# Maths Trek

Exploring maths in the real world

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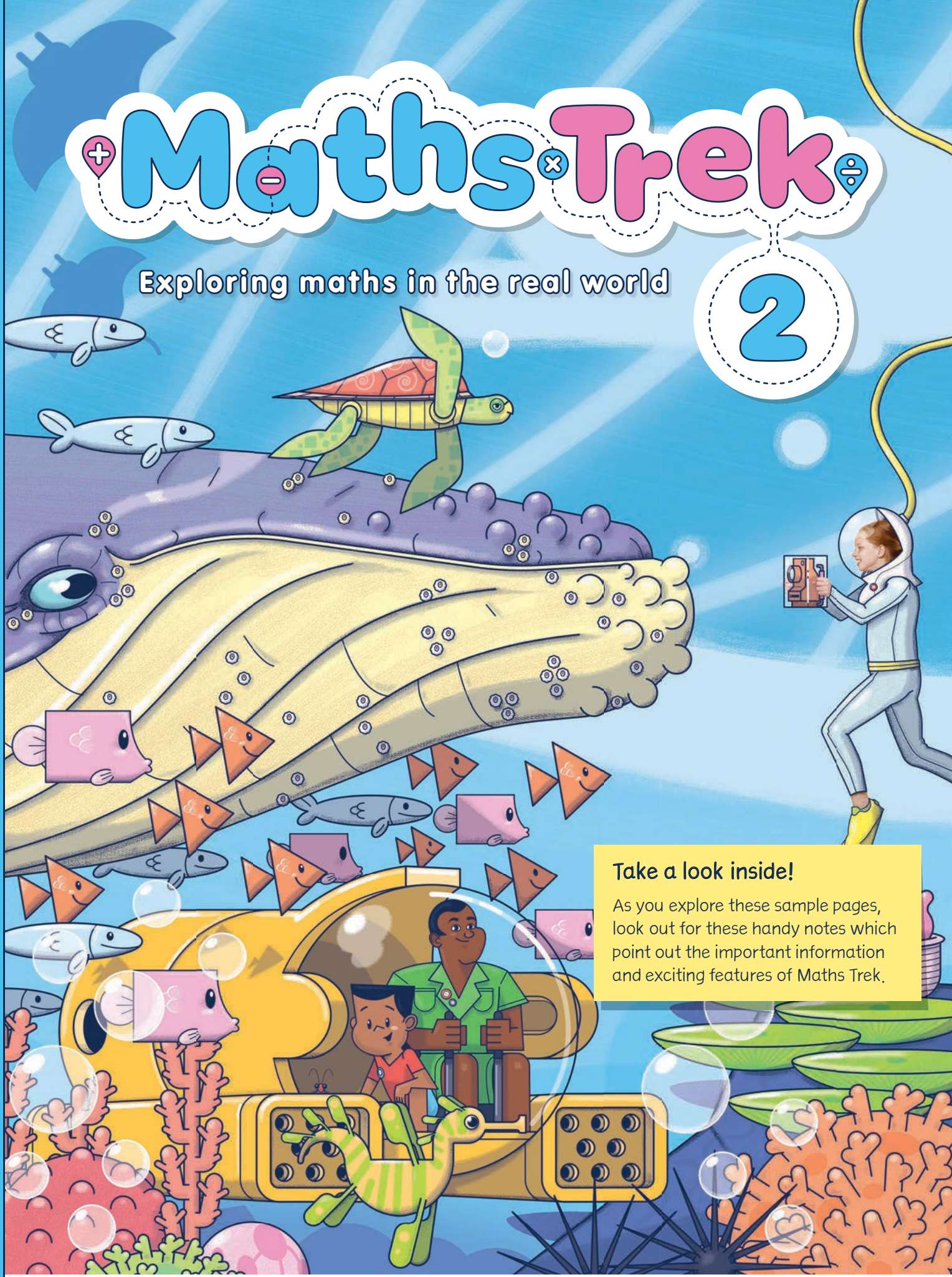


### Take a look inside!

As you explore these sample pages, look out for these handy notes which point out the important information and exciting features of Maths Trek.

**Sample Student Book Pages (Australian Curriculum Edition)**

Firefly EDUCATION

# Your Maths Trek Teacher Guide

Maths Trek is a whole-school numeracy program that provides everything you and your students need to explore maths in real-world contexts.

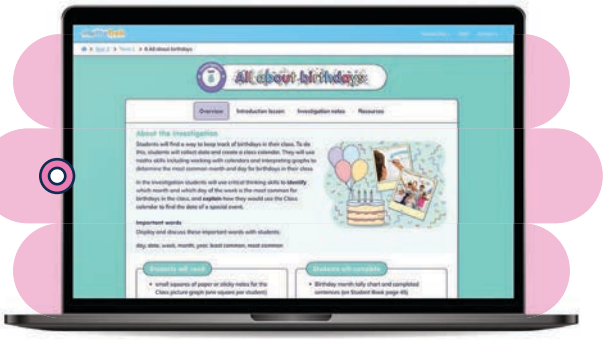
To maximise the benefits of the program, use the Student Book with the explicit teaching resources at Maths Trek Online to build, develop and strengthen each student's ability to work mathematically.

**An adventure in maths for every student from Foundation to Year 6!**

## Maths Trek Online

Maths Trek Online is home to lesson guides, teaching slides, interactive teaching tools, videos, printable differentiation tasks and termly assessments.

You will also find investigation notes, Student Book answers, and preparation and planning documents at Maths Trek Online.

