

# Unit 1

## Place value within 100,000



In this unit we will ...

- ⚡ Find the value of each digit in numbers to 100,000
- ⚡ Partition numbers in different ways
- ⚡ Round numbers
- ⚡ Compare and order numbers up to 100,000
- ⚡ Represent numbers in different ways, including with Roman numerals

In Year 4, we used a place value grid and counters to represent numbers. What number does this show?

| Th | H   | T    | O |
|----|-----|------|---|
| ●● | ●●● | ●●●● | ● |



### KEY LANGUAGE

There is some key language that children will need to know as part of the learning in this unit:

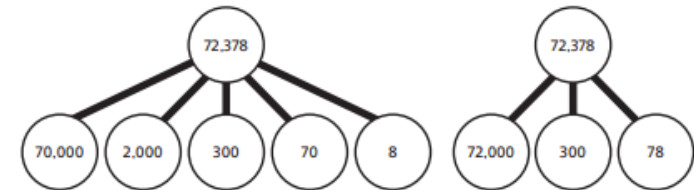
- ones (1s), tens (10s), hundreds (100s), thousands (1,000s), ten thousands (10,000s)
- place value, position
- partition, equivalent
- estimate, closer to, between
- round
- next multiple, previous multiple, nearest multiple of 10, 100, 1,000 or 10,000
- compare, order, greater than (>), less than (<)
- Roman numeral

### STRUCTURES AND REPRESENTATIONS

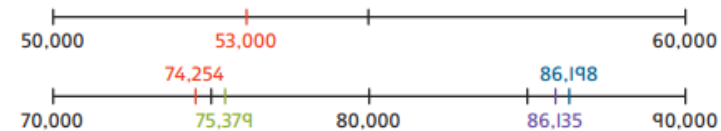
**Place value grid:** This model helps children to organise 4- and 5-digit numbers and show the value of each digit. Place value grids will be used with both concrete representations and abstract numbers.

| TTh  | Th | H   | T | O   |
|------|----|-----|---|-----|
| ●●●● | ●● | ●●● | ● | ●●● |

**Part-whole model:** This model will help to show the value of each part of a number and provide support for more flexible partitioning.



**Number line to 100,000:** This model will support children's work in rounding, comparing and ordering numbers.



## Unit 2

### Place value within 1,000,000



In this unit we will ...

- ✦ Understand the value of any digit in a number up to 1,000,000
- ✦ Compare and order numbers to 1,000,000
- ✦ Round numbers to the nearest 10, 100, 1,000, 10,000 and 100,000
- ✦ Use negative numbers
- ✦ Create number sequences

We need to be able to extend the place value grid to include millions.

| M | HTh | TTh | Th | H | T | O |
|---|-----|-----|----|---|---|---|
|   |     |     |    |   |   |   |



#### KEY LANGUAGE

Here is some key language that children will need to know as part of the learning in this unit:

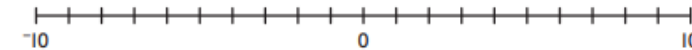
- place value
- ones (1s), tens (10s), hundreds (100s), thousands (1,000s), ten thousands (10,000s), hundred thousands (100,000s), million (1,000,000)
- partition, partitioning
- number line, count
- negative number, positive number
- minus
- rounding, round up, round down
- estimate
- compare, order
- sequence, rule
- ascending, descending
- less than (<), greater than (>), nearest.

#### STRUCTURES AND REPRESENTATIONS

**Place value grid:** Place value grids are used in this unit to help children read numbers and recognise the value of each digit in numbers up to 1,000,000.

| HTh  | TTh    | Th | H     | T | O    |
|------|--------|----|-------|---|------|
| ●●●● | ●●●●●● | ●  | ●●●●● |   | ●●●● |

**Number line:** Number lines are used to help children plot numbers from 0 to 1,000,000 and to show negative numbers.



**Place value counters:** Place value counters are used to help children create and partition numbers.



# Unit 3

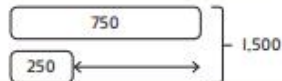
## Addition and subtraction



In this unit we will ...

