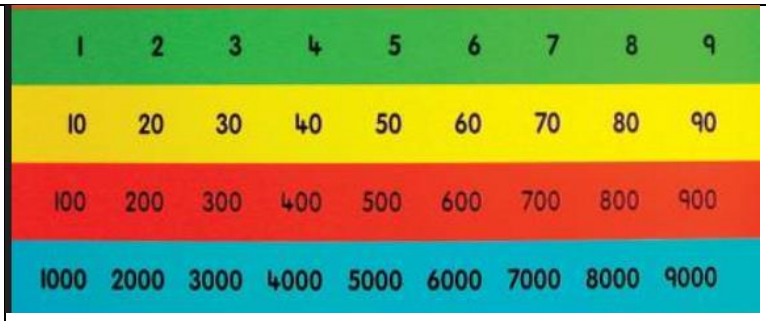
Planning Overview
Year 4 Place Value

Count in multiples of 25 and 1000.
Find 1000 more or less than a given number.
Count backwards through zero to include negative numbers.
Recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones).
Order and compare numbers beyond 1000.
Identify, represent and estimate numbers using different representations.
Round any number to the nearest 10, 100 or 1000.
Solve number and practical problems that involve all of the above and with increasingly large positive numbers.
Read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of zero and place value.

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.
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.
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.
4NPV–4 Divide 1,000 into 2, 4, 5 and 10 equal parts, and read scales/number lines marked in multiples of 1,000 with 2, 4, 5 and 10 equal parts

	Teaching and Learning
Introduction	Have a range of resources on the table with 1, 2, 3 and 4-digit numbers written on card. Choose one number and show the children how it could be made. What other ways could you represent that number? Choose a number and make it in a range of ways. What is the value of each digit? How many 1000s, 100s, 10s, 1s are in your number? Record one number in their books using pictorial representations e.g. Part–Whole model, PV Chart, drawings of dienes, Place Value Counters etc Show children a number made incorrectly, spot the mistake and correct.
Counting in 1000s and 50s	Count in 10s – what is the pattern? Model counting in 100s – can the children explain the pattern? What's the same, what's different about the 10s 100s and 1000s? Make the numbers up to 9000 using resources.

	Complete number sequences involving 1000s, forwards and backwards, with different starting points and back to 0. Solve word problems e.g. You need 8000 marbles. They come in packs of 1000, how many packs do you need? True or False – when I count in 1000s the 1000 column is the only column that changes? Do the children spot that once we get to 9000 the ten thousand column will also change? *This is an introduction to counting in 1000s to introduce children to the size of numbers they will be working with. Continue to count during your warm-up and fluency sessions. Reinforce counting in 50s from Year 3. Further work on counting in steps of 1000 will be completed during work on counting in steps of 25 within and after work on number lines.*
Recognise the place value in each digit in a four-digit number	Can you make a 4-digit number? What is in digit is in each column? How do we say this number? Ask children to make 4-digit numbers using equipment and write as numerals when given the number in words. Make a 4 digit number and write it as numerals when it is given to them orally. Give children a 4-digit number and ask them to partition this number into its column values. 3475 = 3000 and 400 and 70 and 5 Repeat this skill with basic fluency questions – e.g. Partition 4352 4000 and 300 and 50 and 2 Use "Zero the hero" to rescue numbers that are incorrectly written or Spot the mistake.  e.g. 426 has been written incorrectly and should read "four thousand and twenty six". Where should Zero the Hero go to rescue the digits? Children to place 4 counters on the chart below. What number have they made? Can they move 2 counters to make a larger number?