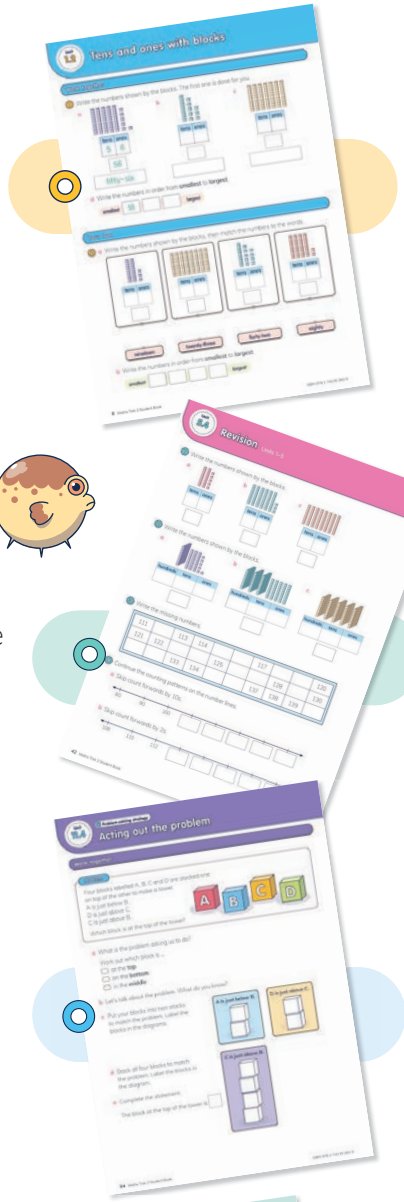


## Maths Trek Student Book

The Student Book is packed with teacher-guided and independent activities for every topic and problem-solving strategy.

Students will also find plenty of practice problems, revision activities, application questions and investigation pages in the Student Book.

# Using the Student Book with Online




## Topics

Use the online lesson guides and teaching slides to explicitly teach each topic.

Complete the *Work together* activities with your students and then have them move on to the *Your turn* activities for independent practice.

The Student Book is an integral part of the consolidation process. Once you have explicitly taught each concept, it is essential that students apply what they have learned to the activities.

## Revision

Use the revision activities throughout the Student Book to consolidate each student's learning and identify strengths and weaknesses.

## Problem-solving

Use the videos, teaching slides and modelled examples in the Student Book to teach each problem-solving strategy.

Students consolidate their skills throughout the year by independently completing practice problems. These build confidence in choosing appropriate strategies to solve a variety of unfamiliar problems.

Download the *Problem-Solving Progress Checklist* to record each student's progress throughout the year.

## Investigations

Investigations provide students with opportunities to apply maths concepts learned in previous weeks to unfamiliar, extended mathematical problems.

Use the online teaching notes, exemplars, videos and printable resources to introduce and guide students through each step of the investigation.

Work together with your students to read, plan and complete each step of the investigation, including the Student Book activity.

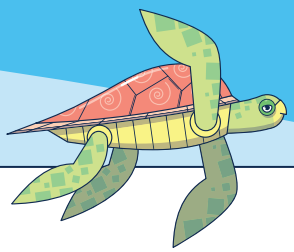
Use the online critical thinking lessons to ensure students can reflect, reason and communicate their understanding of what they have discovered.

Download the *Investigation report* and use the formative assessment checklist to record each student's progress.

## Assessment

Download the four termly assessments at Maths Trek Online to assess each student's understanding of the preceding topics. Each assessment includes graded C to A level questions.

# Contents

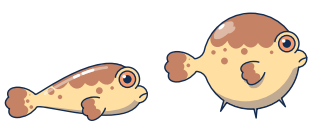


## Term 1



## Term 2





## Planning made easy

Maths Trek guides you and your students through a sequence of topics, problem-solving, revision and investigations. As the year progresses, your students consolidate their learning and revisit concepts. They also have ample opportunity to apply what they've learned to unfamiliar, extended maths problems.

You'll find four assessments in the Yearly Plan too – one for each term. They assess each student's understanding of the preceding topics and are available to print at Maths Trek Online.

## Term 3



## Want more investigations?

You'll find extra investigations at Maths Trek Online – a great way to round off a year of maths!

### Extra investigations

Why not conclude the year with an extra investigation? Teachers can log in to Maths Trek Online to access the printable pages and resources.

Investigation: Paint it

Investigation: Up, up and away

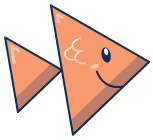
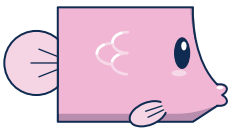
* Log in to Maths Trek Online to download and print assessments.

