

# SmartMaths

## Standard 3



**SAMPLE**

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# How to use this book

This Student's Book meets the content, skills, dispositions, outcomes and elaborations specified for Standard 3 in the primary curriculum for Trinidad and Tobago. It aims to make sure that, at the end of Standard 3, each student will be well prepared for the transition to Standard 4.

The mathematics curriculum is divided into four broad strands: Number, Geometry, Measurement and Statistics. Chapters are colour-coded to show which strand they belong to. The content for each strand appears in the same order in which it appears in the curriculum.

More information on curriculum coverage can be found in the 'Curriculum mapping' document on our website.

**SECTION 1** Chapter 2 Place value and rounding

**In this chapter, you will:**

- explore place value of numbers up to 9999
- write numbers in expanded notation form
- compare and order numerals up to 10 000
- explain the value and place value of each digit in a number
- round numbers to the nearest tens, hundreds and thousands.

**Starting point**

1 Look at the models or base ten blocks shown on the place value mat and discuss in groups.

a Write the values represented by the models or base ten blocks.

b What is the numeral shown? \_\_\_\_\_

c Which digit has the **highest** place value in this numeral? \_\_\_\_\_

d Which has the **smallest**? \_\_\_\_\_

Hundreds (100)	Tens (10)	Ones(1)

Each digit in a numeral has a value based on the position or place in the numeral.

**Place value and value**

**Key maths idea**

We can represent numbers using their **place value**. One way to do this is by using **objects**, such as base ten blocks.

Two thousands, one hundred, two tens, one one

We can also represent numbers using pictures on a place value mat.

Here, the pictures represent each place value of the number 4236.

On the place value mat:

- each splash represents 1 000, therefore the 4 splashes represent 4 000
- each circle represents 100, therefore the 2 circles represent 200
- each rectangle represents 10, therefore the 3 rectangles represent 30
- each triangle represents 1, therefore the 6 triangles represent 6.

Thousands (1 000)	Hundreds (100)	Tens (10)	Ones (1)
4	2	3	6

**Key words**  
place value  
object

At the start of each chapter, you will find an **Objectives** box that lists key content and skills.

The **Starting point** activity stimulates discussion and curiosity.

Eye-catching photographs and illustrations stimulate students' interest.

Numbered questions provide practice tasks for students.

**Key maths idea** boxes explain concepts and provide examples.

**Key words** boxes highlight the key vocabulary that students will need to know.

As students work through the chapters, they will find a range of features, including:

- **Mental maths:** This feature includes short questions for students to work out mentally (in their heads).
- **Problem solving:** This feature gives students a chance to apply their mathematical skills to problem-solving scenarios using the strategies they have learnt.
- **Hints:** This feature supplies additional background information, reminders or links to concepts that have appeared elsewhere.

**Problem solving** ?

**Use a table**

- 1 A farmer picked limes over a three-week period. The first week he picked 1 965 limes; the second week he picked 2 356; and the third week he picked 2 172.
  - a Round the number of limes he picked for each week to the nearest 1 000.
  - b The farmer is asked to give an estimate of the number of limes he could supply for four weeks. Based on the rounded values, what would be his answer?

**Steps:**

- 1 **Read:** You know the number of limes he picked each week. You need to find the rounded value for each week to the nearest 1 000 and an estimate for four weeks.
- 2 **Plan:** Use a table. Guess and check and look for a pattern.
- 3 **Solve:** Present the information in a table.

Week	Week 1	Week 2	Week 3
Number of limes picked	1 965	2 356	2 172

**Part a**

Week	Number of limes picked	Rounded to the nearest 1 000
Week 1	1 965	2 000
Week 2	2 356	2 000
Week 3	2 172	2 000

**Part b**

Looking at the rounded results, you can say that the farmer's estimated supply for four weeks is  $2\,000 \times 4 = 8\,000$

- 4 **Check:** Find the total for three weeks, round to the nearest 1 000 and add 2 000, as in the pattern.

