed so as to create a competition between two or three small groups. This could also be done with adding or subtracting 50 or 100 from given numbers. Recall the 2x table Recall the 4x table Recall the 8x table Recall the 50x table Count on or back in multiples of 100 1000 one thousand	Use the number cards to make a sequence. Can you make more than one sequence? 200 [ ] 400 [ ] 300 [ ]
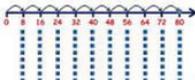
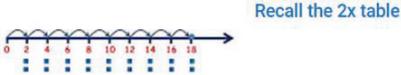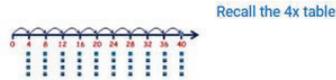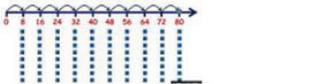|		Count backwards in 3's -87, 84, 81		
find 10 or 100 more or less than a given number	Find 10 or 100 more or less than a given number	Counting on and back at pace between 0 and 100.	Adding 10 rapidly to a number of TU and HTU numbers.	10 more than my number is 100 less than 320.
	one hundred more one hundred less,	Counting on and back at pace from any starting place between 0 and 100.	Taking away 10 rapidly from a number of TU and HTU numbers.	What is my number?
		Use number lines with pupils and show what one more and one less actually means.	Adding 100 rapidly to a number of TU and HTU numbers.	I think of a number. I add 10 and then take away 100. My answer is 350.
		Asking quick fire questions, such as, what is one more than 16? What is one less than 78? etc.	Taking away 100 rapidly from a number of HTU numbers.	What was my number?
		Concrete	Finding 10 more or less	
				Create two 3-digit numbers. They have a difference of more than 10 with the ones number being 7 and the hundreds number being 6.
		Pictorial How many fingers if I put one down? 9	206	Create another pair of 3-digit numbers. This time they have a difference of more than 500. The tens has to be an odd number and the ones has to be an even number.
		Abstract Fill in the box		
			Finding 100 more or less	
			Let's count up in 100s.	

			Let's have a go at counting down in 100s.	
compare and order numbers up to 1000	Compare and order numbers up to 1000 **Vocabulary** Thousand Counting numbers... Compare	Ensure all pupils are familiar with the signs < > and =. Link to previous work when these signs have been used. Revise counting games to 20, then to 50 and then to 100. Find rhymes, especially number rhymes, where numbers go down as well as up. Improvise with these number games, eg, 100 green bottles with 10 or 5 accidentally falling each time. Show how the signs work within a number sentence. 5<3 54>32 66=66 Order the numbers from smallest to largest: 23, 32, 27, 30, 19, 41 Ans -19, 23, 27, 30, 32, 41	Use cards with numbers up to 1000 on them and get pupils to pick out the hundreds, tens or ones number. 4 3 7 5 1 5	I am thinking of a number. My number is between 300 and 500. The digits add up to 14. The difference between the largest and the smallest digit is 2. What could my number be? Order all the possible numbers from smallest to largest.
identify, represent and estimate numbers using different representations	Identify, represent and estimate numbers using different representations **Vocabulary** Estimate numbers Represent numbers	Chn should become familiar and secure using a number line, counting forward and counting backwards. They should be able to identify numbers up to two digits on a number line. Also, they should estimate the position of number on a number line. Place these numbers on the number line. 93 95 98 100 93 94 95 97 98 99 100	Chn should become familiar and secure using a number line, counting forward and counting backwards. They should be able to identify numbers up to two digits on a number line. Also, they should estimate the position of number on a number line. Place these numbers on the number line. 107 109 111 113 107 108 109 110 111 112 113	Using four counters and the place value grid below, how many different numbers can you make? Eg 211 100s 10s 1s If the number on the number line is 780, what could the start and end point of the number line be?