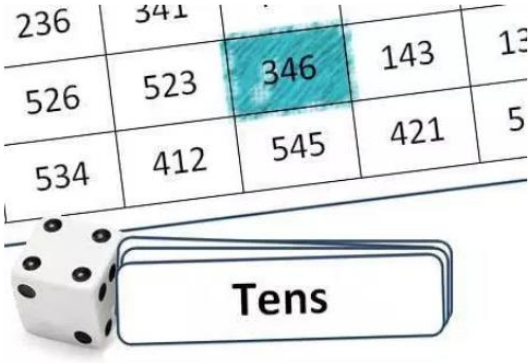


What happens if we only use 3 counters but still make a 4-digit number?

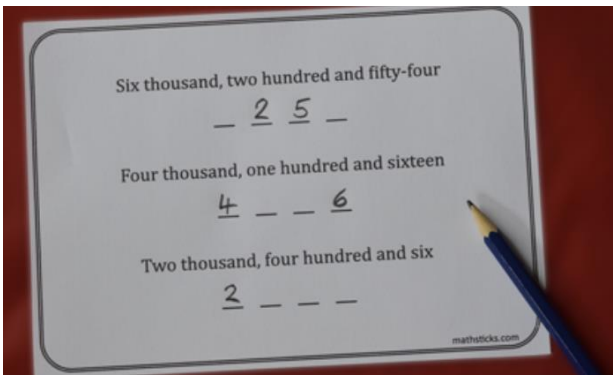
If we have no counter in the 100s/10s/1s column what happens?

What is the largest number you can make with 3 counters? 2 counters? What is the smallest 4-digit number?

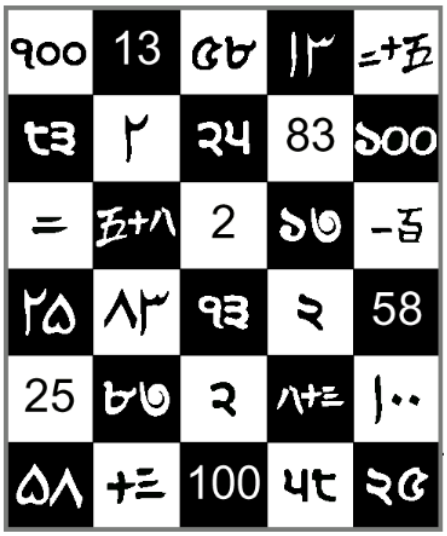
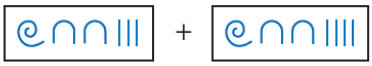
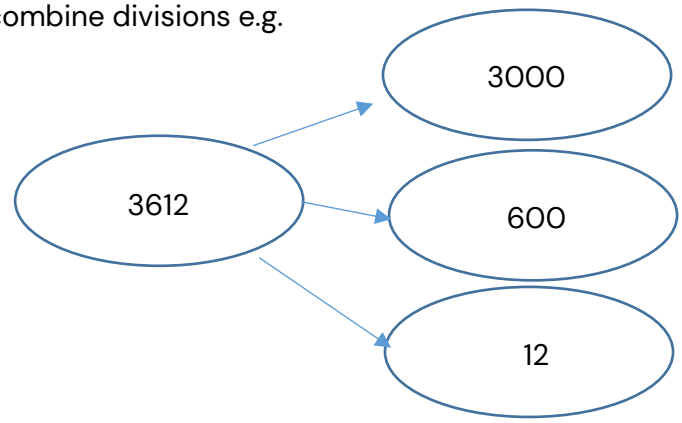
Consolidation activities
Mathsticks - Place Value Four in a Row.



Mathsticks - Place Value Bingo



Children may wish to extend their reasoning around understanding the value of numbers with the following problem-solving activities

	NRICH - Which Scripts?  **Mastery with Greater Depth** 5000 years ago Egyptians carved number symbols on their tombs: | =1 ∩ =10 𓆐 =100 What is the value of these Egyptian numbers?   
Identify and represent numbers using different representations **Standard and non-standard partitioning**	Look at how numbers are partitioned into their components using the part–part–whole model. Repeat for lots of examples starting with smaller numbers increasing to larger numbers. Encourage children to have a circle per division initially and then allow them to combine divisions e.g. 