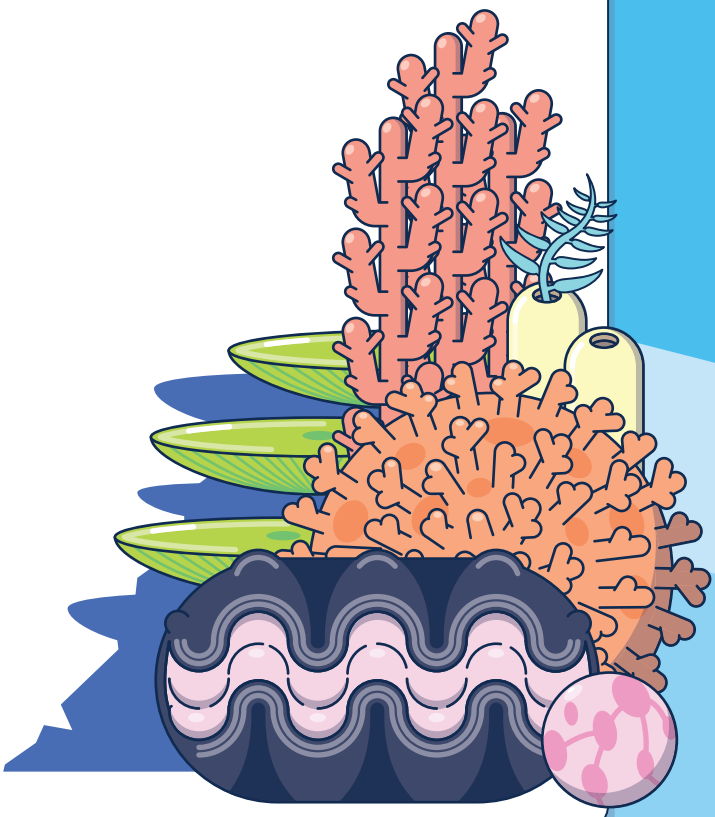
Unit 1.1

# Maths is everywhere

## Cover hunt

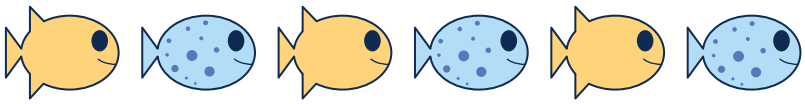
Look at the front cover of your book. Count the fish.
Use tally marks to show how many fish.

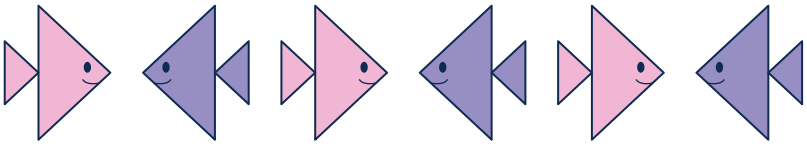
| Fish | Tally |
|---|---|
|  | |
|  | |
|  | |

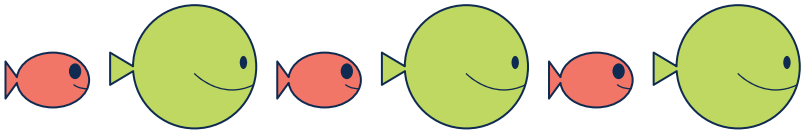


## Fish patterns

Say the patterns aloud. Circle the repeated parts. Continue the patterns.







## Engaging activities from day one

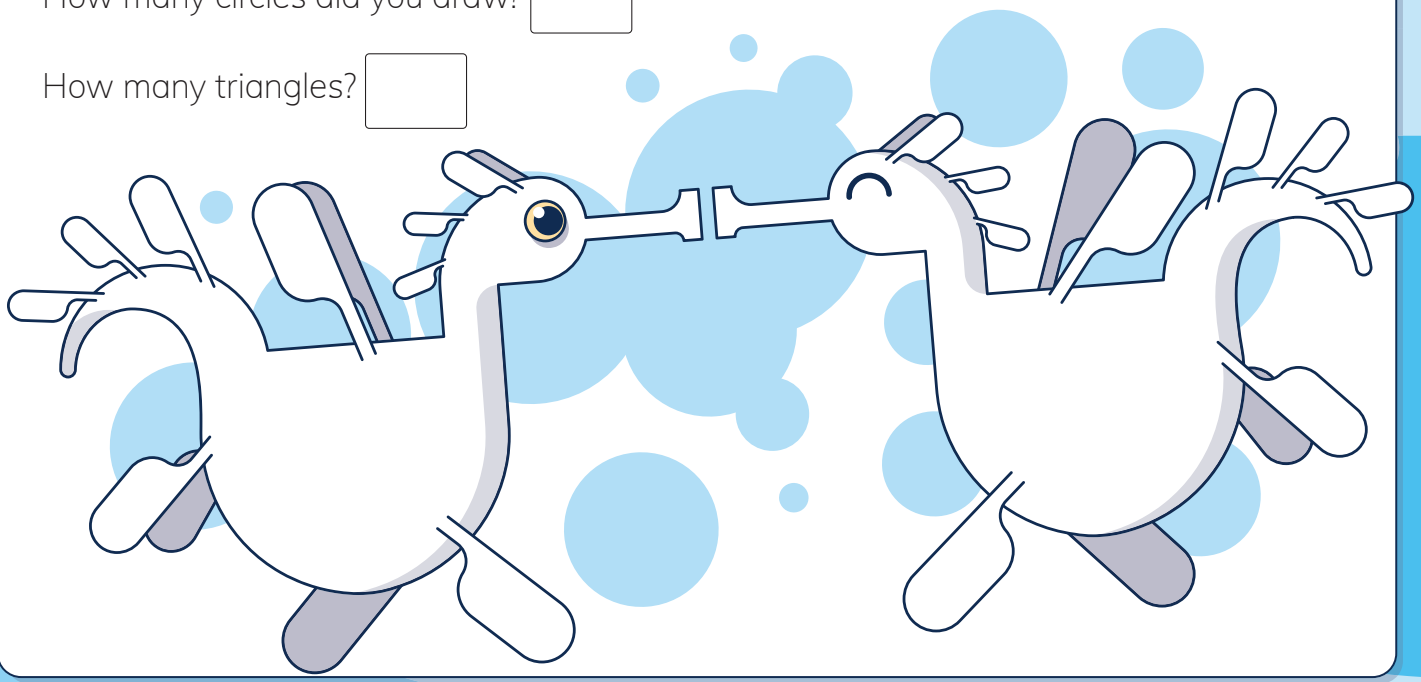
Get your students excited about maths as they apply skills learned in the previous year to these fun activities – all cleverly inspired by the art on the cover.