Each chapter ends with a **Review** page, which comprises:

- **Key terms and concepts:** vocabulary questions that check students understand the main terms and concepts presented in the chapter.
- **Quick check:** short questions that revise the mathematics covered through the chapter.
- **Challenge and investigate:** long questions or activities that can extend beyond the main curriculum for students who need additional challenge or stretch.

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- Answers
- Glossary
- Curriculum mapping

Section 1 **Number** Chapter 2 Place value and rounding

**Review: Place value and rounding**

**Key terms and concepts**

- a We can separate the digits of numerals according to their \_\_\_\_\_.
- b When comparing digits of different numerals, always start at the \_\_\_\_\_ place value.
- c The midpoint of the upper and lower benchmarks of a number rounds to the \_\_\_\_\_ benchmark.
- d Numbers falling below the midpoint of the upper and lower benchmarks of a number round to the \_\_\_\_\_ benchmark.

**Quick check**

- 1 What numeral do the base ten blocks represent in the table? \_\_\_\_\_

Thousands (1 000)	Hundreds (100)	Tens (10)	Ones (1)

- 2 Three children counted the steps they walked in a day.
 

Number of steps	Marcus	Katelyn	Jabari
	2 467	3 248	2 678
- 3 Ato and Tyrone were playing a video game. Ato scored 6 387 points, while Tyrone scored 6 378 points. Compare the two sets of points. Who is the winner? \_\_\_\_\_
- 4 Given the digits 7, 9, 8 and 3, write the **largest** numeral with the largest digit being used in the ones place value. \_\_\_\_\_
- 5 What would be the upper and lower benchmarks and the midpoint when rounding 4 376 to the nearest 100 on a number line? \_\_\_\_\_
- 6 Using the digits 7, 4, 3 and 5, arrange two sets of digits that would round to 4 000. \_\_\_\_\_

**Challenge and investigate**

- 1 With a family member, discuss the amount of money they spend on transport over three weeks. Record each week separately, as in the table.

Weeks	Week 1	Week 2	Week 3
Money spent (\$)			

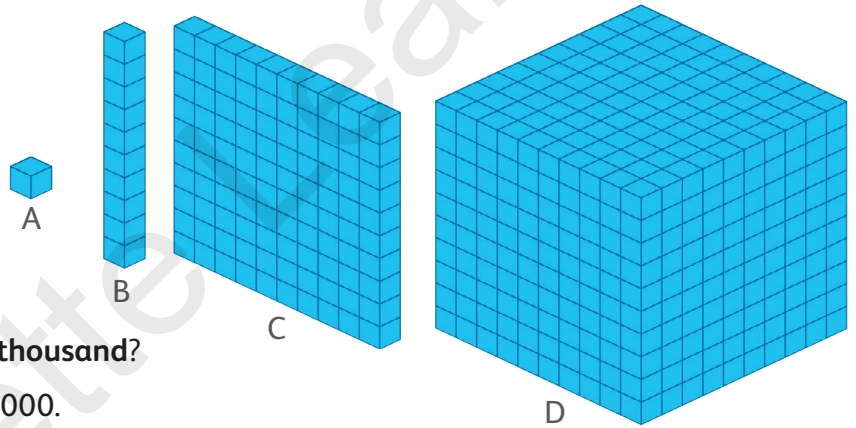
- a Compare the results. \_\_\_\_\_
- b Round the amount of money for each week to the nearest \$10. \_\_\_\_\_

**In this chapter, you will:**

- understand the concept of numbers up to 10 000
- count forward and backward by 1 from any number
- skip count in ascending and descending order
- count objects in a set
- match number names and numerals
- sequence numbers and numerals
- read and write number names and numerals up to 10 000
- estimate a given quantity of items using 100 as a benchmark.

