Maths Trek

Exploring maths in the real world

2

firefly EDUCATION

Your Introduction to Maths Trek

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.
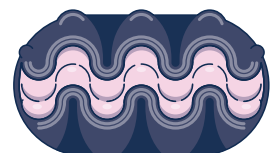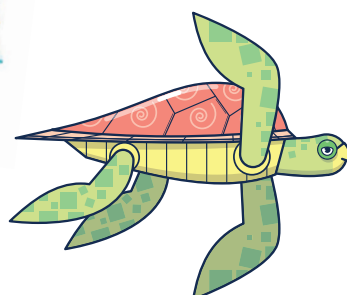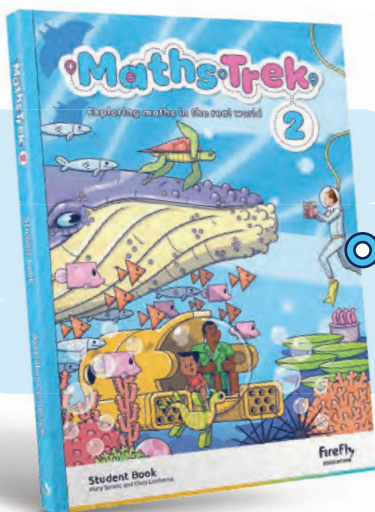
Using the Student Book with Online

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.

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, stimulus images and printable resources to introduce and guide students through each step of the investigation.
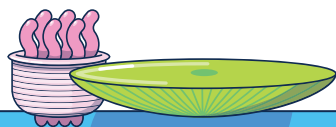
Work together with your students to read, plan and complete each step of the investigation, including the Student Book activity.

Use the online critical thinking lessons to ensure students can reflect, reason and communicate their understanding of what they have discovered.
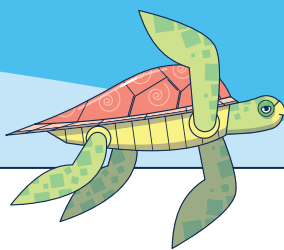
Download the *Investigation report* and use the formative assessment checklist to record each student's progress.

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.
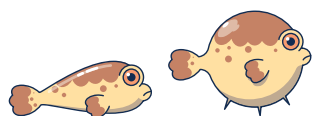
Contents

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.

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
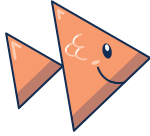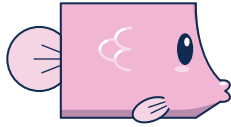
Investigation: Up, up and away

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

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
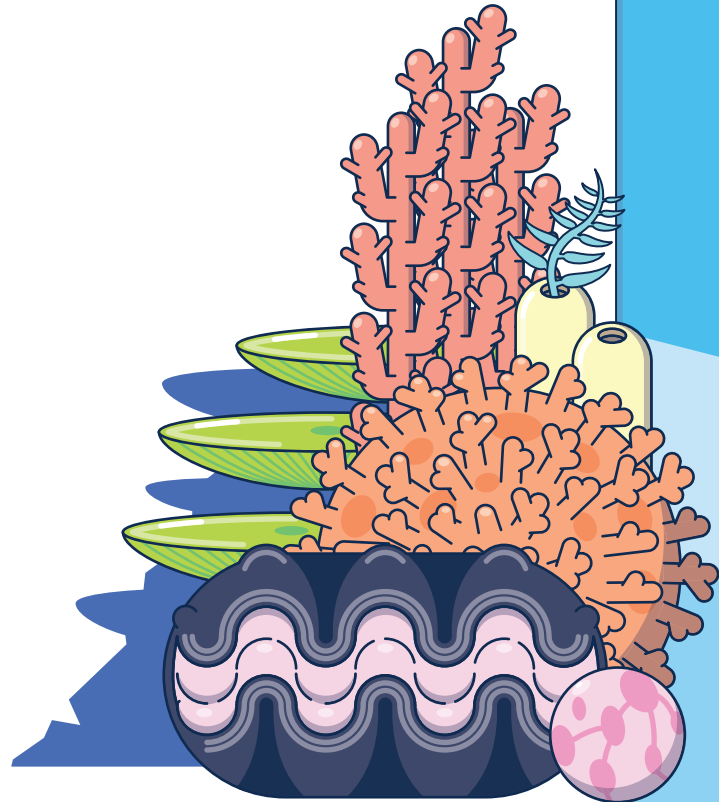
Fish patterns