### Sea dragon art

Draw yellow circles on one sea dragon. Draw

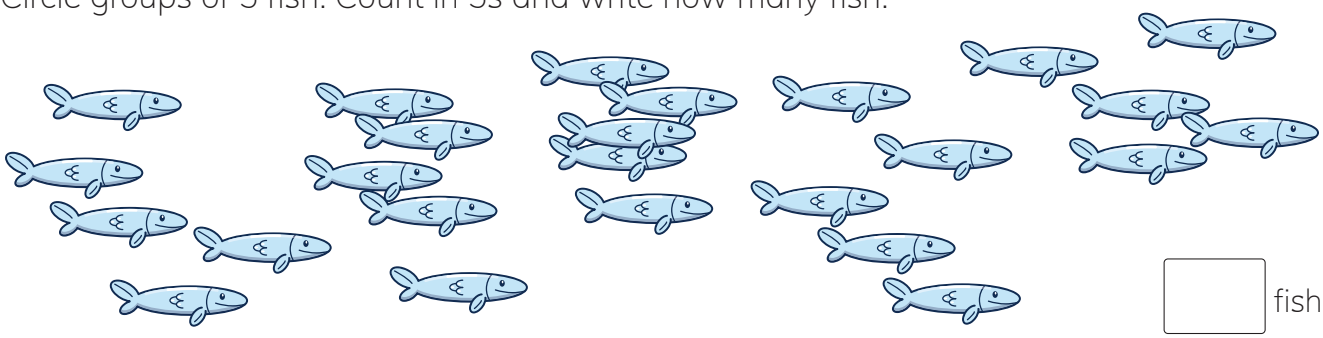
How many circles did you draw? ☐

How many triangles? ☐



### Groups of five

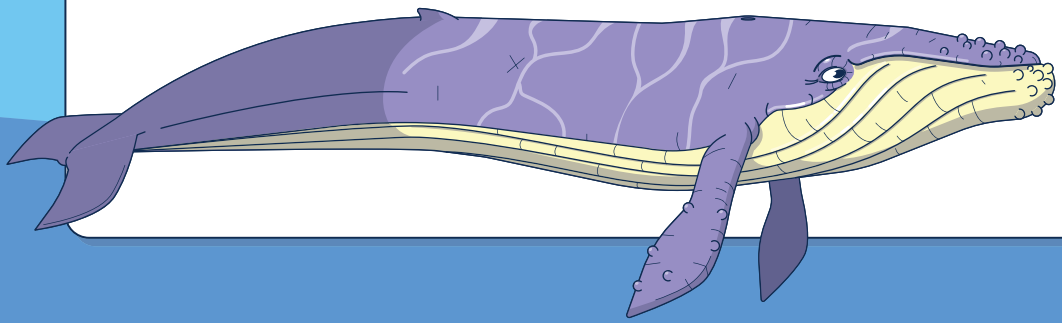
Circle groups of 5 fish. Count in 5s and write how many fish.



☐ fish

### Whale of a problem!

A humpback whale has a mass of 30 tonnes! Work out the mass of 2 humpback whales.



☐ tonnes

Unit 3.3

# Picture graphs

## Work together

1 Survey your class to find out which fruit in the table is the most popular.

a Draw a smiley face symbol in the key.

b Draw one smiley face in the picture graph to show each student's favourite fruit.

Key ☐ = 1 person

| Most popular fruit in my class | |
|---|---|
| Apples | |
| Strawberries | |
| Bananas | |
| Grapes | |
| Watermelon | |
| Oranges | |

2 Use the picture graph in question 1 to complete the sentences.

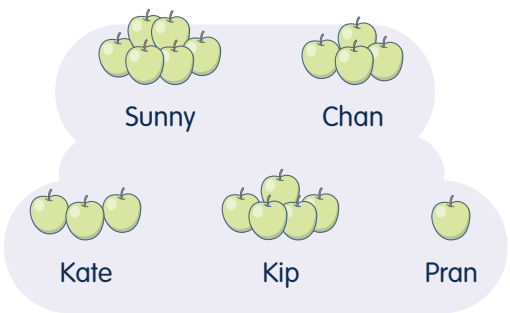
a The most popular fruit in my class is ☐.

b The least popular fruit in my class is ☐.

## Your turn

3 a Draw an apple symbol in the key.

b Display the number of apples the students picked as a picture graph.




| Number of apples picked | | | | | | |
|---|---|---|---|---|---|---|
| Sunny | | | | | | |
| Chan | | | | | | |
| Kate | | | | | | |
| Kip | | | | | | |
| Pran | | | | | | |

Key ☐ = 1 apple

**4** Complete the picture graph to show the number of at the camp site during one week.

On Sunday there were 8 tents, Monday 4, Tuesday 2, Wednesday 4, Thursday 4, Friday 6 and Saturday 8.

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| Sun | Mon | Tue | Wed | Thu | Fri | Sat |