		Put the number 45 on a number line 45 0 100	Representing Numbers Using Base 10 417	
read and write numbers up to 1000 in numerals and in words	Read and write numbers up to 1000 in numerals and in words **Vocabulary** Thousand numeral **Vocabulary** Numerals Thousand	Pupils should respond quickly to cards with the tens numbers on them, ie, ten, twenty, thirty, etc. Pupils should then respond rapidly to numbers such as twenty-one, fifty-two, etc. Half the class are given numbers in words and the other half have numbers, in turn pupils stand up from one side and the person on the other with the corresponding number has to react as quickly as possible. Write numbers in words Numbers as word fifty-six, fifty-seven, fifty-eight, fifty-nine Writing numbers , eighty-two, , eighty-four Writing numbers _68_ , 6 tens + 9 ones, _70_ , 7 tens + 1 one, _72_	Pupils should respond quickly to cards with the hundreds numbers on them, ie, hundred, two hundred, three hundred, etc. Pupils should then respond rapidly to numbers such as hundred and twenty, two hundred and forty, etc. **Five hundred and fifteen** Half the class are given numbers in words and the other half have numbers. In turn a pupil with the words stands up from one side and the person, on the other side, with the corresponding number has to react as quickly as possible. In small groups pupils play a bingo style game or a snap game involving words and numbers.	Hariz thinks of a number. It is an odd number It is between 130 and 340 The three digits are different numbers. Write four possible numbers they could be in numerals and in words. He then goes on to think of another number. This time it is a tens number and has three-digits; the hundreds number is between 2 and 5; the tens number is between 6 and 9 and the ones number is even. Think of 3 possible answers Match the number in words to the number in numerals. Fill in the missing numbers.
recognise the place value of each digit in a three-digit number (hundreds, tens, ones)	Recognise the place value of each digit in a three-digit number (hundreds, tens, ones)	The oracy sessions will mostly be in the form of reminders.	Recognise the value of each digit in a 3-digit number. Reinforce this through practise and consolidation.	Use the clues to find the missing digits:

		Games could include rapid response to saying, e.g. 3 tens and 7 units is 37. How many tens in a number like 48? Rapid response is the key at this stage of the year. Rapid response to adding one or taking one away from a given number. Rapid response to adding ten or taking away ten from a given number. Give up to 6 pupils a number between 0 and 99 and get them to organise themselves so that the smaller number is first. They can also partition 2-digit numbers **69 =** 	Have 3 pupils holding a 3-digit number in front of them. Get pupils to order the pupils according to the value of the number (greatest first or smallest first as commanded) Get pupils to recognise that a number like 362 has 3 hundreds; six tens and 2 ones; or, 36 tens and 2 ones; or, 362 ones 3-digit numbers are numbers that use the place value positions of hundreds, tens and ones. 	The hundreds digit is double the tens digit. The tens digit is 5 less than 2 x 8. The ones digit is 2 less than the hundreds digit.
solve number problems and practical problems involving these ideas.	Solve number problems and practical problems involving these ideas. **Vocabulary**	All of the above	All of the above	All of the above

Year 4.
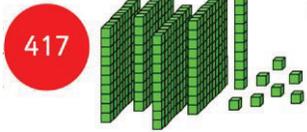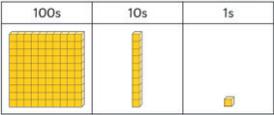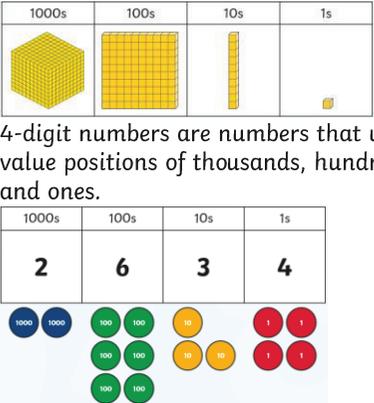
NC Objective	Learning Objectives	Pre-learning	Methods from Calculation Policy	Key Questions for GDS
count backwards through zero to include negative numbers	Count backwards through zero to include negative numbers Vocabulary next, consecutive positive, negative above/below zero, minus	Counting games to 20, then to 50 and then to 100. Number rhymes and number games to 20, then to 50 and then to 100. Counting games back to 0 from 20, then 50 and then 100. Counting on beyond 100. Counting back starting with a number greater than 100. Concrete Pictorial 6 7 8 9 Abstract Finish the sequence: 1, 2, 3, 4, 5, 6, 7 10, 9, 8, 7, 6, 5 33, 32, 31, 30,29	Use a number line with pupils. The number line will be from -10 to +10. Get pupils to count in ones starting from a negative number and emphasising the zero. Use a number line with and without negative numbers and show how counting on is a move to the right and how counting back is a move to the left. Talk about the way we record temperature in Celsius. On very cold days our recording could be a negative number.	Fred is a police officer. He is chasing a suspect on Floor 5 of an office block. The suspect jumps into the lift and presses -1. Fred has to run down the stairs, how many flights must he run down?
count in multiples of 6, 7, 9, 25 and 1000	Count in multiples of 6, 7, 9, 25 and 1000 Vocabulary sixes, sevens, nines, twenty-fives	Create a circle with a small group of pupils and starting with one pupil they have to move around adding 4 or 8 to a given number as rapidly as possible.	Focus on 6, 7, 9 and 10 times tables. Check understanding by asking questions related to tables out of order. Now check inverses by asking how many 6s, 7s or 9s in 36, 42 or 81 respectively.	What is wrong with these sequences of numbers? 950, 975,1000,1250 2006, 4006, 6006, 7006, 8006