Using dienes, look at the number 23 on a place value chart. How many ones are in the number? Is it 3 or 23? Show how the 2 tens can be exchanged into 20 ones therefore making 23 ones.

Repeat for 234. How many ones? How many tens? Is it 23 tens or 3 tens? What patterns do the children notice? They can apply a general rule to the pattern.

1000 is also 10 hundreds and 100 tens and 1000 ones
100 hundred is also 10 tens and 100 ones
10 is also 10 ones

If I had 4000 how would I work out how many hundreds that is?

Mastery

Match 4600 to numbers with the same value.

4600	460 tens
	460 hundreds
	46 hundreds
	4600 ones
	46 tens

Model a systematic approach to partitioning numbers in different ways using folded paper.

What patterns do the children notice? Begin to apply general rules.

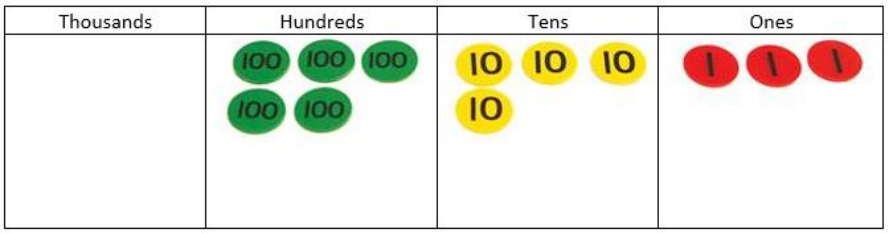
To know how many tens are in 3456 children read the tens column and anything to the left - 345 6 – there are 345 tens in 3456

To know how many hundreds are in 4367 they read the hundreds column and anything to the left - 43 67 – there are 43 hundreds in 4367

Mastery with Greater Depth

How many different ways can you write 5510?

Pupils should suggest answers such as:
551 tens
55 hundreds and 1 ten
5 thousands and 510 ones

Find 1000 more or less than a given number	Make a number using resources e.g. PV Counters, add a counter to a column. What changes? What stays the same? Continue to add a counter to one column until exchange is needed. What happens when we get 9 counters in one column? What if we want to take away counters from the hundreds column? What happens when we run out of counters in the hundreds column and we want to take away 100? Discuss exchange. ***The Exchange Game*** Roll 4 numbers and make a number on a place value chart. Use a place value grid with Dienes or place value counters to represent it. Throw a 0 to 9 dice and turn a "place card" (containing the names for the place value columns e.g. ones, tens…) to generate the digit you will add. Place the correct number of counters in the appropriate column e.g. throw 8 and turn the card "tens" – place 80 (8 tens) on the board and record the number. Repeat and add the appropriate counters each time, exchanging when any column reaches 10 counters. Who can be first to reach a given target?  Variation: Add subtraction into the game by using cards with "add ones", "subtract tens" etc. Start from a random number and follow each instruction, recording the new number each time. Consider how to take 8 tens when there are not enough tens counters. e.g. Throw "8" and turn over "add ones" How will this affect the number? Add 8 ones to make 11, exchange 10 ones for 1 ten and record the new number. If "subtract ones" had been chosen, how would we have done this? Exchange 1 ten for 10 ones to make 13 ones. Now subtract 8 from the ones to leave 5 ones. Record the new number – which columns were affected?

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<tr>
<td></td>
<td>
Complete fluency tables adding and subtracting 1s, 10, 100, 1000s.
Do this first without exchange, then add exchange.