Say the patterns aloud. Circle the repeated parts. Continue the patterns.
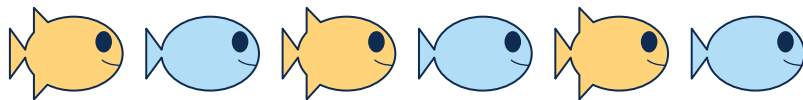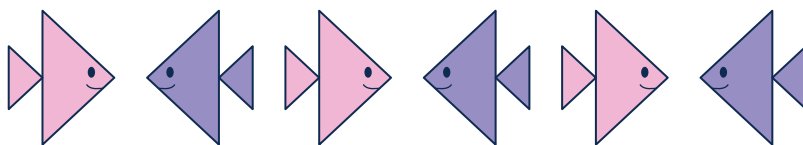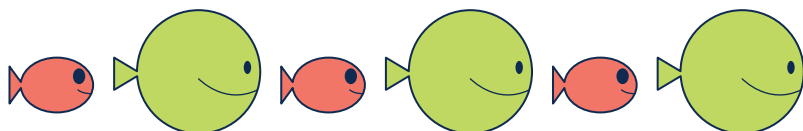
Sea dragon art

Draw **yellow** circles on one sea dragon. Draw

How many circles did you draw? ☐

How many triangles? ☐
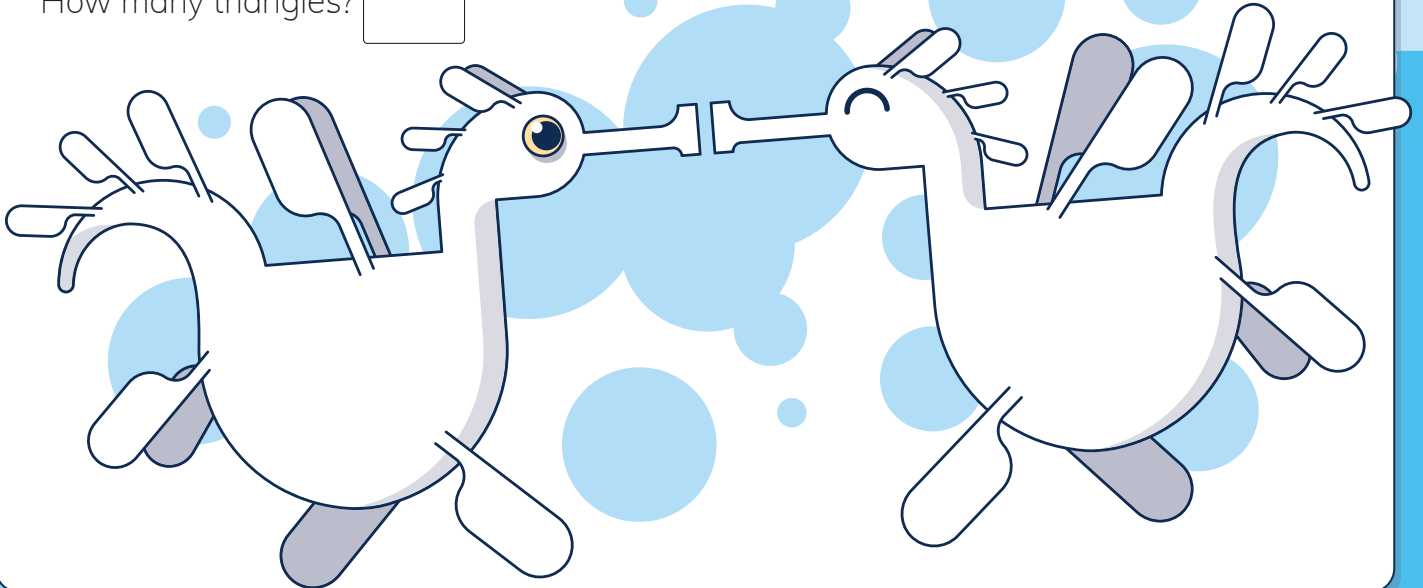
Groups of five

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

☐ fish
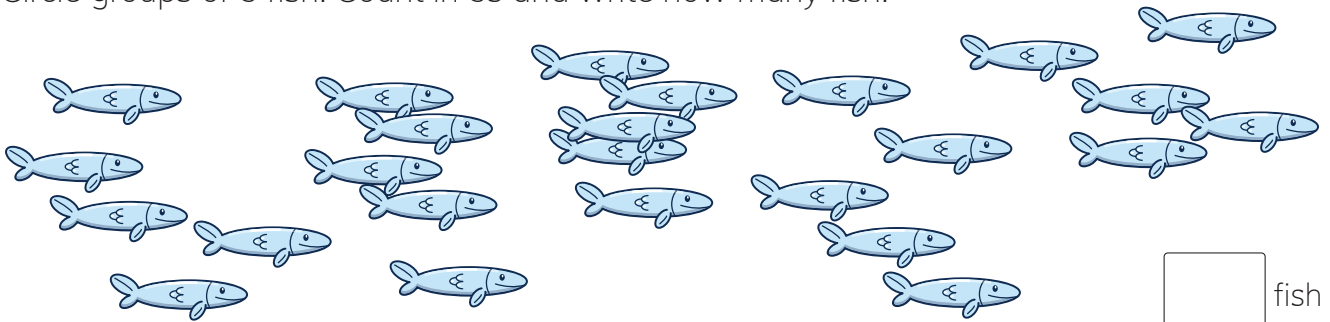
Whale of a problem!

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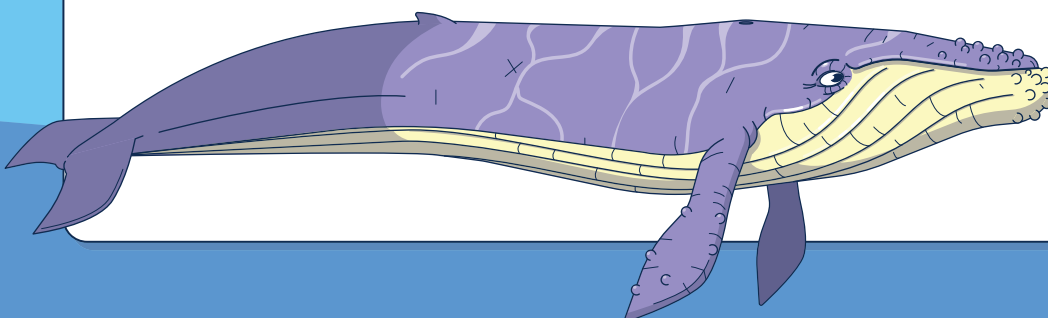
☐ tonnes

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.
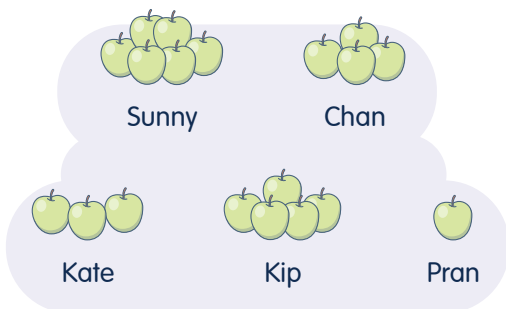