**Starting point**

- Discuss with your partner which of the base ten blocks represents **one hundred**.
  - How many of those blocks are needed to represent **three hundred**?
- Which of the blocks represents **one thousand**?
- Write a number between 100 and 1 000.  
Draw and colour the blocks that represent that number.

**Counting by 1****Key maths idea**

We can count forward from any number by **increasing** by 1.

We can count backward from any number by **decreasing** by 1.

- Counting forward: 4 567, 4 568, 4 569, 4 570 (increasing by 1)
- Counting backward: 4 570, 4 569, 4 568, 4 567 (decreasing by 1)

**Key words**

increasing  
decreasing

- Count **forward**. 1 560, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_
- Count **backward**. 4 005, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_

## Skip counting

### Key words

skip counting  
thousands



### Key maths idea

We can count forward and backward by **skip counting**.

Skip counting can start and stop at any number. We can skip count by different numbers.

#### Skip count forward by adding

Start with a number. Add the number you are skip counting by to the start number. Continue skip counting from the new number until you are told to stop.

- Skip counting forward by adding 100: 1 430, 1 530, 1 630, 1 730, \_\_\_\_  
The number in the **hundreds** position changes as we skip count forward by 100.
- Skip counting forward from 1 000 to 10 000 by adding 1 000:  
1 000, 2 000, 3 000, 4 000, 5 000, 6 000, 7 000, 8 000, 9 000, 10 000  
The number in the **thousands** position changes as we skip count forward by 1 000.

#### Skip count backward by subtracting

We subtract the number we are skip counting by from the start number.

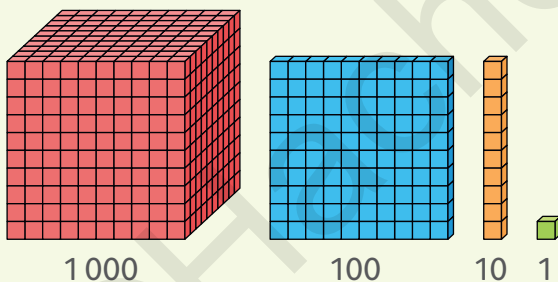
- Skip counting backward by 10: 2 070, 2 060, 2 050, 2 040  
The number in the **tens** position changes as we skip count backward by 10.
- Skip counting backward by 1 000: 8 307, 7 307, 6 307, 5 307  
The number in the **thousands** position changes as we skip count backward by 1 000.

- 1 What number is being used to skip count forward? 3 125, 3 130, 3 135, 3 140
- 2 Skip count backward by **100**. 3 672, \_\_\_\_, 3 472, \_\_\_\_, \_\_\_\_, \_\_\_\_, 3 072

## Place value and value of numbers

### Key maths idea

Base-10 blocks can be used as visual representations of 1, 10, 100 and 1 000.

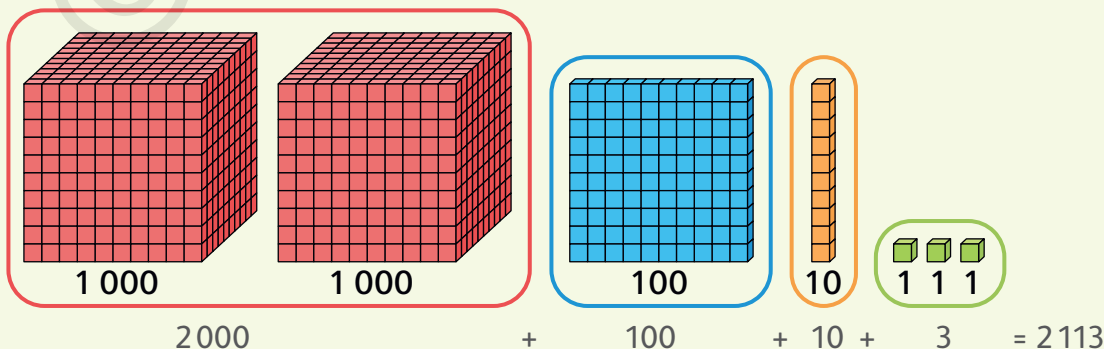


### Hint

We can call the ones block **units** or **ones**.