<table>
<tr><td></td><td>+10</td><td>+100</td><td>+1000</td></tr>
<tr><td>1235</td><td></td><td></td><td></td></tr>
<tr><td>3568</td><td></td><td></td><td></td></tr>
</table>

<table>
<tr><td></td><td>−10</td><td>−100</td><td>−1000</td></tr>
<tr><td>3764</td><td></td><td></td><td></td></tr>
<tr><td>5637</td><td></td><td></td><td></td></tr>
</table>

<table>
<tr><td></td><td>+1</td><td>+10</td><td>+100</td></tr>
<tr><td></td><td></td><td>4567</td><td></td></tr>
<tr><td></td><td></td><td></td><td>2632</td></tr>
</table>

Fluency with exchange.
Complete charts as above where exchange is needed.

Children to reinforce counting forwards and backwards in starters.

Children can explore place value with a calculator.
Ask them to key in a four-digit number e.g. 4 568
Give them instructions such as ‘change the 4 into a 9’, ‘change the 6 into a 7’. What do the children need to type into the calculator to make that happen? Is there more than one way to do this?

I think of a number +1000 and -100. I end up with 3456, what number was I thinking of?

Sometimes/always/never When I add or take away a number of counters from a column, that column is the only digit that changes.
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<tr>
<td>Order and compare numbers beyond 1000</td>
<td>
What digits do you look at when you are ordering numbers?
Show 2 numbers and ask the children to explain how they know which is bigger.
5 and 9999
23 and 4264
146 and 2395
1456 and 5427
1523 and 1967
1657 and 1676
1675 and 1679