Number of apples picked					
Sunny					
Chan					
Kate					
Kip					
Pran					

Sunny   Chan

Kate   Kip   Pran

Key [   ] = 1 apple

④ Complete the picture graph to show the number of tents 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

September weather

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? ☐

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 $\overset{10}{\overparen{5 + 5}} + 3$ $= \boxed{10} + \boxed{3} = \boxed{}$

b $\overset{10}{\overparen{9 + 6 + 1}}$ $= \boxed{} + \boxed{} = \boxed{}$

c $\overset{10}{\overparen{5 + 5}} + \overset{10}{\overparen{9 + 1}}$ $= \boxed{} + \boxed{} = \boxed{}$
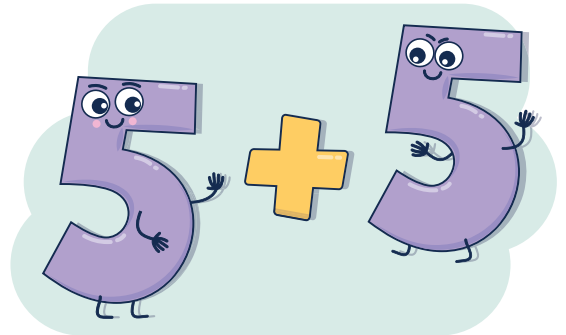
Your turn