		This idea could be developed so as to create a competition between two or three small groups. This could also be done with adding or subtracting 50 or 100 from given numbers.	Count rapidly forwards and backwards in 10, 100 and 1000s, then in 25s. Provide pupils with regular 'test' to check their rapid recall of table facts.	Here is a hundred square.
				  Some numbers have been shaded in blue, and some in pink. Can you notice the pattern? Why are some numbers maroon?
find 1000 more or less than a given number	Find 1000 more or less than a given number Vocabulary integer, one thousand more one thousand less	Adding 10 rapidly to a number of TU and HTU numbers. Taking away 10 rapidly from a number of TU and HTU numbers. Adding 100 rapidly to a number of TU and HTU numbers. Taking away 100 rapidly from a number of HTU numbers. Finding 10 more or less	Help pupils to have rapid recall when adding or subtracting 100 to a given 3-digit number. Then move on to add or subtract 100 from a 4-digit number. Create a system of rapid recall and chanting to help pupils with their mental agility. Move on then to add or subtract 1000 rapidly from a 4-digit number. Ensure pupils are confident with adding and subtracting from a 4-digit number before adding 1000 to 2 and 3 digit numbers.	5 children were given a maths problem where the answer was 4870. Harry wrote 3858 as his answer; Harry wrote 4735; Jen wrote 6187; Ahmed wrote 5925 and Harriet wrote 4648. Who was closest to the answer and who was furthest away?
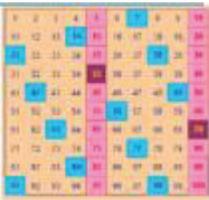
The diagram in the third column shows:
- Recall the 2x table
- Recall the 4x table
- Recall the 8x table
- Recall the 50x table
- 1000 one thousand — Count on or back in multiples of 100