Develop an explanation about what thought processes you go through when deciding which is the largest number? Use pictorial and concrete equipment as appropriate to support understanding.
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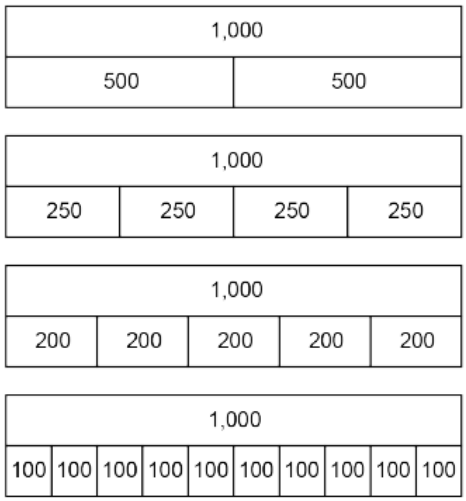
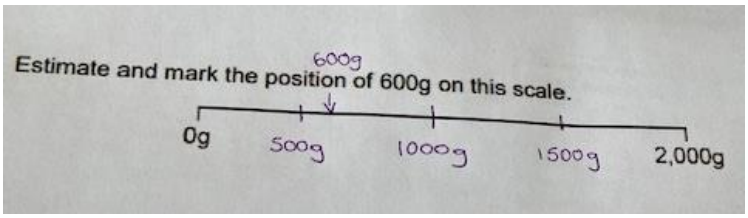
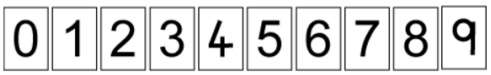
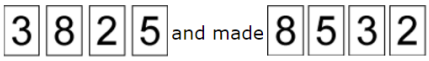
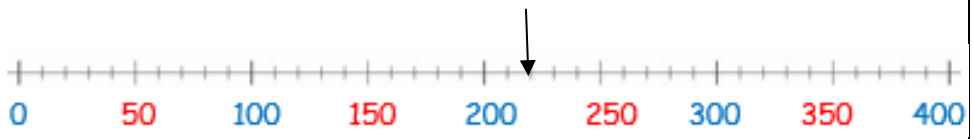
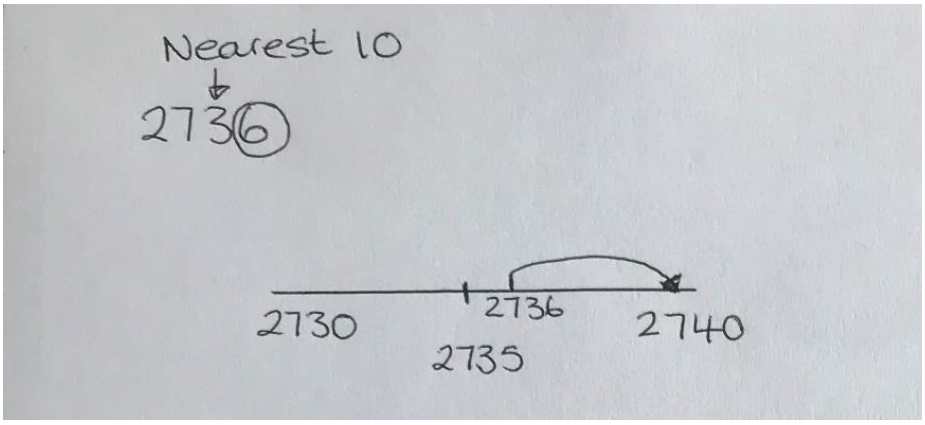
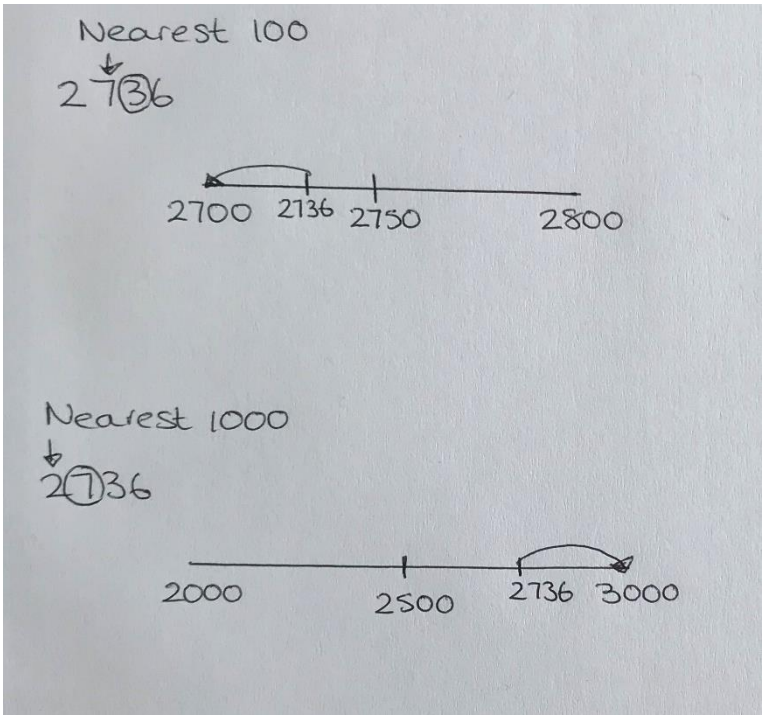
	Complete fluency questions comparing 2 numbers, including using the < and > symbols. Mathsticks – ordering cards. Children play against each other. Each child draws a card. They show their cards, explain how they know one card is bigger than the other and the player with the larger card wins both cards. 
Order and compare numbers beyond 1000	Move onto ordering more than two numbers. Use numbers that are clearly different to start with and then move to numbers like those from the question below where the same digits are used in a range of numbers. Do then Explain 5035, 5053, 5350, 5530, 5503 Write these numbers in order starting from the smallest number. Explain how you did this. Which column do we look at first? Thousands. As these are all the same we then need to look at the hundreds, then tens, then ones. **Mastery** Using these 4 digits: 1 7 3 0 What is the smallest number you can make? What is the largest number you can make? Kiz has these numbers: 1330 1303 1033 1003 1030 He writes them in order from smallest to largest. What is the fourth number he writes? What could the missing digits be so that the numbers are in order from smallest to largest? 2_41 2_31 2_23