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

a $2 + 6 + 4 = \boxed{}$

b $3 + 7 + 2 = \boxed{}$

c $8 + 5 + 5 = \boxed{}$

d $3 + 5 + 7 + 5 = \boxed{}$

e $9 + 4 + 1 = \boxed{}$

f $6 + 5 + 4 + 5 = \boxed{}$

> **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 $\boxed{} + \boxed{} + \boxed{} = \boxed{}$

b The total of 8 and 2 and 5 $\boxed{} + \boxed{} + \boxed{} = \boxed{}$

c 3 plus 7 plus 4 $\boxed{} + \boxed{} + \boxed{} = \boxed{}$

d Add 1 and 9 and 4 and 3 $\boxed{} + \boxed{} + \boxed{} + \boxed{} = \boxed{}$

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

a $5 + 5 + 6 = \boxed{}$

b $1 + 9 + 2 = \boxed{}$

c $4 + 7 + 6 = \boxed{}$

d $6 + 4 + 1 + 9 = \boxed{}$

e $5 + 3 + 3 + 5 = \boxed{}$

f $7 + 3 + 8 + 1 = \boxed{}$

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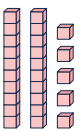
b Farmer Tess has 12 sheep, 8 goats, 3 pigs and 7 cows. How many animals is that?

c Which farmer has the most animals?

◯ Farmer Max   ◯ Farmer Tess
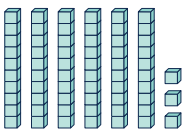
1. Write the numbers shown by the blocks.

a
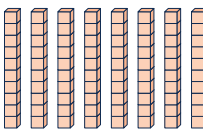
tens	ones

b

tens	ones
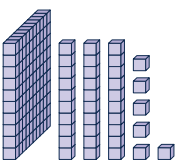
c

tens	ones
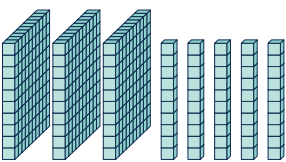
2. Write the numbers shown by the blocks.

a
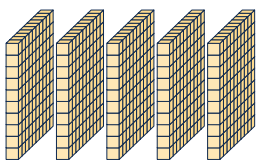
hundreds	tens	ones

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.

80   90   100

b Skip count forwards by 2s.

108   110   112

5 Complete the addition facts.

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

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

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

6 Write the missing numbers.

a

100   110   [☐]   120   [☐]   140   [☐]   150   [☐]   170

b

230   [☐]   250   260   [☐]   280   [☐]   290   [☐]
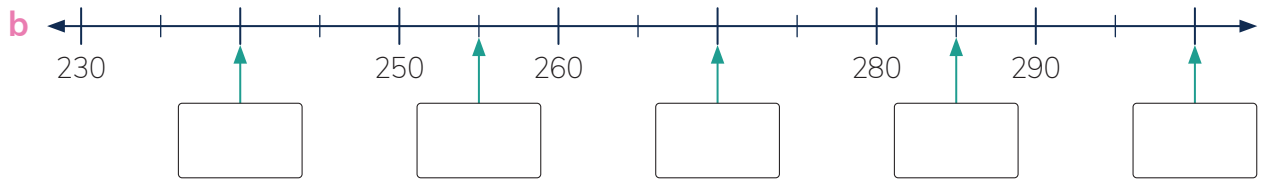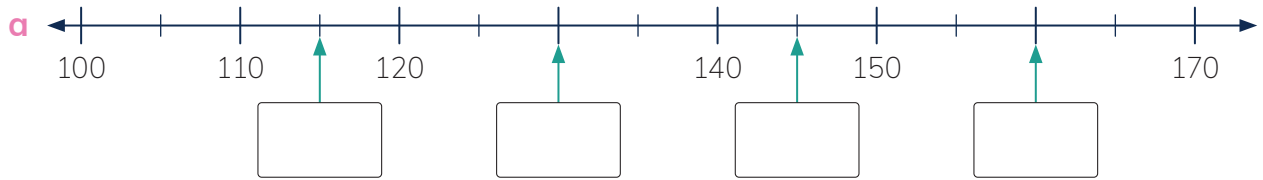
7 Jump to a friendly ten, then add the rest. Write the answers.