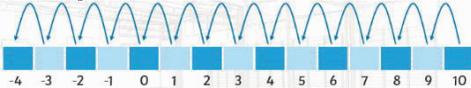|				
		Finding 100 more or less	**1000 more** Laura wants to add 1000 to some numbers. Explain to her how to find 1000 more than these numbers, then write the answers. **3871, 7203, 8014, 5530** Finding 1000 more than the given numbers increases the thousands digit by 1 (thousand) whilst the hundreds, tens and ones digit remain the same. **4871, 8203, 9014, 6530.** **1000 less** With a 1000 less, you subtract a 1000 from a given number. E.g. **2093 -1093**	Fill in the boxes by finding the patterns.
order and compare numbers beyond 1000	Order and compare numbers beyond 1000 **Vocabulary** ten thousand, hundred thousand, million	Use cards with numbers up to 1000 on them and get pupils to pick out the hundreds, tens or ones number.	This is picking up from other place value learning. The main issue is to emphasise the value of each digit in a 4-digit number. Use cards with different digits bolded and get pupils to say what the value of the bolded digit is. Pass the cards around a group and each has to say what the thousand value is; then the hundred value; etc. Four pupils are given a set of four cards. They have to stand in order going from the smallest to the largest. Pupils could also chant starting at 100 and going up in 100s beyond a 1000. **Comparing numbers** Look at this example. The symbol tells us that 1755 is greater than 1577. **1577 < 1755**	I am thinking of a number. It is greater than 1500 but smaller than 2000. The digits add up to 13. The difference between the largest and smallest digit is 5. What could the number be? Order them from smallest to largest. Make up a 4-digit number from the cards above and then make up another which is more than 1000 bigger or smaller than your original. Choose another 4 and this time make the difference more than 100 but less than 500.
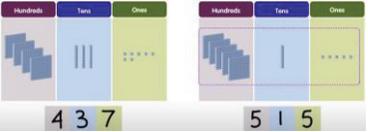
			Now write the correct sign (< >) for each set of numbers.	
			Ordering numbers Order these numbers from smallest to largest. Look at the value of each digit in each column then order from smallest t largest.	
			5646 6534 6550 6605 6641 7506	
compare numbers with the same number of decimal places up to two decimal places	Compare numbers with the same number of decimal places up to two decimal places ### Vocabulary	See policy Fractions, decimals and percentages	See policy Fractions, decimals and percentages	See policy Fractions, decimals and percentages
identify, represent and estimate numbers using different representations	Identify, represent and estimate numbers using different representations ### Vocabulary Estimate Hundred Tens Thousand Ones Place value	Chn should become familiar and secure using a number line, counting forward and counting backwards. They should be able to identify numbers up to two digits on a number line. Also, they should estimate the position of number on a number line. Place these numbers on the number line. 107 109 111 113 **107 108 109 110 111 112 113** 	Chn should become familiar and secure using a number line, counting forward and counting backwards. They should be able to identify numbers up to two digits on a number line. Also, they should estimate the position of number on a number line. Number line Laura draws 4 number lines and marks a number at either end. She asks Alfie to mark the number 3500 on each number line. Where will Alfie mark 3500? 	Using 3 counters and the place value grid below, how many 4 digit numbers can you make? If the number on the number line is 1788, what could the start and end numbers be?
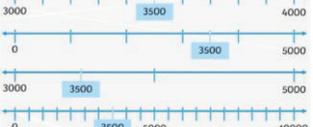
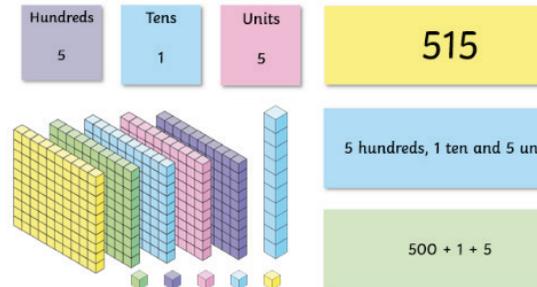|			Abacus	
		Representing Numbers Using Base 10 417	**Abacus** Fatima has an abacus to represent four-digit numbers. The following beads are already on the abacus. She has one more bead. Where can she place the bead to make the following 1. An even number. Ones column 2. A multiple of 5. Thousands or hundreds or tens 3. A multiple of 3. Any column 4. The largest number possible. Thousands column 5. The smallest number possible. Ones column 6. A number with all digits odd. Impossible	
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.	Read Roman numerals to 100 (I to C) Vocabulary Numerals Place value	None	Although the construct is specifically about Roman Numbers it would be healthy to have a look at different systems including Ancient Egyptian and Arabic. Pupils will need to remember the key letters of V; X; L and C as in 5; 10; 50 and 100. They will also need to be taught how the one or ten number preceding the letters will be in front of the new letter, eg, 1V; 1X; XL and XC. Each letter represented a certain value These are the letter symbol combinations we need to know to be able to read Roman numerals to 100 | Letter	Value
---	---
I	1
V	5
X	10
L	50
C	100		Add and subtract the following Roman Numerals and give answers as both Roman and TU numbers. XXV + XX11 LX – XX1V LX + XXV1 C – LXX11 XXV11 + XXXV111 LXX – V111
recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones)	Recognise the place value of each digit in a four-digit number Vocabulary Hundred Thousand Four-digit number Three-digit number Vocabulary	Recognise the value of each digit in a 3-digit number. Reinforce this through practise and consolidation. Have 3 pupils holding a 3-digit number in front of them. Get pupils to order the pupils according to the value of the number (greatest first or smallest first as commanded)	Recognise the value of each digit in a 4-digit number. Reinforce this through practise and consolidation. Have 3 pupils holding a 4-digit number in front of them. Get pupils to order the pupils according to the value of the number (greatest first or smallest first as commanded) Get pupils to recognise that a number like 1362 has 1 thousand; 3 hundreds; six tens and 2 ones.	Claire thinks of a 4-digit number. The digits add up to 12. The difference between the first and fourth digit is 5. What could Claire's number be?