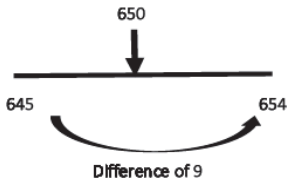
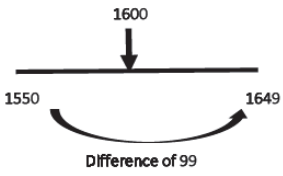
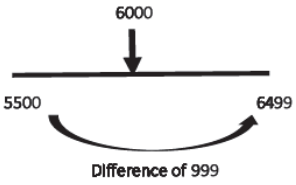
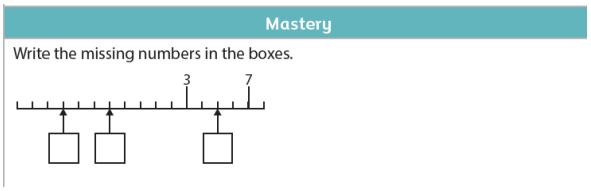
	Can you find 4 different ways of completing this question? Choose three 0-9 cards. Place them on a place value grid. Use place holders to fill the rest of the grid. What number have you made? Can you make 4 more numbers? Can you order the numbers?
Counting in 1000s 500s, 100s, 50s and 25s **Introducing the number line**	Main objective in this section is counting in 1000s and 25s, however we will use this opportunity to consolidate counting in 100s and 50s from Year 3 and use counting in 500s alongside the introduction of the number line in preparation for rounding at the end of the unit. Introduction, counting 0 – 100, 0-1000, 0 – 10 000 – look at how the number lines can be split in different ways and how counting in 25s will support us when we are counting in 250s **4NPV–4 Teaching guidance** By the end of year 4, pupils must be able to divide 1,000 into 2, 4, 5 or 10 equal parts. This is important because these are the intervals commonly found on measuring instruments and graph scales.  **Figure 10: bar models showing 1,000 partitioned into 2, 4, 5 and 10 equal parts** Mathematics guidance: Key stages 1 and 2 - Non-statutory guidance for the National Curriculum in England Mark intervals on the number line or by using pegs on a bead string.  Discuss where multiples of 5, 50 and 500 would be on the number lines and mark these half-way points. Look at the patterns when counting in 50s/25s. How many 50s are in 100? How many 25s are in 100? Encourage children to make the link between these facts and the number of divisions on number lines which have multiples of 100 marked.

	Complete sequences with a range of steps. Spot the mistake with sequences in steps of 25 represented in different ways. If buses hold 25 people and there are 325 people, how many buses will we need? **Mastery** Gemma counts on in 25s from 50. Circle the numbers that she will say: 990 550 125 755 150 Extending thinking – generalisations Venn Diagrams with multiples of 25/50, 50/100. What do you notice when you put the multiples of 25 in the diagram? Which section has no numbers? Why? All multiples of 50 are also multiples of 25. **Mastery with Greater Depth** Here is a sequence of numbers: 20, 30, 40, 50 What will the nineteenth number in the sequence be? What will the hundredth number in the sequence be?
Order and compare numbers beyond 1000, using a number line.	Recap from previous objective about the range of ways we can split up a number line. Continue to practise with a range of number lines and scales. Encourage the children to identify the interval before and after the number that is placed to prepare for rounding. E,g. if I have just placed 3465 what could my before and after intervals be? 3460 and 3470 - tens intervals 3400 and 3500 - hundreds intervals 3000 and 4000 - thousands intervals