- ⚡ Add and subtract numbers with up to 5 digits
- ⚡ Use the column method for addition and subtraction
- ⚡ Round numbers to estimate answers to problems
- ⚡ Add and subtract mentally
- ⚡ Solve problems involving addition and subtraction

What information does this comparison bar model give you? What can you use it to work out?



### KEY LANGUAGE

There is some key language that children will need to know as part of the learning in this unit:

- add, subtract
- 1s (ones), 10s (tens), 100s (hundreds), 1,000s (thousands), 10,000s (ten thousands)
- total
- difference
- inverse
- round
- mentally
- estimate

### STRUCTURES AND REPRESENTATIONS

**Place value grid:** This model uses counters to show the value of each column, which supports the column method layout.

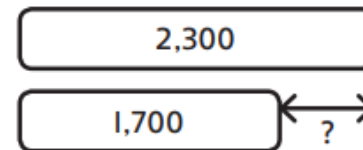
| TTh   | Th | H   | T    | O |
|-------|----|-----|------|---|
| ⚪⚪⚪⚪⚪ | ⚪  | ⚪⚪⚪ | ⚪⚪⚪⚪ |   |

### Column method addition and column method subtraction:

This model demonstrates the place value of each digit in addition and subtraction calculations and shows exchanges between columns.

|   | TTh | Th | H | T | O |  | TTh          | Th           | H            | T            | O |   |
|---|-----|----|---|---|---|--|--------------|--------------|--------------|--------------|---|---|
|   | 1   | 6  | 9 | 9 | 8 |  | <del>7</del> | <del>2</del> | <del>6</del> | <del>0</del> | 6 |   |
| + |     | 2  | 1 | 5 | 6 |  | -            | 3            | 9            | 4            | 1 | 5 |
|   | 1   | 9  | 1 | 5 | 4 |  |              | 4            | 3            | 2            | 9 | 1 |
|   |     |    |   |   |   |  |              |              |              |              |   |   |

**Bar model:** This model can be used to represent the situation in some addition and subtraction word problems.



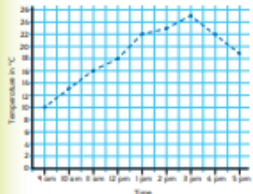
# Unit 4 Graphs and tables



In this unit we will ...

- ✂ Read information from tables
- ✂ Understand and create two-way tables
- ✂ Read information from line graphs
- ✂ Answer questions relating to the information in graphs and tables
- ✂ Draw simple line graphs

You will be able to draw a line graph from data in a table. Can you see how the line graph has been drawn?



| Time      | 9 am | 10 am | 11 am | 12 pm | 1 pm | 2 pm | 3 pm | 4 pm | 5 pm |
|-----------|------|-------|-------|-------|------|------|------|------|------|
| Temp (°C) | 10   | 13    | 16    | 18    | 22   | 23   | 25   | 22   | 19   |

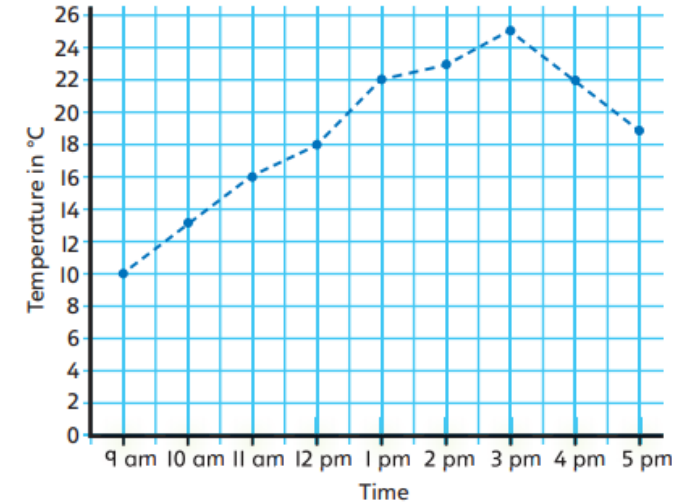
## KEY LANGUAGE

Here is some key language that children will need to know as part of the learning in this unit:

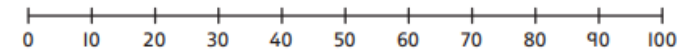
- line graph, **dual line graph**
- horizontal axis, vertical axis, axes, scale
- data, information
- read, interpret, complete
- table, **two-way table**.