		Get pupils to recognise that a number like 362 has 3 hundreds; six tens and 2 ones; or, 36 tens and 2 ones; or, 362 ones. 3-digit numbers are numbers that use the place value positions of hundreds, tens and ones. 	4-digit numbers are numbers that use the place value positions of thousands, hundreds, tens and ones. 4-digit numbers are numbers that use the place value positions of thousands, hundreds, tens and ones. 	Use the clues to find the missing digits. The thousands and tens digit multiply together to make 24. The hundreds and tens digit have a digit total of 9. The ones digit is double the thousands digit. The whole number has a digit total of 18.
round any number to the nearest 10, 100 or 1000	Round any number to the nearest 10, 100 or 1000 Vocabulary Whole number The rule of rounding up The rule of rounding down Rounding to the nearest…	None Recap and know the place value of digits up to 4 digits.	Explain to pupils why it is sometimes very useful to be able to get an approximate value. Go on to explain that in mathematics a system known as 'rounding' gives a better overall picture rather than just approximating. Explain how the numbers close to the smaller of two numbers is rounded to that number and the numbers closest to the higher of the two numbers is rounded to the higher number. Explain the rule about a number exactly half way between two numbers. Round 36 to the nearest 10. Look at the value of the 6. Apply the rule of rounding up to the tens or down to the tens. 980 to the nearest 10	When a number is rounded to the nearest 100 it is 200. When the same number is rounded to the nearest 10 it is 250. What could the number be? Rounding Money Harris and Jones have rounded their money to the nearest £10. Harris has £80 and Jones has £120. Consider the largest and smallest amounts that each one could actually have. What is the largest possible difference in their money? What is the smallest possible difference in their money?

round decimals with one decimal place to the nearest whole number	Round decimals with one decimal place to the nearest whole number Vocabulary	See maths policy Fractions, decimals and percentages	See maths policy Fractions, decimals and percentages	
solve number and practical problems that involve all of the above and with increasingly large positive numbers	Solve number and practical problems Vocabulary	Covered above	Covered above	

Year 5.

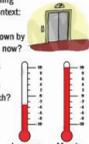| NC Objective	Learning Objectives	Pre-learning	Methods from Calculation Policy	Key Questions for GDS
interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero	Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers **Vocabulary** Negative numbers Positive numbers Counting forwards Counting backwards ascending/descending order	Use a number line with pupils. The number line will be from -10 to +10. Get pupils to count in ones starting from a negative number and emphasising the zero. Use a number line with and without negative numbers and show how counting on is a move to the right and how counting back is a move to the left. Talk about the way we record temperature in Celsius. On very cold days our recording could be a negative number.	Remind pupils of the learning already covered with regard to negative numbers in Year 4. Use a large metre stick to show what happens when we go through zero. Consider when negative numbers are used in everyday life, eg, measuring temperature of freezers, etc. Start at 3. Count back 5. **What number do you reach? -2** Start at -2. Count on 5. What number do you reach? **3** 	Fred is a police officer. He is chasing a suspect on Floor 5 of an office block. The suspect jumps into the lift and presses -1. Fred has to run down the stairs, how many flights must he run down?
count forwards or backwards in steps of powers of 10 for any given number up to 1000 000	Count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000 **Vocabulary** ascending/descending order one thousand more one thousand less	Focus on 6, 7, 9 and 10 times tables. Check understanding by asking questions related to tables out of order. Now check inverses by asking how many 6s, 7s or 9s in 36, 42 or 81 respectively. Count rapidly forwards and backwards in 10, 100 and 1000s, then in 25s. Provide pupils with regular 'test' to check their rapid recall of table facts.	As a class count on in powers of 10, 100, 1000 from any given number. Then count back in 10, 100, 1000 from a given number. Move on to counting forwards and backwards in 10,000; 100,000 and 1,000,000 from any given number. Help pupils to have rapid recall when adding or subtracting up to 1000000 to a given number. Create a system of rapid recall and chanting to help pupils with their mental agility.	5 children were given a maths problem where the answer was 14850. Hamish wrote 13858 as his answer; Nicola wrote 14735; Jemma wrote 16187; Aliz wrote 15925 and Harriet wrote 14648. Who was closest to the answer and who was furthest away? Explain how you know. Temperature falls by about 1oC for every 100 metres height gain. Abigail