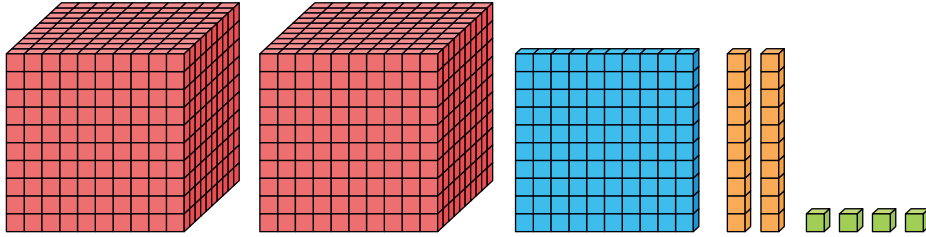
The blocks represent the value of a number.

What number do these base-10 blocks represent?

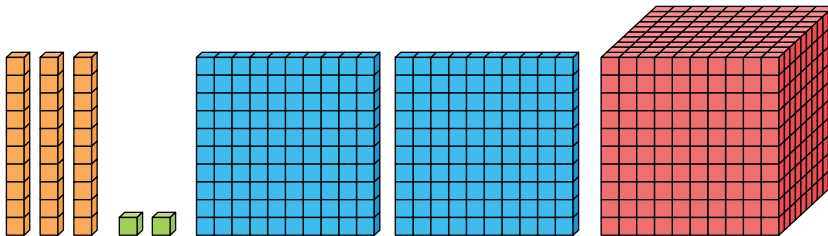


1 Write the numeral for the base-10 blocks.

a



b



## Matching number names and numerals

### Key maths idea



In mathematics, each numeral has a specific name based on the quantity it represents. We can group digits in numbers according to the quantity they represent.

Look at the table.

Quantity				
Thousands	Hundreds	Tens	Ones	Total
2 thousands	1 hundred	4 tens	5 ones	

When reading and writing a numeral, we use the word **and** to separate the hundreds from the tens and ones values, for example two thousand one hundred **and** forty-five.





**(continued)**

To connect a number to its name, we can use a place value chart

Thousands	Hundreds	Tens	Ones
-----------	----------	------	------

We can write the number according to the place value of each digit, then we read it using **and** before the tens and ones.

Let us read **3 567** by putting this number on the place value chart.

Thousands	Hundreds	Tens	Ones
3	5	6	7

Read each number with its appropriate place value: 3 thousand 5 hundred and sixty-seven.

After reading the numeral, we can write it in words: three thousand five hundred and sixty-seven.

When a numeral is given in words, we can write it by placing it on a place value chart, for example two thousand eight hundred and seventy-four:

Thousands	Hundreds	Tens	Ones
two thousand	eight hundred	seventy	four
2	8	7	4

We can write the numeral as: 2874

Where there are zeros in a numeral, do not read the place values where the zeros occur.

Look at these numerals: 5 047, 5 407, 5 470

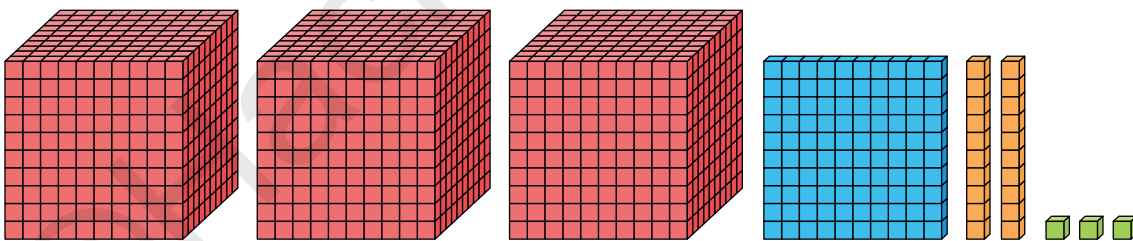
5 047 in words is five thousand and forty-seven.