**5** Use the picture graph to answer the questions about the weather in September.

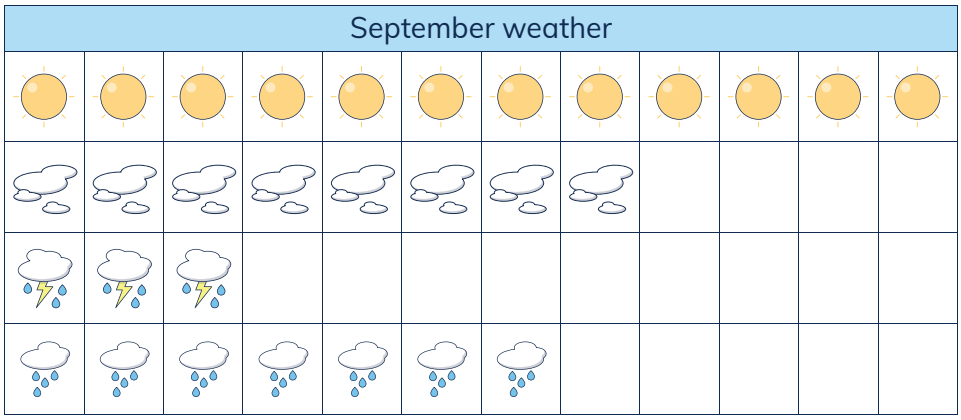
Key

= sunny day

= cloudy day

= stormy day

= rainy day




**a** How many days were sunny? ☐

**b** How many days were cloudy? ☐

**c** How many days were stormy? ☐

**d** How many days were rainy? ☐

**e** What was the most common type of weather in September? ☐

Unit 7.2

# Addition using friendly pairs

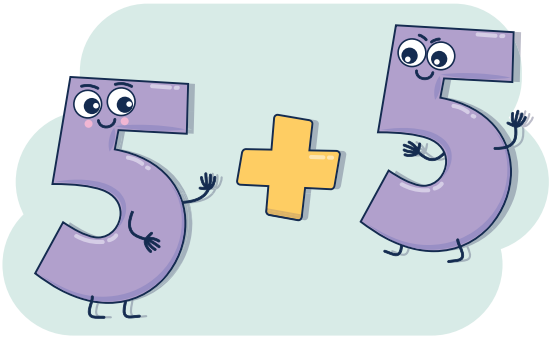
## Work together

1 Add the numbers. Look for friendly pairs to help you. The first one is started for you.

a $\overset{10}{\overbrace{5 + 5}} + 3 = 10 + 3 =$ ☐

b $\overset{10}{\overbrace{9 + 6 + 1}} =$ ☐ + ☐ = ☐

c $\overset{10}{\overbrace{5 + 5}} + \overset{10}{\overbrace{9 + 1}} =$ ☐ + ☐ = ☐



## Your turn

2 Add the numbers. Look for friendly pairs to help you.

a $2 + 6 + 4 =$ ☐

b $3 + 7 + 2 =$ ☐

c $8 + 5 + 5 =$ ☐

d $3 + 5 + 7 + 5 =$ ☐

e $9 + 4 + 1 =$ ☐

f $6 + 5 + 4 + 5 =$ ☐

**Reminder**

Look for pairs that add to 10. Add them first.

3 Read the addition problems. Write number sentences to match. Look for friendly pairs to help you.

a 4 and 2 and 6 more ☐ + ☐ + ☐ = ☐

b The total of 8 and 2 and 5 ☐ + ☐ + ☐ = ☐

c 3 plus 7 plus 4 ☐ + ☐ + ☐ = ☐

d Add 1 and 9 and 4 and 3 ☐ + ☐ + ☐ + ☐ = ☐

4 Try working out the addition problems mentally. Look for friendly pairs to help you.

a $5 + 5 + 6 =$ ☐

b $1 + 9 + 2 =$ ☐

c $4 + 7 + 6 =$ ☐

d $6 + 4 + 1 + 9 =$ ☐

e $5 + 3 + 3 + 5 =$ ☐

f $7 + 3 + 8 + 1 =$ ☐

5 Read each story. Write a number sentence to match. Solve the problem.

**a** Jen is birdwatching. She sees 2 kookaburras, 3 magpies and 8 cockatoos. How many birds is that?

**b** Troy has a tub of toy vehicles. He has 9 monster trucks, 5 racing cars, 4 utes and 1 bus.
How many vehicles are there altogether?

**c** A pack of iceblocks is $5. Mum buys 3 packs.
How much do they cost altogether?

**d** Zac is saving his pocket money. On Monday he earns $6. On Tuesday and Wednesday he earns $5 each day. On Thursday he earns $4. How much is that altogether?

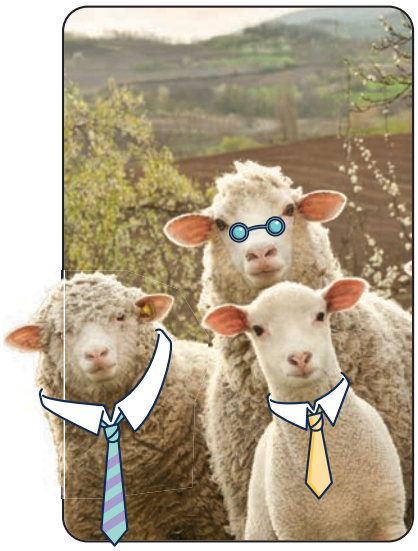
6 Write a number sentence to match each story and solve the problems.

**a** Farmer Max has 3 ducks, 5 chickens, 5 sheep and 1 dog.
How many animals is that?

**b** Farmer Tess has 12 sheep, 8 goats, 3 pigs and 7 cows.
How many animals is that?

**c** Which farmer has the most animals?

◯ Farmer Max ◯ Farmer Tess

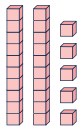


Unit 5.4

# Revision Units 1–5

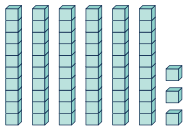
1 Write the numbers shown by the blocks.

a



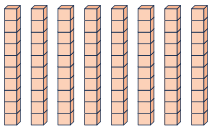
| tens | ones |
|---|---|
| | |

b



| tens | ones |
|---|---|
| | |

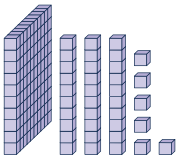
c



| tens | ones |
|---|---|
| | |

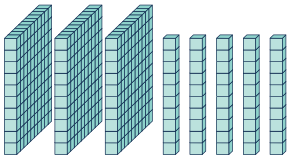
2 Write the numbers shown by the blocks.