				Move on then to add or subtract in powers of 10 rapidly from numbers with up to 7 digits.	is standing on top of a mountain at 900 metres above sea level. The temperature is – 3oC. Abigail walks down the mountain to sea level. What should she expect the temperature to be?
read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit	Read, write, order and compare numbers to at least 1 000 000 Vocabulary ascending/descending order one thousand more one thousand less	Pupils should respond quickly to cards with the hundreds numbers on them, ie, hundred, two hundred, three hundred, etc. Pupils should then respond rapidly to numbers such as hundred and twenty, two hundred and forty, etc. **Five hundred and fifteen** Hundreds 5 Tens 1 Units 5 515 5 hundreds, 1 ten and 5 units 500 + 1 + 5 Half the class are given numbers in words and the other half have numbers. In turn a pupil with the words stands up from one side and the person, on the other side, with the corresponding number has to react as quickly as possible. In small groups pupils play a bingo style game or a snap game involving words and numbers.	Start by revising reading and writing numbers to 1000, 10,000, and 100,000. Remind pupils of place value. Chant in thousands beyond 100,000 and 100,000 up to 1,000,000. Half the class are given numbers in words and the other half have numbers. In turn a pupil with the words stands up from one side and the person, on the other side, with the corresponding number has to react as quickly as possible. In small groups pupils play a bingo style game or a snap game involving words and numbers. Read and write numbers to a 1 000 000 45,829 Hundred thousands 4 Ten thousands 5 Thousands 8 Hundreds 2 Tens ... Ones 9 45 thousand, 8 hundred and 29 Order numbers to 1 000 000 from smallest to largest 322 223 233 332 33 323 322 232 smallest largest Compare numbers to 1 000 000	Harriet has made five numbers, using the digits 1, 2, 3 and 4. She has changed each number into a letter and has written three clues to help people work out her numbers. 'Number 1 is the largest. Number 4's digits add up to 12. Number 3 is the smallest number.' 1. aabdc 2. acdbc 3. dcaba 4. cdadc 5. bdaab 1 6 5 4 9 3 0 Make up 7-digit numbers, with the numbers shown. The first digit has to be a 1. Make a pair of 7-digit numbers which are less than 100,000 apart. Make a pair of 7-digit numbers that are more than 500,000 apart. Make up a pair of 7-digit numbers that are less than 50,000 apart. Now think up some for yourself to give to your friends.

			45,645 **smaller** 46,545 **larger**	

Row 1:

Read Roman numerals to 1 000 (M) and recognise years written in Roman numerals.	Read Roman numerals to 1000 (M) and recognise years written in Roman numerals **Vocabulary** Roman numerals Years **Vocabulary**	Although the construct is specifically about Roman Numbers it would be healthy to have a look at different systems including Ancient Egyptian and Arabic. Pupils will need to remember the key letters of V; X; L and C as in 5; 10; 50 and 100. They will also need to be taught how the one or ten number preceding the letters will be in front of the new letter, eg, 1V; 1X; XL and XC. Each letter represented a certain value These are the letter symbol combinations we need to know to be able to read Roman numerals to 100 Letter/Value: I 1, V 5, X 10, L 50, C 100 Tens: X 10, XX 20, XXX 30, XL 40, L 50, LX 60, LXX 70, LXXX 80, XC 90 Ones: I 1, II 2, III 3, IV 4, V 5, VI 6, VII 7, VIII 8, IX 9 Hundreds: C 100	Remind pupils of the learning about Roman numerals to 100 giving particular attention to numbers like 4; 9; 40 and 90; Discuss when Roman numerals are used in everyday life, including dates. Number List: I 1, V 5, X 10, L 50, C 100, D 500, M 1000 For example: 9 = 10 – 1 = **IX** 40 = 50 – 10 = **XL** **CD** (500 – 100 = 400) What are these numbers? IV — 4 XC — 90 XL — 40	Write the full date in Roman numerals: | Date	Roman Date
---	---
4/11/2011	1V/ X1/ MMX1
19/12/1990	
12/4/1951	
30/7/2007	
18/5/2011	
7/5/1980		 Work out the year of your birth in Roman Numerals. Work out the current year in Roman Numerals. Can you find the difference?

Row 2:

round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000	Round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000 **Vocabulary** Round Million Ten thousand Thousand Place value	Explain to pupils why it is sometimes very useful to be able to get an approximate value. Go on to explain that in mathematics a system known as 'rounding' gives a better overall picture rather than just approximating. Explain how the numbers close to the smaller of two numbers is rounded to that number and the numbers closest to the higher of the two numbers is rounded to the higher number. Explain the rule about a number exactly half way between two numbers.	Remind pupils of the learning carried out in the previous term related to rounding decimal numbers. Explain that the same applies to rounding larger numbers. Provide pupils with cards that have large numbers on them and verbally get pupils to round the numbers to the nearest 10, 100 or 1000. Move on then to round to the nearest 10,000 and 100,000.	Nathan thinks of a number. He says 'My number rounded to the nearest 10 is 1150, rounded to the nearest 100 is 1200 and rounded to the nearest 1000 is 1000.' What could Nathan's number be? **Adding Rounded Numbers** Two numbers between 670 and 700 have been rounded to the nearest 10.

