Number & Place Value: Read, write, order and compare numbers to at least 1,000,000 and determine the value of each digit.

Learning focus	Read large numbers, recognising when to change between hundreds, thousands, millions, etc., by counting the digits to the left of any decimal place in chunks of three. Write large numbers accurately, optionally inserting commas every three places to the left of the decimal place for numbers larger than 999 (but not to the right - 4,567·123456 is correct).

Greater Depth Challenge:

What is the value of the 5 in 4750.9?

Can you give an example of using the digit 5 in a different place value?

Explain these using sentence starters such as:

The value of the 5 is (tens) because

The value of the 5 cannot be (hundreds) because

Greater Depth Challenge:

Make the 4 in 4750.9 ten times bigger.

Can you show me an example of a number where the 4 is ten times bigger?

Greater Depth Challenge:

How many thousandths are in one thousand?

How do you know?

Greater Depth Challenge:

Sarah says that any number with seven digits is worth at least one million.

Is Sarah always correct? Explain your answer!

Learning focus	Partition numbers into millions, hundred thousands, ten thousands, thousands, hundreds, tens and ones, using apparatus if require, e.g., digit cards or a place value grid. Partition up to seven-digit numbers in different ways, e.g., 92,150 = 80,000 + 12,000 + 100 + 50.

Greater Depth Challenge:

Write a six digit number where the 5 has a ten thousand value.

Could you make your number 10 times larger in value but keeping the 5 as ten thousand?

Explain your reasoning.

Greater Depth Challenge:

How many hundred thousands are there between **3897652** and **8729373**?

Explain your reasoning.

Greater Depth Challenge:

True or False

5,345,675= 600 + 300,000 +70 + 5,000,000 + 40,000 + 5 + 5000

72,538 = 40,000 + 10,000 + 22,000 + 500 + 30 + 8

Prove this.

Greater Depth Challenge:

Billy has partitioned a number. He says that…

"6,392,836 = 500 + 6 + 300,000 + 300 + 2000 + 6,0000,000+ 90,000 + 30"

Is he right? Explain your answer.

Learning focus	Know the value of any digit in a number up to 1 million, e.g., Explain which has the greater value, the 5 in 3,215,067 or the 5 in 856,207.

Greater Depth Challenge:

Write down 2 numbers between 500000 and 3000 that have the digit 4.

4 has to be 100 times bigger in your first number than in your second number.

Is there more than one solution?

Greater Depth Challenge:

5012345, 015234, 012354, 01234.5

What pattern do you notice in this sequence?

Greater Depth Challenge:

I think of a five digit number.
The difference between the thousand digit and the hundreds digit is 2
The tens digit is one less than the hundreds digit.
The ones digit is the same as the ten thousand digit.

What could my number be?
How many solutions can you find?

Learning focus	Order whole numbers with up to seven-digits and know that the number of digits to the left of any decimal place is the first consideration followed by the size of the digits in the corresponding position

Greater Depth Challenge:

House A costs £1870246

House B costs £1786999

Sam says House B cost more.

Is Sam correct? Explain how you know!

Greater Depth Challenge:

What is the mistake?

9967 > 21999

Can you think about how this mistake might have been made?

Greater Depth Challenge:

Tom says that…

"To compare two numbers the first step is to count how many digits each number has and the number with more digits is bigger."

Is Tom correct?

Can you think of an example where his method would not work?

Greater Depth Challenge:

Explain why **0.123** is smaller than **0.13**.

Using the digits 1, 2 and 3, can you think of two other numbers that are greater than 0.123

Learning focus	Compare large numbers, e.g., Use 3 different six-digit numbers to make this number sentence true -

Greater Depth Challenge:

□ < □ > □

Fill these boxes with numbers between hundred thousand and a million.

Which two numbers are closer in value?

Greater Depth Challenge:

567823 < 667362> 666123

Can you add hundred thousand to any of these numbers to keep the number sentence true?