a



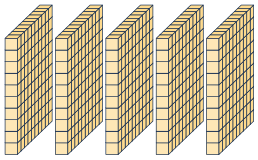
| hundreds | tens | ones |
|---|---|---|
| | | |

b



| hundreds | tens | ones |
|---|---|---|
| | | |

c



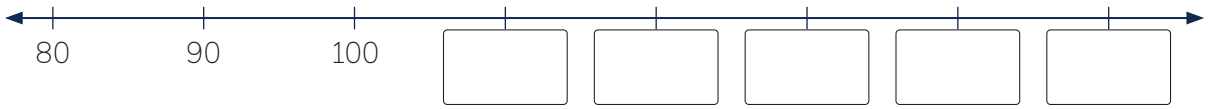
| hundreds | tens | ones |
|---|---|---|
| | | |

3 Write the missing numbers.

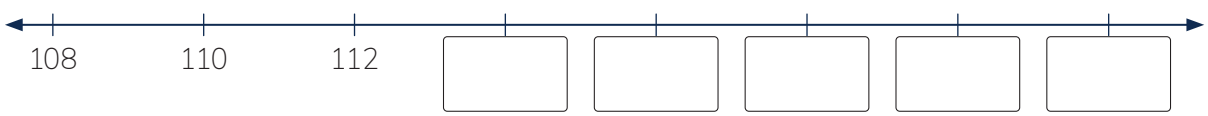
| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 111 | | 113 | 114 | | | 117 | | | 120 |
| 121 | 122 | | | 125 | | | 128 | | 130 |
| | | 133 | 134 | | | 137 | 138 | 139 | |

4 Continue the counting patterns on the number lines.

a Skip count forwards by 10s.




b Skip count forwards by 2s.



## Regular revision

Every 4–5 weeks, your students complete revision activities based on the preceding topics. This regular revision is great for consolidating learning and identifying each student's strengths and weaknesses.

**5** Complete the addition facts.

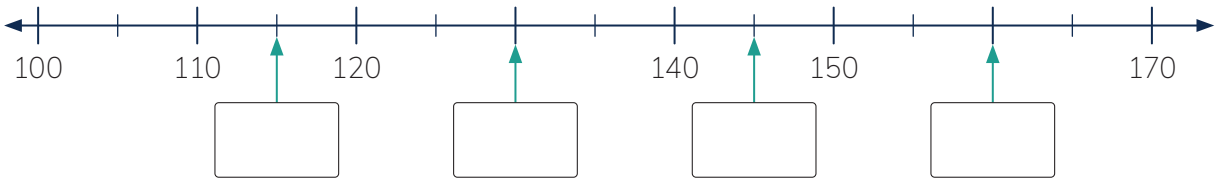
**a** 5 + 5 = ☐ **d** 9 + 2 = ☐ **g** 6 + 7 = ☐

**b** 3 + 9 = ☐ **e** 2 + 8 = ☐ **h** 7 + 7 = ☐

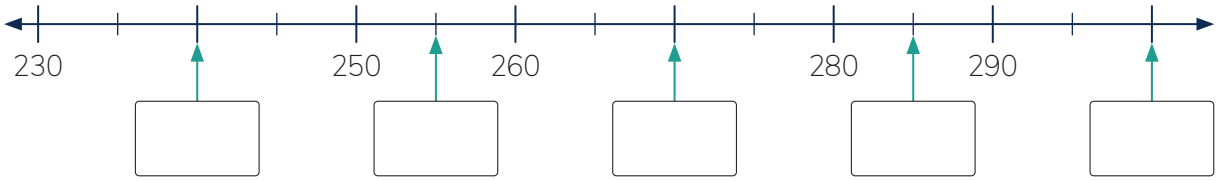
**c** 10 + 6 = ☐ **f** 5 + 6 = ☐ **i** 8 + 4 = ☐

**6** Write the missing numbers.

**a**




**b**




**7** Jump to a friendly ten, then add the rest. Write the answers.

**a** 9 + 4


**b** 19 + 4


**c** 29 + 4


**8** Use a current calendar to answer the questions.

**You will need**

a current calendar

**a** What month is it? ☐

**b** How many days are in this month? ☐

**c** What is today's date? ☐

Investigation Unit 21

# Showtime

## Spend up at the show!

Congratulations, you have won two free passes to the show!

You and a friend have a total of $100 to make it a fun-filled day by buying show bags, ride tickets, food and drinks.

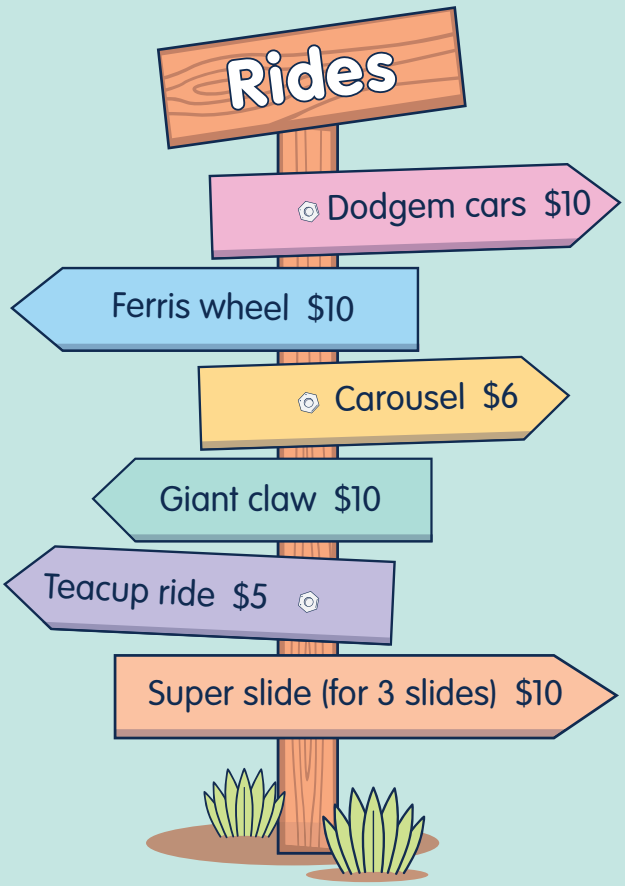
Your task is to choose how best to spend your money.