Say 5 407 and 5 470 in words to your partner.

**Hint**

We do not mention the place values where zeros occur when reading a numeral.

- 1** Write the number name and numeral these base-10 blocks represent.



- 2** Write these numerals on a place value chart. Read the numbers and write them in words.

**a** 2 346

**b** 7 608

- 3** Write six thousand two hundred and thirty-seven as a numeral.

# Sequencing



## Key maths idea

We can count or skip count forward or backward by following a pattern.

- Counting five numbers forward in 1s from 2 340:  
2 340, 2 341, 2 342, 2 343, 2 344 and 2 345

We can see that the numbers are in **sequence**.

We can also do this when skip counting.

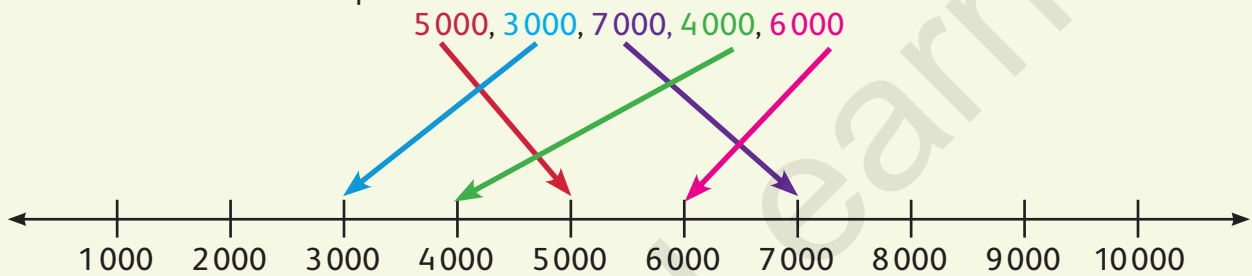
- Skip counting by 1 000 starting from 3 000:  
3 000, 4 000, 5 000, 6 000, 7 000, 8 000

**Key word**  
sequence

The numbers are in sequence and follow a pattern.

When numerals are **not** in sequence, we can use a number line to place the numerals in sequence.

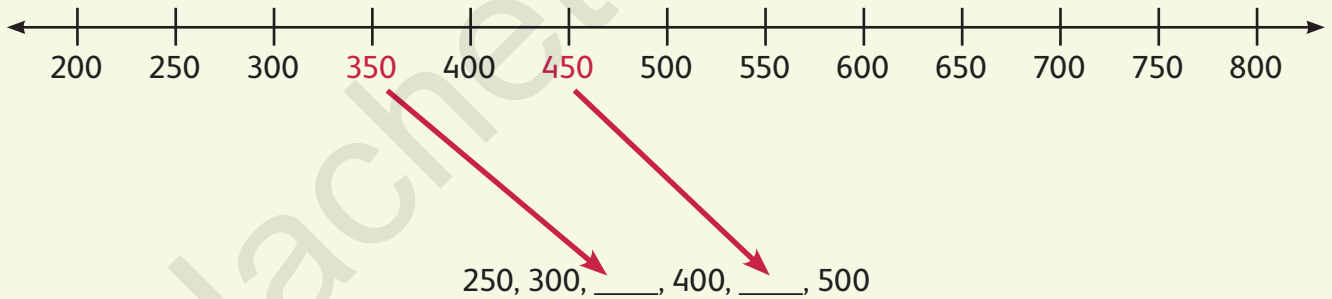
These numbers are **not** in sequence:



We can now sequence the numerals as: 3 000, 4 000, 5 000, 6 000, 7 000

Given the set of numerals 250, 300, \_\_\_\_, 400, \_\_\_\_, 500, we can identify from the number line that 350 and 450 are the missing numerals.