<u>Number & Place Value</u>: Count forwards or backwards in steps of powers of 10 for any given number up to 1,000,000.

Learning focus	Count in steps of 10, 100, 1,000, 10,000, and 100,000 from any given number. Understand the result of counting in steps of powers of 10

<u>Greater Depth Challenge:</u>

Find the missing number.

4568923, 4578923, ☐, 4598923

What is happening to the sequence?

<u>Greater Depth Challenge:</u>

What number did I miss out in the sequence?

8309246, 828246, 827246, 826246

How did you work this out?

Learning focus	Adding and subtracting multiples of powers of 10, using place value knowledge.

Greater Depth Challenge:

375782, 395782, 415782, 435782

What is the rule of this sequence?

What would be the 8^{th} term?

Greater Depth Challenge:

Look at the number **349721**

How many ten thousands would you need to subtract to get to zero?

Prove your answer.

Number & Place Value: **Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers including through zero.**

Learning focus	Count forwards and backwards in different step numbers of equal size through the zero boundary

Greater Depth Challenge:

The temperature in Moscow is -3.
In Oslo the temperature is -8.

It is more than twice as cold in Oslo than Moscow?
True or False?

Explain your thinking.

Greater Depth Challenge:

In a quiz, teams get 2 points for every correct answer and -2 for every wrong answer.

Team A have a score of -12.

What is the minimum number of correct answers they need to get a score of 20?

Greater Depth Challenge:

Estimate where the following numbers would go on this numberline:

-35 10 -8 0

Learning focus	Understand that the further away from zero a negative number is, the smaller the size, e.g., -36 is further to the left than -14 so it is a smaller number. Position negative numbers accurately on a blank number line and compare them. Use the < and > signs to record statements such as -13 < -1 > -2.

Greater Depth Challenge:

True or False

-1.5 > -2

Use a number line to prove your answer.

Greater Depth Challenge:

Use the following digits and symbols and write 3 number sentences.

-22, 2, -17, 0, <, >

Number & Place Value: Round any number up to 1,000,000 to the nearest 10, 100, 1,000, 10,000 and 100,000.

Learning focus	Confidently round larger numbers to round to the nearest 10, 100 and 1,000.

Greater Depth Challenge:

Which number is closest to ten thousand?

9995, 10009, 9989, 10003

Explain how you came to this decision?

Greater Depth Challenge:

I'm thinking of a number.

When rounded to the nearest 1000 it is 1000.

When rounded to the nearest hundred it is 500.

What could my number be?

How many solutions can you think of?

Do you know how many possible solutions there are in total?

Learning focus	Round numbers to the nearest 10,000, 100,000 and 1,000,000 using a number line to visualise and position a number between relevant powers of 10, e.g., round 227,842 to the nearest 10,000..

Greater Depth Challenge:

To win the game you need to be the closest to ten thousand.

Ryan scored 999897 and Jo scored 1000010.

Who won the game?

Explain your thinking.

Greater Depth Challenge:

Imagine you are teaching rounding to a Year 4 class.

Using a number line and a series of steps, explain to them how to round a number to the nearest 10000.

Learning focus	Apply the rule of 5 when rounding to the nearest 10 and the scaling of this when rounding to powers of 10 (nearest 50 if rounding to nearest 100, etc.).

Greater Depth Challenge:

What is the smallest value number that when rounded to the nearest 100 rounds to 2000?

Explain why a number smaller than this will not round to 2000 when rounded to the nearest 100.

Greater Depth Challenge:

Could the number 14500 ever be rounded to 10000?

When could this happen?

Greater Depth Challenge:

A stadium holds 50,000 people. The local team sold a number of tickets.

The manager counted them and said, **"When I round the number of tickets sold to the nearest 10,000 I get 50,000 and when I round to the nearest 100,000 the number of tickets sold comes to 100,000."**

Do you think all the people who bought tickets will fit in the stadium? Explain why you think this!