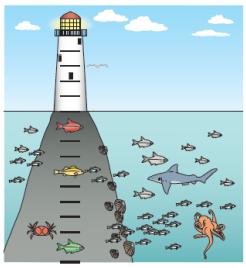
	Encourage children to position numbers on a blank number line by finding the mid-point on the number line and labelling this then finding the quarter points and labelling these.  Place the same number on three different number lines that start and finish at different points e.g. 3650 on a number line from 0-5000, 3000 -4000 and 3600-3800. Estimate a range of start and end points on a number line based on one given number i.e. if this arrow is pointing a ¼ of the way up this number line and the number showing is 700, what could the start and end points be? Is there more than one possibility? 
Place Value Problem Solving **Use this time to consolidate number lines for those who are still struggling in preparation for rounding**	Play the place value game, nice and nasty. Each player has four blank spaces to fill. Take turns to throw a 0-9 dice and place the digit in the spaces. The aim is to get the largest number possible. Adapt the aim so that you are trying to make the nearest number to 5000. In the nice version you only place digits on your own spaces. In the nasty version you can place them on your opponent's too. NRICH – The Thousands Game Class 3 were playing a game. There were ten cards with the digits 0 to 9 on them.  These cards were put into a bag and players took out four cards and made a number out of them. At first they made the highest number they could. Sinita took out  Encourage the children to generate six 4-digit numbers throwing a dice or following the rules • All numbers are 4 digits long. • Their digit total is 25. • At least two numbers are even. • There is a pair of consecutive digits in each number. Once completed, can the children place the numbers on a number line. What will their scale be?

Rounding to the nearest 10, 100 ad 1000.	Empty Number Line  Using an empty number line, ask children to count in ones (0, 1, 2, 3,..), putting a counter on every tens number (0, 10, 20, 30…). Emphasise that 0 is a tens number because it is zero tens. Put a different coloured counter halfway between each tens number (5, 15, 25 ..). What do you notice about the number that is halfway? Establish that they all end in 5. What is the value of the 5 each time? (5 ones) and 5 is half of 10 (our counting number). Which numbers on the number line are closest to 30? Which tens number is 15 closest to? Agree that although it is the same distance away from 10 as 20, we will round up to 20.  Now count along an empty number line in tens (0, 10, 20, 30…) Place a counter on every hundreds number (0, 100, 200, 300 …) What number is halfway between each hundreds number? (50, 150, 250…) What do you notice? What is the value of the 5 now? It is 5 tens or 50, which is half of 100 (our counting number). Which numbers on the number line are closest to 300? Which hundreds number is 150 closest to? Agree that although it is the same distance away from 100 as 200, we will round up to 200 when rounding to the nearest 100. Use an image such as the one below to explain how to round any number to the nearest 10. You may want to start with 2 and 3-digit numbers and then build to this image. 

	Repeat for rounding to the nearest 100 and 1000  If rounding to the nearest ten, look at the units, 5 or more round to the next ten. If rounding to the nearest hundred, look at the tens. 5 tens (50) or more round up to the next hundred If rounding to the nearest thousand, look at the hundreds. 5 hundreds (500) or more round up to the next thousand. Give the children a range of fluency questions to ensure that they can round to the nearest 10, 100, 1000. E.g. Make a 4-digit number by throwing your dice 4 times. What would your number be when rounded to the nearest ten, hundred, thousand? Emergency telephones are placed every 1000m along the motorway. Where would the telephones be located? Where are the halfway points? If I break down after 5400m (5.4km), which telephone should I walk to? Reinforce the generalisation that it is the size of the number to the right of the multiple we are rounding to that determines whether we round up or down. So if we are rounding to the nearest 10 the determiner is the ones column. If we are rounding to the nearest 100 the determiner is the tens column and so on.

	What is 2997 rounded to the nearest 10? 100? 1000? What do you notice about the answers? Can you find other examples where this is the case? What do you have to think about in order to make this work? If the answer to a rounding question is 1000, what could the question have been? Greater Depth Challenge- Digging Deeper Show examples on a number line where you have the answer in the middle of the number line. If I was rounding to the nearest 10 what would the smallest and largest number be that could round to this number? What is the difference between these numbers? Will this be the case each time I round to the nearest 10?  Can the children predict what the difference will be between the smallest and largest numbers when rounding to 100 and 1000? Rounding to the nearest 100  
Negative Numbers	Examine negative numbers in context e.g. lifts in hotels, bank balances and temperature. Can they represent these on a number line? Can children place negative numbers on a blank number line based on the patterns they have looked at before. Fluency Questions around positioning numbers on number line with positive and negative numbers.  Look at number lines where the scale has different increments

Mastery with Greater Depth



Can you draw a fish at –35 m?