The number line shows how we can identify missing numerals in a sequence.

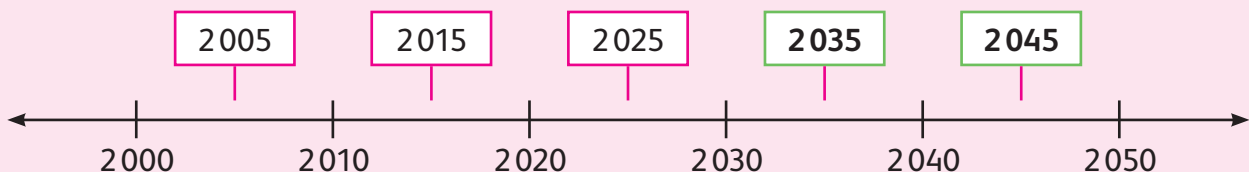


We can now write the sequence as: 250, 300, 350, 400, 450, 500

## Problem solving



Use a number line



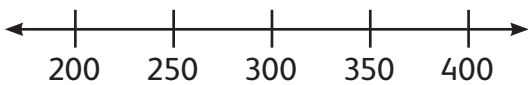
(continued)



Steps:

- 1 **Read:** We know the first three numbers in the skip counting pattern. We want to find the missing numbers.
- 2 **Plan:** Identify that the number to skip count by is 10.
- 3 **Solve:** Add:  $10 + 2025 = 2035$   
To find the next number, add:  $10 + 2035 = 2045$   
The two missing numbers are 2035 and 2045.
- 4 **Check:** Add 1 to the digit in the 10s position. It is increasing by 1, so the solution is correct.

- 1 Write the numbers in **sequence** using the number line to help.  
375, 225, 325, 275



- 2 Fill in the missing number in the sequence.  
1 600, 1 500, 1 400, \_\_\_\_\_, 1 200
- 3 Which is the **largest** numeral in the sequence?  
2000, 1 500, 1 000, 500
- 4 Which is the **smallest** numeral in the sequence?  
2 125, 2 225, 2 325, 2 425, 2 525

## Estimating: benchmark 100

### Key maths idea

We can see the value of 100 using base-10 blocks. 100 is a good benchmark for estimating a set of objects.

Count a small section of the set then look at the entire set and judge how many more sections you can get.

We can now use the strategy of mental grouping to estimate how many groups of ten there are in the picture.

You may get about 6 groups of ten, which we can estimate to  $6 \times 10 = 60$  books

Using 100 as a benchmark, we can say there are **fewer than 100** books on the three shelves.

In some cases, we can count to verify our estimates.

We use **estimation** to get an approximate value, especially in everyday life when the exact value may be too time consuming to calculate.



Group of ten books

- 1 Look at the pictures. Using mental grouping of 10, estimate the number using a benchmark of **more than 100** or **fewer than 100** for each question.

a



b



## Compatible numbers

### Key maths idea

We say that two numbers are **compatible** when they are easy to work with mentally. We can add sets of tens as pairs to make up 100.

We can also do this for thousands.

$10 + 90 = 100$	$500 + 500 = 1\ 000$
$20 + 80 = 100$	$250 + 250 + 250 + 250 = 1\ 000$
$30 + 70 = 100$	$200 + 300 + 240 + 260 = 1\ 000$
$40 + 60 = 100$	$100 + 500 + 100 + 300 = 1\ 000$
$50 + 50 = 100$	$150 + 150 + 300 + 400 = 1\ 000$



**Key word**  
compatible

- 1 Calculate the following using compatible numbers.