## STRUCTURES AND REPRESENTATIONS

**Line graph:** plots points using the vertical and horizontal axes to quickly and accurately read data and to easily see the relationship between each point.



**Number lines:** children will recognise that reading the horizontal and vertical axes on line graphs is the same as reading number lines.



**Two-way table:** presents two sets of information and can include tallies or digits.

|       | Spots | Stripes |
|-------|-------|---------|
| Socks | 8     | 4       |
| Hats  | 3     | 5       |

# Unit 5

## Multiplication and division 1



In this unit we will ...

- ✦ Recognise and find multiples and factors
- ✦ Recognise and identify prime numbers
- ✦ Calculate square and cube numbers
- ✦ Use inverse operations
- ✦ Multiply and divide by 10, 100 and 1,000
- ✦ Multiply and divide by multiples of 10, 100 and 1,000

Do you know what these are called? We will use them to help us find factors!



### KEY LANGUAGE

Here is some key language that children will need to know as part of the learning in this unit:

- multiple
- factor
- prime number
- composite number
- square ( $x^2$ )
- cube ( $x^3$ )
- multiply, multiplication, times
- divide, division
- inverse operation
- place value
- ones, tens, hundreds, thousands, tens of thousands

### STRUCTURES AND REPRESENTATIONS

**Array:** Arrays are a visual representation of multiplication and division. They are an excellent tool for showing equal groups within a number.



**Bar model:** The bar model enables children to more easily represent a problem. In the context of this unit, it is used to show different types of calculations.



**Factor tree:** Factor trees are used to show the factors a given number has.



**Multiplication square:** Multiplication squares are used in this unit to demonstrate and investigate the patterns found in different types of numbers.

| x | 1 | 2 | 3 | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 |
|---|---|---|---|----|----|----|----|----|----|----|----|----|
| 1 | 1 | 2 | 3 | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 |
| 2 | 2 | 4 | 6 | 8  | 10 | 12 | 14 | 16 | 18 | 20 | 22 | 24 |
| 3 | 3 | 6 | 9 | 12 | 15 | 18 | 21 | 24 | 27 | 30 | 33 | 36 |

## Unit 6

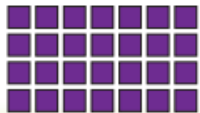
### Measure – area and perimeter



In this unit we will ...

- Measure shapes to find their perimeter
- Calculate the perimeter of squares, rectangles and other rectilinear shapes
- Use a formula to find the area of squares and rectangles
- Estimate the area of different shapes

How many rows? How many in each row? How many altogether?



### KEY LANGUAGE

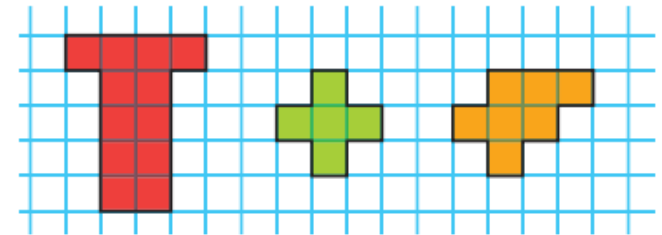
There is some key language that children will need to know as part of the learning in this unit:

- ➔ perimeter, distance, area, space
- ➔ scale, actual area/actual size, convert
- ➔ centimetres (cm), metres (m), square centimetres (cm<sup>2</sup>), square metres (m<sup>2</sup>)
- ➔ rectangle, square, rectilinear shape, sides, length, width
- ➔ measure, combine, brackets, total, double, estimate, array

### STRUCTURES AND REPRESENTATIONS

#### 2D rectilinear shapes represented on squared paper:

This model allows children to count the number of side lengths around a shape and the number of squares that fit inside a shape.



**Array:** This model is an essential link between the idea of multiplying two numbers to find a total and the concept of length  $\times$  width to calculate a rectangle's area.