		Round 36 to the nearest 10. Look at the value of the 6. Apply the rule of rounding up to the tens or down to the tens. **36**　　**980** 980 to the nearest 10	Examples Ten-thousands Thousands Hundreds Tens Units **1 9 9 3 3** Round 19 933 to the nearest: 10,000: 20,000　100: 19,900 1,000: 20,000　10: 19,930 Hundred-thousands Ten-thousands Thousands Hundreds Tens Units **7 7 3 5 8 2** Round to the nearest: 100,000: 800,000　10,000: 770,000　100: 773,600 1,000: 774,000　10: 773,580 Millions Hundred-thousands Ten-thousands Thousands Hundreds Tens Units **5 1 8 5 5 5 5** Round 5,185,555 to the nearest: 1,000,000: 5,000,000　10,000: 5,190,000　100: 5,185,600 100,000: 5,200,000　1,000: 5,186,000　10: 5,185,560	When adding the rounded numbers together they make 1350. Give two sets of examples of what the numbers could have been in the first place. Two numbers between 7000 and 7200 have been rounded to the nearest 100. When adding the rounded numbers together they make 14100. Give two sets of examples of what the numbers could have been in the first place.
round decimals with two decimal places to the nearest whole number and to one decimal place	Round decimals with two decimal places to the nearest whole number and to one decimal place **Vocabulary** Decimals Decimal places Whole numbers	See maths policy Fractions, decimals and percentages	See maths policy Fractions, decimals and percentages	
solve number problems and practical problems that involve all of the above	Solve number problems and practical problems that involve all of the above **Vocabulary**	All of the above	All of the above	All of the above

Year 6.

NC Objective	Learning Objectives	Pre-learning	Methods from Calculation Policy	Key Questions for GDS
use negative numbers in context, and calculate intervals across zero	Use negative numbers in context, and calculate intervals across zero **Vocabulary** Negative numbers Intervals Sequence	Remind pupils of the learning already covered with regard to negative numbers in Year 4. Use a large metre stick to show what happens when we go through zero. Consider when negative numbers are used in everyday life, eg, measuring temperature of freezers, etc. Start at 3. Count back 5. **What number do you reach? -2** Start at -2. Count on 5. What number do you reach? **3** 	Revise learning already covered in relation to negative numbers from Years 4 and 5; Ensure pupils are confident in dealing with: knowing the difference between a positive and a negative number; continuing a sequence which includes negative and positive numbers. Find examples of when negative numbers are used in context such as measuring temperature. Look at the rules of adding and subtracting negative numbers. 	The temperature is -6°c. It gets 5 degrees warmer. True or false – it is now -11°c. Explain your answer using a drawing e.g. number line. Here are some number cards: Use the cards to complete the calculations below ___ + ___ = ___ ___ - ___ = ___
read, write, order and compare numbers up to 10 000 000 and determine the value of each digit	Read, write, order and compare numbers up to 10 000 000 and determine the value of each digit **Vocabulary** Compare Value Ten million	Start by revising reading and writing numbers to 1000, 10,000, and 100,000. Remind pupils of place value. Chant in thousands beyond 100,000 and 100,000 up to 1,000,000. Half the class are given numbers in words and the other half have numbers. In turn a pupil with the words stands up from one side and the person, on the other side, with the	Start by revising reading and writing numbers to 10,000, 100,000 and 1,000,000. Reminding pupils of place value. Chant in thousands beyond 100,000 and 100,000 up to 1,000,000. Half the class are given numbers in words and the other half have numbers. In turn a pupil with the words stands up from one side and the person, on the other side, with the corresponding number has to react as quickly as possible.	**Write the next two numbers in this sequence:** • Eleven million, two hundred and forty thousand, six hundred and thirty-five: • 11,140,635; • Eleven million, forty thousand; six hundred and thirty-five; • 10,940,635