a  $70 + 100 + 30 =$

b  $300 + 1\ 000 + 250 + 250 =$

c  $1\ 050 + 250 + 400 + 600 =$

d  $1\ 260 + 1\ 240 + 1\ 500 + 500 =$

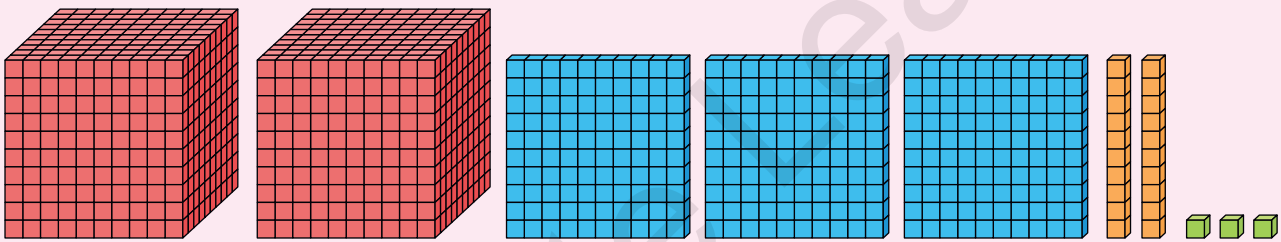
## Review: Number concepts

### Key terms and concepts

- 1 Fill in the blanks.
  - a We can skip count both \_\_\_\_\_ and \_\_\_\_\_.
  - b We use the word 'and' after the \_\_\_\_\_ position and before the tens and ones positions.
  - c When reading a numeral with zero, we do not mention the \_\_\_\_\_ where the zeros occur.

### Quick check

- 1 Fill in the missing values.  
2 468, 2 469, 2 470, \_\_\_\_\_, \_\_\_\_\_
- 2 We got these numbers by skip counting in \_\_\_\_\_s.  
1 230, 1 240, 1 250, 1 260
- 3 What number does the base-10 blocks represent?



- 4
  - a Use a place value chart to identify the value of each digit in the numeral 7 684.
  - b Write 7 684 in words.
- 5 Write the set of numbers in order from smallest to largest.  
2 240, 2 220, 2 260, 2 200, 2 280

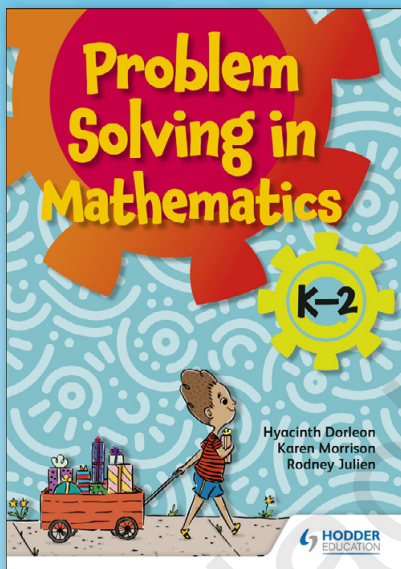
### Challenge and investigate

- 1 On a visit to a cinema, theatre or stadium:
  - count the number of seats in one row
  - use skip counting to identify how many seats there are in 10 rows
  - using mental grouping, estimate the number of seats in your section.

