Year ⑥

Small Steps Guidance and Examples

Block 1: Place Value

White Rose Maths

Overview

Small Steps

- Numbers to ten million
- Compare and order any number
- Round any numbers
- Negative numbers

NC Objectives

Read, write, order and compare numbers up to 10,000,000 and determine the value of each digit.

Round any whole number to a required degree of accuracy.

Use negative numbers in context, and calculate intervals across zero.

Solve number and practical problems that involve all of the above.

Numbers to Ten Million

Notes and Guidance

Children need to read, write and represent numbers to ten million in different ways.

Numbers do not always have to be in the millions – children need to see a mixture of smaller and larger numbers.

Mathematical Talk

What does a zero in a number represent?

What strategy do you use to work out the divisions on a number line?

How many ways can you complete the partitioned number?
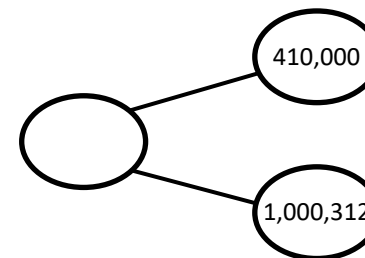
Varied Fluency

1 Match the representation to the numbers in digits.

One million, four hundred and one thousand, three hundred and twelve

1,041,312

M	HTh	TTh	Th	H	T	O

1,410,312

410,000

1,401,312

1,000,312

2 Complete the missing numbers.

$6,305,400 = \underline{\hspace{1.5cm}} + 300,000 + \underline{\hspace{1cm}} + 400$

$7,001,001 = 7,000,000 + \underline{\hspace{1cm}} + \underline{\hspace{1cm}}$

$42,550 = \underline{\hspace{1cm}} + \underline{\hspace{1cm}} + \underline{\hspace{1cm}}$

3 Husna's number is 306,042
She adds 5,000 to her number.
What is her new number?

Numbers to Ten Million

Reasoning and Problem Solving

Put a digit in the missing space below to make the sentence correct.

$$4,62\_,645 < 4,623,64\_$$

Is there more than one option?
Can you find them all?

1st digit could be 0, 1, 2
2nd digit could be 6, 7, 8, 9
When 1st digit is 3, 2nd digit must be 6 or above
When 2nd digit is 5, 1st digit must be 0, 1 or 2

Miley has this number:

824,650

She takes forty thousand away.

Her answer is 820,650

Is this correct?

Explain how you know.

No, this is incorrect.
Miley has taken away 4,000 not 40,000
The number should be 784,650

Use the digit cards and statements to work out my number.

| 0 | 3 | 3 | 5 | 5 | 6 | 7 |

o The ten thousands and hundreds have the same digit.

o The hundred thousand digit is double the tens digit.

o It is a six-digit number.

o It is less than six hundred and fifty five thousand.

Is this the only option?

Possible options

653,537
650,537
650,533

Compare and Order

Notes and Guidance

Children will compare and order numbers up to ten million using numbers presented in different formats.

Children will use greater than and less than vocabulary, and the inequality symbols.

Mathematical Talk

What is the value of each digit?

What is the value of [ ] in this number?

What is the value of the whole? Can you suggest other parts that make the whole?

Can you write a story to support your part whole model?

Varied Fluency

1 Complete the statements to make them true.
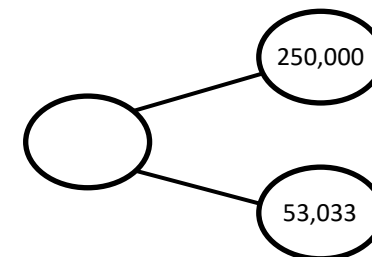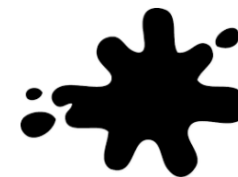
M	HTh	TTh	Th	H	T	O
••	••	••	•	••	•	••

◯

M	HTh	TTh	Th	H	T	O
••	•	••	••	••	•	••

M	HTh	TTh	Th	H	T	O
•	••••••	•	••	•••	•	•

>

M	HTh	TTh	Th	H	T	O

2 What number could the splat be covering?

Three hundred and thirteen thousand and thirty three

250,000

53,033

Greatest ⟶ Smallest

3 A house costs £250,000.
A motorised home costs £100,000.
A bungalow is priced half way between the two.
Work out the price of the bungalow.

Compare and Order

Reasoning and Problem Solving

Lola has ordered eight 6-digit numbers.

The smallest number is 345,900

The greatest number is 347,000

All the other numbers have digit totals of 20 and have no repeating digits.

What are the other six numbers?

Can you order all eight numbers from smallest to greatest?