### Food and Drinks Menu

Dagwood dog.....$5
Hamburger.....$10
Cup of hot chips...$5
Cheese toastie.....$3

Bag of fairy floss.....$5
Ice cream cone.....$4
Watermelon slice....$2

Fresh orange juice....$4
Bottle of water.....$3
Cup of lemonade.....$5





Munchies show bag


Princess show bag


Rockstar show bag


Monster trucks show bag

# Final budget


Record the prices of the show bags, ride tickets, food and drinks you and a friend would like to buy. Calculate the totals.

| Show bags | |
|---|---|
| | |
| | |
| | |
| | |
| Total | $ |

| Rides | |
|---|---|
| | $ |
| | $ |
| | $ |
| | $ |
| Total | $ |

| Food and drinks | |
|---|---|
| | |
| | |
| | |
| | |
| | |

Budget total: $ + $ + $ = $

## Bring maths to life

Designed to be conducted over a week, every investigation is packed with opportunities for your students to apply their maths skills to unfamiliar, extended problems.

## Develop critical thinking skills

Critical thinking is an integral part of every investigation. At Maths Trek Online, you'll find critical thinking lessons, cognitive verb definitions, examples and hints – all designed to help your students craft well-reasoned responses when sharing and discussing results.

Unit 3.4

Problem-solving strategy

# Making an organised list

## Work together

**Problem**

Connie has three round stones labelled 1, 2 and 3. She puts them in a line on the ground to make a three-digit number.

List all the different three-digit numbers Connie can make with the stones.


**a** What is the problem asking us to do?

List all the different ...

- ⬭ two-digit numbers Connie can make
- ⬭ three-digit numbers Connie can make
- ⬭ four-digit numbers Connie can make

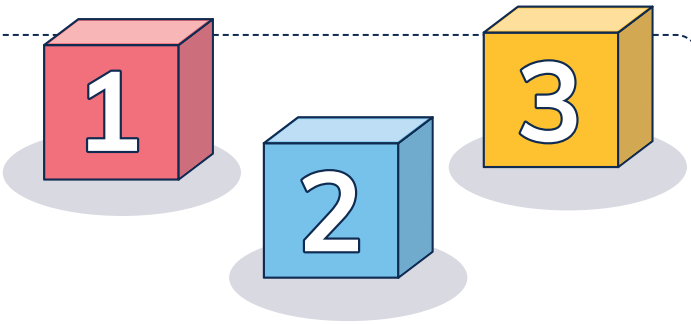
**b** Let's talk about the problem. What do you know?

**c** List the three-digit numbers that start with 1.

**d** List the three-digit numbers that start with 2.

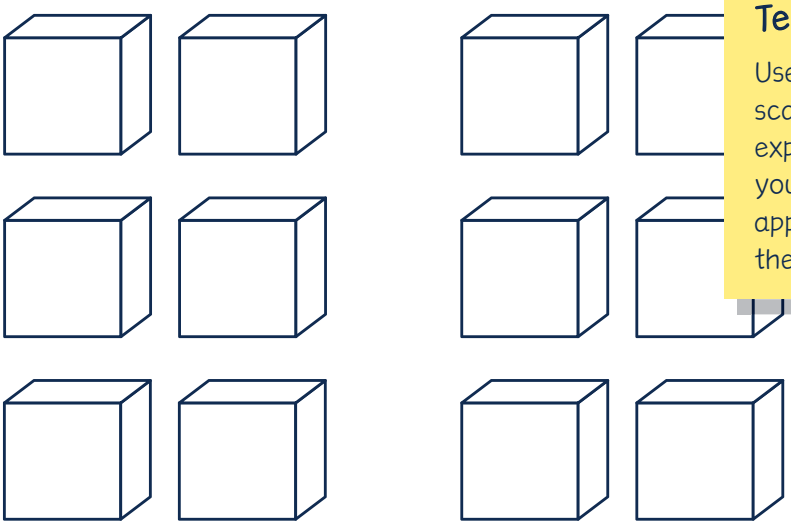
**e** List the three-digit numbers that start with 3.

## Problem A




Tommy has three wooden blocks labelled 1, 2 and 3.
He puts two blocks side by side to make a two-digit number.

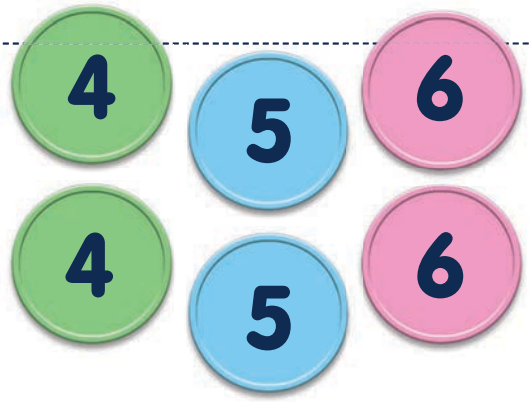
List all the different two-digit numbers Tommy can make with the blocks.