# Problem Solving in Mathematics



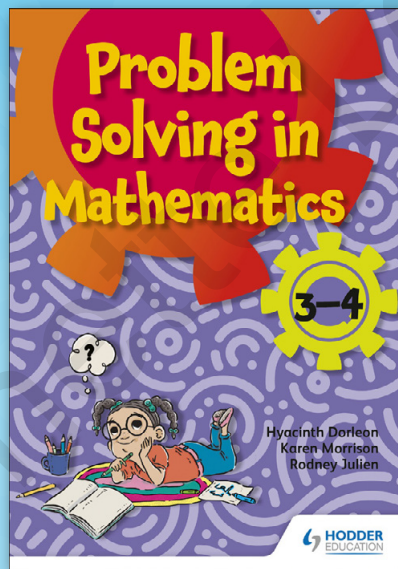
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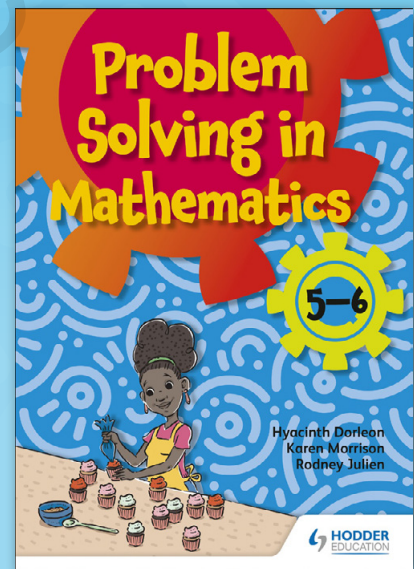
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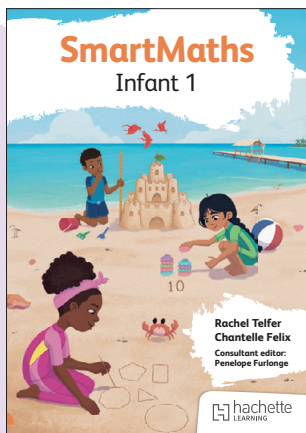
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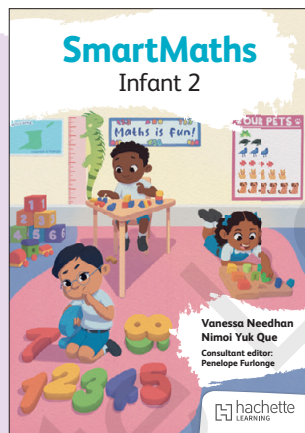


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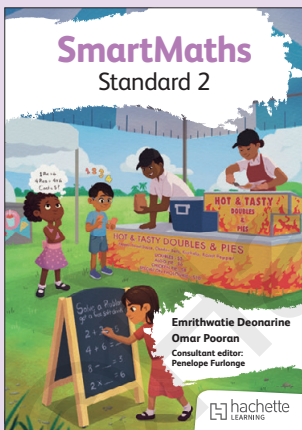
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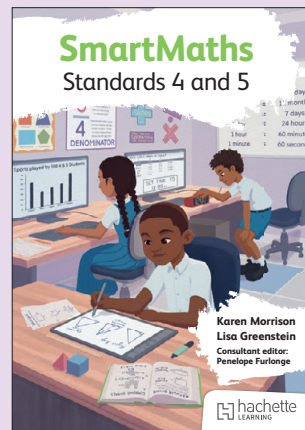
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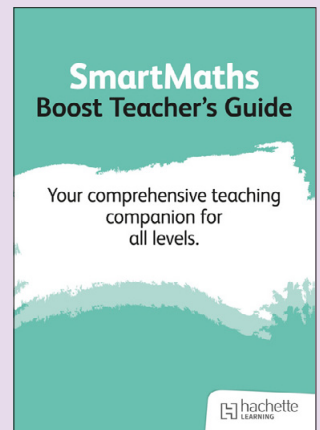
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# SmartMaths

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- Cultivate mastery of key mathematical concepts through clear, straightforward explanations using step-by-step guidance and real-life examples.
- Streamline SEA preparation from the start with a structured course. Beginning with Standard 1 and progressing seamlessly to a focused resource for Standards 4 and 5, prepare students for the SEA with extensive exercises and exam preparation materials that cater to diverse learning styles.
- Engage with culturally relevant content authentically reflecting Trinidad and Tobago's local environments, cultures, and realities, developed, and reviewed by local authors and a consultant editor.
- The answers, glossary and curriculum mapping can be found online at [www.hachettelearning.com/mathematics/smartmaths-standard-3](http://www.hachettelearning.com/mathematics/smartmaths-standard-3).

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