The other six numbers have to have a digit total of 20 so they all must be larger than 346,000 because anything between 345,900 and 346,000 has a larger digit total.
The final three digits have to add up to 7 as 3 + 4 + 6 = 13
As the number has no repeating digits, the other six numbers have to be:
346, 025
346, 052
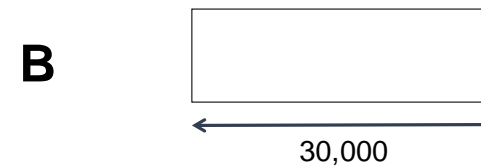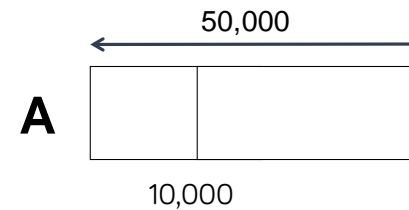346, 205
346, 250
346, 502
346, 520

Kayleigh draws bar model A.
Her teacher asks her to draw another where the total is 30,000

50,000

A

10,000

B

30,000

Explain how you know bar B is inaccurate.

Bar B is inaccurate because it starts after 10,000 and finishes after 50,000
Therefore it is longer than 40,000
30,000 < 40,000

Rounding Numbers

Notes and Guidance

Children build on previous work on rounding. They need to experience rounding up to and within ten million.

Children use their knowledge of multiples to work out which two numbers the number they are rounding sits between.
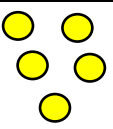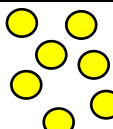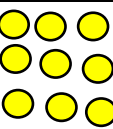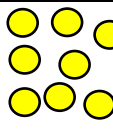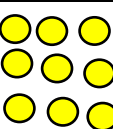
Mathematical Talk

What are the 'rules' we use when rounding?

Which place value column do we need to look at when we round the nearest 100,000?

When is it best to round to 1,000? 10,000?
Can you justify your reasoning?

Varied Fluency

1

100,000s	10,000s	1,000s	100s	10s	1s

Round the number in the place value chart to:
- The nearest 10,000
- The nearest 100,000
- The nearest 1,000,000

2 Write five numbers that round to the following numbers when rounding to the nearest hundred thousand.
- 200,000
- 600,000
- 1,900,000

3 Complete the missing digits so that each number rounds to one hundred and thirty thousand when rounded to the nearest ten thousand.

12 ☐ , 657   1 ☐ 1, 999   13 ☐ , 001

Rounding Numbers

Reasoning and Problem Solving

My number is 1,350 when rounded to the nearest 10

Ed

My number is 1,400 when rounded to the nearest 100

Joe

Both numbers are whole numbers.

What is the greatest possible difference between the two numbers?

The greatest possible difference is 104 because:

1,449 – 1,345 = 104

Kiera rounded 2,215,678 to the nearest million and wrote 2,215,000

Can you explain to Kiera what mistake she has made and why she has done it?

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She has rounded it to the nearest million correctly. However, digits in the other columns should all be zero.

Miss Grogan gives out the following four cards: 15,987, 15,813, 15,101, 16,101

Four children each take a card and give a clue to what their number is:

Marc says, "My number rounds to 16,000 when rounded to the nearest 1,000"

Daryl says, "My number has one hundred."

Tom says, "My number is 15,990 when rounded to the nearest 10"

Adam says, "My number is 15,000 rounded to the nearest 1,000"

Can you work out which child has which card?
Explain your choices.

Tom has 15,987
Marc has 15,813
Adam has 15,101
Daryl has 16,101

Negative Numbers

Notes and Guidance

Children continue their work on negative numbers by counting forwards and backwards through zero.

They extend their learning by finding intervals across zero.

Children need to see negative numbers in context.

Mathematical Talk

Are negative numbers whole numbers?

Why do the numbers on a number line mirror each other from 0?

Why does positive 1 add negative 1 equal 0?

Draw me a picture to show 5 subtract 8

Varied Fluency

1. Use sandcastles (+1) and holes (-1) to calculate.

   = +1   = -1

   Here is an example.
   -2 + 5 =
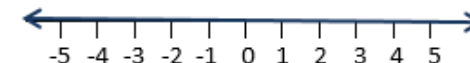
   Two sandcastles will fill two holes.
   There are three sandcastles left to make positive three.
   Use this method to solve:
   - 3 – 6
   - - 7 + 8
   - 5 – 9

2. Use the number line to answer the following:

   -5 -4 -3 -2 -1 0 1 2 3 4 5

   - What is 6 less than 4?
   - What is 5 more than -2?
   - What is the difference between 3 and -3?

3. Filip has £17.50 in his bank account. He pays for a jumper costing £30. How much does he have in his bank account now?

Negative Numbers

Reasoning and Problem Solving

A company decided to build offices over ground and underground.

If we build from 20 to -20, we will have 40 floors.

Do you agree?

Explain how you know.

No, there would be 41 floors because you need to count floor 0

When counting in tens from any single digit, the last number never changes.

When counting back in tens from any single digit, the last number does change.

e.g.

9, 19, 29, 39
9, -1, -11, -21

Explain why this happens.

When crossing 0, the order of the numbers changes and mirrors the positive side of the number line.
Therefore the final digit in the number changes.