		corresponding number has to react as quickly as possible.	In small groups pupils play a bingo style game or a snap game involving words and numbers.	Claire is given the calculation below to estimate an answer to 1912 + 1888 =
		In small groups pupils play a bingo style game or a snap game involving words and numbers.		Claire says "I will just double 1900 which is 3800".
		Read and write numbers to a 1 000 000	One million, one hundred and four thousand, two hundred and thirteen.	Why has Claire done that? Would you do anything differently?
			Value Here is a 7-digit number: 7 654 321	
		45,829	Write down the numbers that are:	
		45 thousand, 8 hundred and 29	1. ten thousand more — 7 664 321	
		Order numbers to 1 000 000 from smallest to largest	2. one hundred less — 7 654 221	
			3. one million less — 6 654 321	
		322 223 233 332 33 323 322 232	4. a thousand more — 7 655 321	
		smallest largest	5. three hundred thousand more — 7 954 321	
		Compare numbers to 1 000 000	6. Eight more — 7 654 329	
			7. Forty less — 7 654 281	
		45,645 46,545	Order the following numbers from smallest to largest: 1 010 011 1 100 010 1 101 001 1 001 100 1 001 010 1 101 011 110 110	
		smaller larger	• 110 110 is the smallest as it is the only number with 6 digits. The rest have 7 digits. • 1 001 010 and 1 001 100 are the next smallest numbers. They both have the same total number of thousands, but the former is smaller as the last three digits are 010 and the latter is 100. • The next number is 1 010 011 as it has no hundred thousands. • The largest three numbers are 1 100 010, 1 101 001, 1 101 011. All have ones in the millions and hundred thousands. The first of these is the smallest as has no thousands, but the others do. The third one is the largest as all the digits are the same as the second one except is has a ten and the middle one has no tens.	
identify the value of each digit to three decimal places and multiply and divide numbers by 10, 100 and 1000 where the answers are up to three decimal places	Identify the value of each digit to three decimal places and multiply and divide numbers by 10, 100 and 1000 Vocabulary Decimal places Value Multiply Divide	See maths policy Fractions, decimals and percentages	See maths policy Fractions, decimals and percentages	

round any whole number to a required degree of accuracy	Round any whole number to a required degree of accuracy **Vocabulary** Rounding Whole number degree of accuracy	Remind pupils of the learning carried out in the previous term related to rounding decimal numbers. Explain that the same applies to rounding larger numbers. Provide pupils with cards that have large numbers on them and verbally get pupils to round the numbers to the nearest 10, 100 or 1000. Move on then to round to the nearest 10,000 and 100,000. Examples Ten-thousands Thousands Hundreds Tens Units 1 9 9 3 3 Round 19 933 to the nearest: 10,000: 20,000 100: 19,900 1,000: 20,000 10: 19,930 Hundred-thousands Ten-thousands Thousands Hundreds Tens Units 7 7 3 5 8 2 Round to the nearest: 10,000: 770,000 100: 773,600 100,000: 800,000 1,000: 774,000 10: 773,580 Millions Hundred-thousands Ten-thousands Thousands Hundreds Tens Units 5 1 8 5 5 5 5 Round 5,185,555 to the nearest: 1,000,000: 5,000,000 10,000: 5,190,000 100: 5,185,600 100,000: 5,200,000 1,000: 5,186,000 10: 5,185,560	Much of the unit is revising previous learning by revisiting previous units. Remind pupils of the rules associated with rounding and provide them with increasingly difficult examples to explore. Talk with pupils about when rounding is a useful concept and when it would not be. Ensure pupils are confident of rounding a decimal value to the nearest whole number. Round each of these numbers to the nearest 1000, 10 000, 100 000 or 1 000 000. |	Rounded to the nearest 1000	Rounded to the nearest 10 000	Rounded to the nearest 100 000	Rounded to the nearest 1 000 000
145 678	146 000	150 000	100 000	0
563 459	563 000	560 000	600 000	1 000 000
3 489 503	3 490 000	3 490 000	3 500 000	3 000 000
6 805 476	6 805 000	6 810 000	6 800 000	7 000 000		**Adding and Subtracting Rounded numbers** Two rounded numbers, rounded to the nearest 1,000 add up to 52,000 and when subtracted from each other makes 2000. What are the two rounded numbers? Give an example of what the original numbers could have been before they were rounded. Mr Langfield gives out the following four cards: 59.96 59.94 60.26 62.32 Four children each take a card and give a clue to what their number is: Alice says "My number is 60 when rounded to the nearest 10." Beth says "My number has exactly 6 tens in it." Charlie says "My number is 59.9 to the nearest tenth." Daniel says "My number is 60 to the nearest tenth." Can you work out which child has which card? Explain your choices
solve problems which require answers to be rounded to specified degrees of accuracy	Solve problems which require answers to be rounded to specified degrees of accuracy **Vocabulary** Rounding	Check maths policy **Fractions decimals and percentages**	Check maths policy **Fractions decimals and percentages**	Check maths policy **Fractions decimals and percentages**

	Degree of accuracy			
solve number and practical problems that involve all of the above	Solve number and practical problems that involve all of the above Vocabulary	All of the above	All of the above	All of the above