a 9 + 4   9   ☐

b 19 + 4   19   ☐

c 29 + 4   29   ☐

8 Use a current calendar to answer the questions.

a What month is it? ☐

b How many days are in this month? ☐

c What is today's date? ☐

You will need

a current calendar

0 1

JANUARY

Showtime
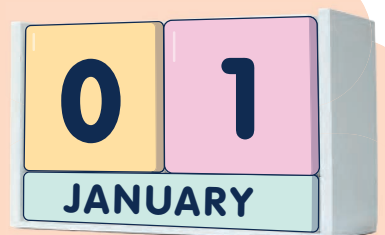
Spend up at the show!

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

Rides

Dodgem cars $10

Ferris wheel $10

Carousel $6

Giant claw $10

Teacup ride $5

Super slide (for 3 slides) $10

$10

Popcorn
Gummy lollies
Chocolate bars
Chips
Toys

Munchies show bag

$20

Tiara
Jewel stickers
Costume
Lip gloss
Gel pens
Ride voucher –
Carousel (x2)

Princess show bag

$20

Sunnies
Inflatable guitar
Sticker tattoos
Rockstar wig
Ride voucher –
Giant claw (x2)

Rockstar show bag

$30

Cap
Toy monster trucks
Stickers
Wristband
Drink bottle
Ride voucher –
Dodgem cars (x2)

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	$

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.

Rides	
	$
	$
	$
	$
Total	$

Food and drinks	
	$

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.

Budget total: $ [ ] + $ [ ] + $ [ ] = $ [ ]

Access resources @ Maths Trek Online

◎ **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.
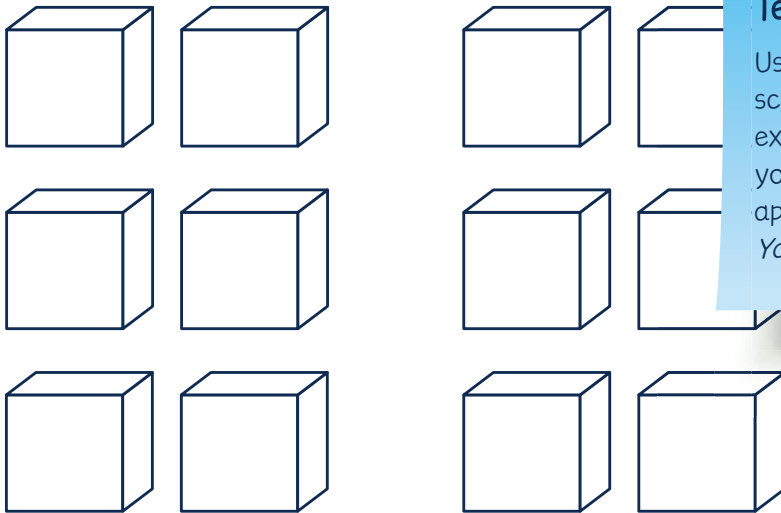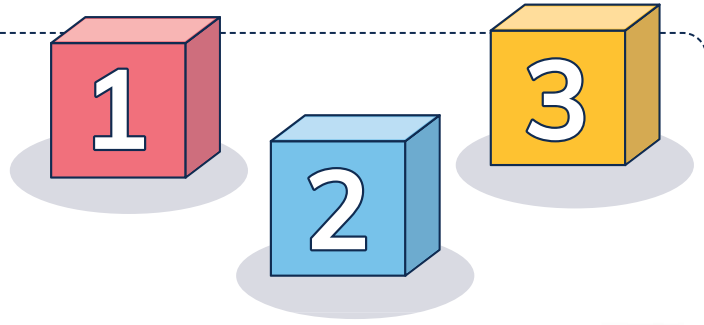
Ten problem-solving strategies

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.