### Ten problem-solving strategies

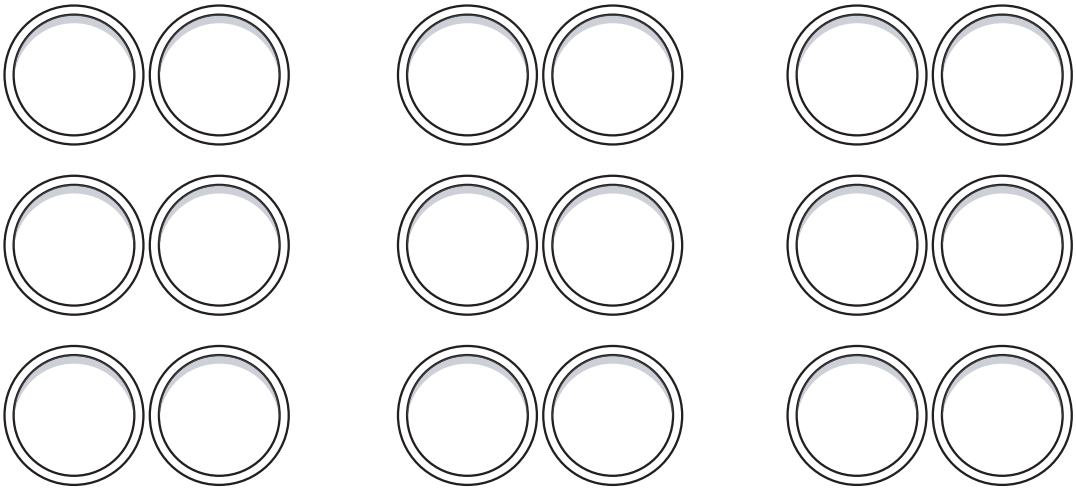
Use the online teaching resources and scaffolded *Work together* problem to explicitly teach each strategy. Then give your students independent practice at applying the strategy as they complete the *Your turn* problems.

## Problem B




Andy has six counters.
Two counters are labelled 4, two are labelled 5 and two are labelled 6.
Andy puts two counters side by side to make a two-digit number.

List all the different two-digit numbers Andy can make with the counters.



Unit 15.4

# Problem-solving practice

## Problem A

Mick wrote a song about his favourite number.

> I have a favourite number that you might like to find.
>
> My number has two digits, and one of them is 9.
>
> My number is not too big. It is less than 32.
>
> My number is more than 20. Now it is up to you.

Use the clues in the song to work out Mick's favourite number.


Mick's favourite number is ☐.

## Think critically

**a** How did you solve the problem? Tick the strategy you used.

- ☐ Finding the useful information
- ☐ Guessing and checking
- ☐ Acting out the problem

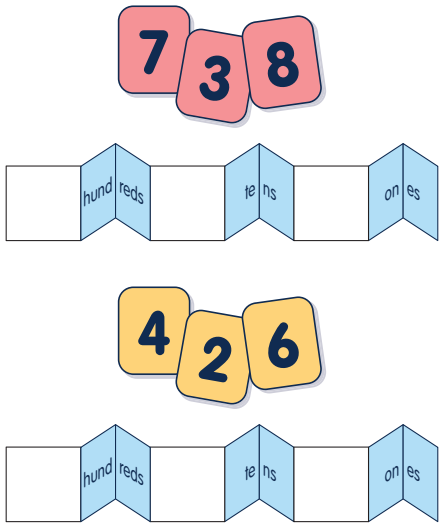
**b** What if Mick's favourite number was less than 52 and more than 10? List all the possible numbers. Tell a classmate about any patterns you find.

## Problem B

I made two secret numbers using number cards:

- both are three-digit numbers
- one is made using the red cards
- the other is made using the yellow cards
- if the red card and yellow card in the hundreds places are added, I get 9
- if the red card and yellow card in the tens places are added, I get 7.

What are the two secret numbers?




The two secret numbers are ☐ and ☐.

### Plenty of problem-solving practice

As the year progresses, your students practise choosing appropriate problem-solving strategies to solve a variety of unfamiliar problems.

### Share and discuss

Encourage your students to share their solutions and explain how they used their chosen strategies.

Then discuss the extra related problem with your students to further develop their critical thinking skills.

## Think critically

a How did you solve the problem? Tick the strategy you used.

☐ Finding the useful information ☐ Guessing and checking
☐ Acting out the problem

b What if the red card and the yellow card in the tens places added to 11 instead of 7? What would the two secret numbers be?

# The Maths Trek Program

Maths Trek is a whole-school numeracy program for Foundation to Year 6 that develops mathematical understanding, fluency, reasoning and problem-solving skills.

The Student Book together with the explicit teaching resources at Maths Trek Online build, develop and strengthen each student's ability to work mathematically.

Use the comprehensive online teaching resources to explicitly teach each concept before students apply their learning in the Student Book.

Matched to the Australian Curriculum V9

## In this book students will find ...

- shared *Work together* activities
- independent activities to develop and master maths skills
- concepts revisited throughout the year
- scaffolded problems to learn key problem-solving strategies
- practice problems to build confidence in applying the strategies
- real-world investigations where students apply maths skills to unfamiliar, extended mathematical problems to strengthen connections between concepts
- regular revision to consolidate learning

## At Maths Trek Online teachers will find ...

- explicit teaching slides and lesson guides for every topic and problem-solving lesson
- engaging visuals and hands-on activities in lessons
- differentiation tasks
- interactive teaching tools
- place value videos
- problem-solving strategy videos
- digital and printable resources to guide students through every investigation
- critical thinking lessons
- formative and summative assessments

Maths Trek Online includes the teaching resources for all year levels and complimentary access to the student site.

## Head to www.fireflyeducation.com.au/mathstrek to:

- view Maths Trek sample pages from other year levels
- download the Curriculum Match and Yearly Plan documents
- sign up for a free trial of the online teaching resources
- book a free professional learning workshop for your school.

Maths Trek