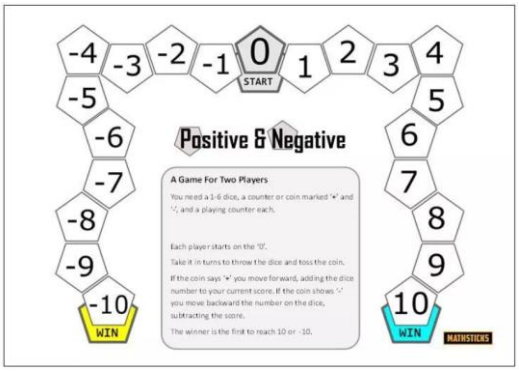
Can you draw a seagull at 20 m above sea level?

What would the position of your fish and the seagull be if each of the intervals on the lighthouse represented 7 m?

Mastery with Greater Depth

The sea level is usually taken as zero.
Look at the picture of the lighthouse.
If the red fish is at –5 m (5 metres below sea level):
Where is the yellow fish?
Where is the green fish?

Play Mathsticks Positive and Negative Game and/or Tug of War



Children can either create or be provided with number lines from -10 to 10. In pairs play Tug of War with a dice. Start with a counter on 0, one has the target to get to -10, the other to 10. Roll the dice and move the counter in your direction. Ask them to think of quick ways of working out where their counter will end up (encourage them to think about bridging).

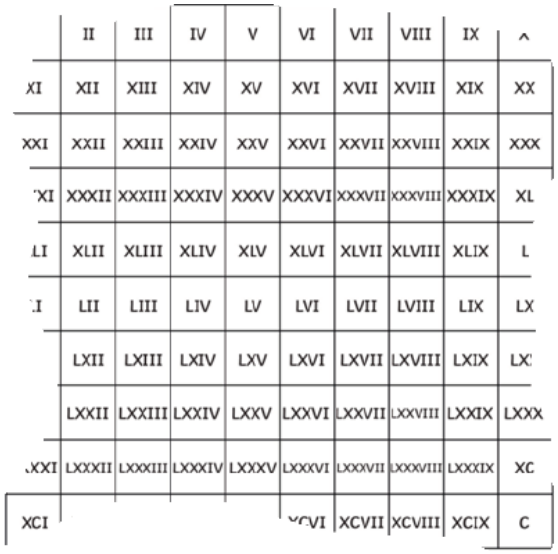
Look at negative numbers in context – e.g. temperature. Can the children see the difference between the numbers?

Give children opportunity to work out differences between positive and negative numbers on a number line, the focus in Year 4 is by counting forwards and backwards – bridging will be developed in Year 5.

Mastery

What temperature is 20 degrees lower than 6 degrees Celsius?

Give children a map of the UK and give them clues to work out the temperature of each city. Children fill in temperatures on the map, e.g.
Clue 1: On Monday it was 5 degrees in London.
Clue 2: On Tuesday the temperature in Edinburgh was 6 degrees less.

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.	Introduce Roman Numerals, the rules and patterns to the children.  The edges have been ripped off this 100 square of Roman Numerals. Can you work out which numbers have been ripped off? Find opportunities to consolidate Roman Numerals e.g. writing the date, links to topic. Range of resources to support with teaching Roman Numerals on the Mathsticks website. https://mathsticks.com/my/?s=roman+numerals Extending thinking Ask children to imagine we have been taken over by aliens and our number system has been transformed into alien numerals. Can they design a new number system using images or shapes? Can their partner decipher the numerals? Are there any patterns?