Problem-solving practice
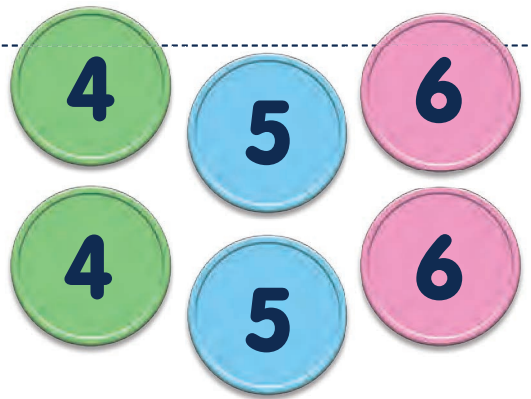
Problem A

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 [ ].

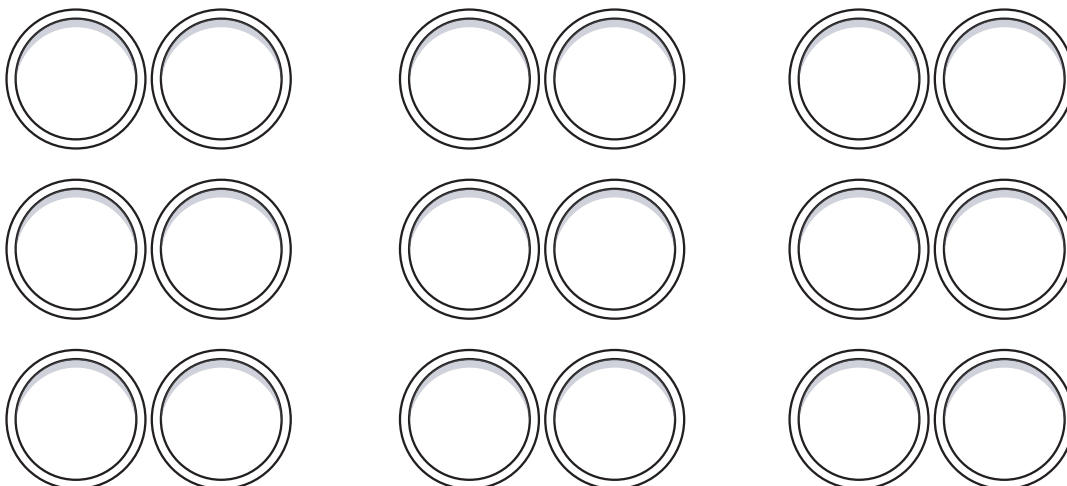**Think critically**

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.

I made two secret numbers using number cards:

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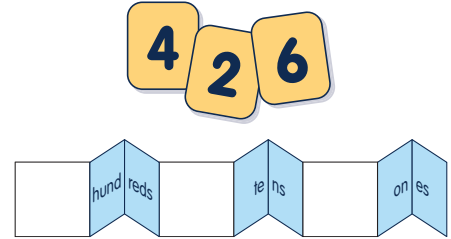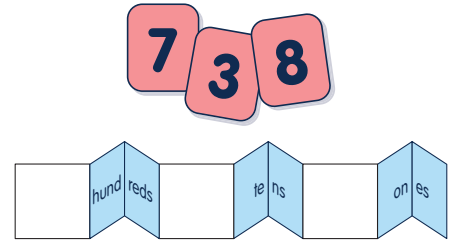- one is made using the red cards
- the other is made using the yellow cards
- if the red card and yellow card in the hundreds places are added, I get 9
- if the red card and yellow card in the tens places are added, I get 7.

What are the two secret numbers?

7 3 8

hundreds | tens | ones

4 2 6

hundreds | tens | ones

Plenty of problem-solving practice

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

The two secret numbers are [ ] and [ ]

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.

a How did you solve the problem? Tick the stra

☐ 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.

Aligned with the Australian Curriculum V9

In the Student Book you 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 you will find ...

- explicit teaching slides and lesson guides for every topic
- differentiation tasks
- interactive teaching tools
- problem-solving strategy videos
- digital and printable resources to guide students through every investigation
- critical thinking lessons in every investigation
- termly assessments
- access to teaching resources for all year levels

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
- check out the full Maths Trek product range
- book a meeting with your local education consultant to learn about Maths Trek.

MathsTrek