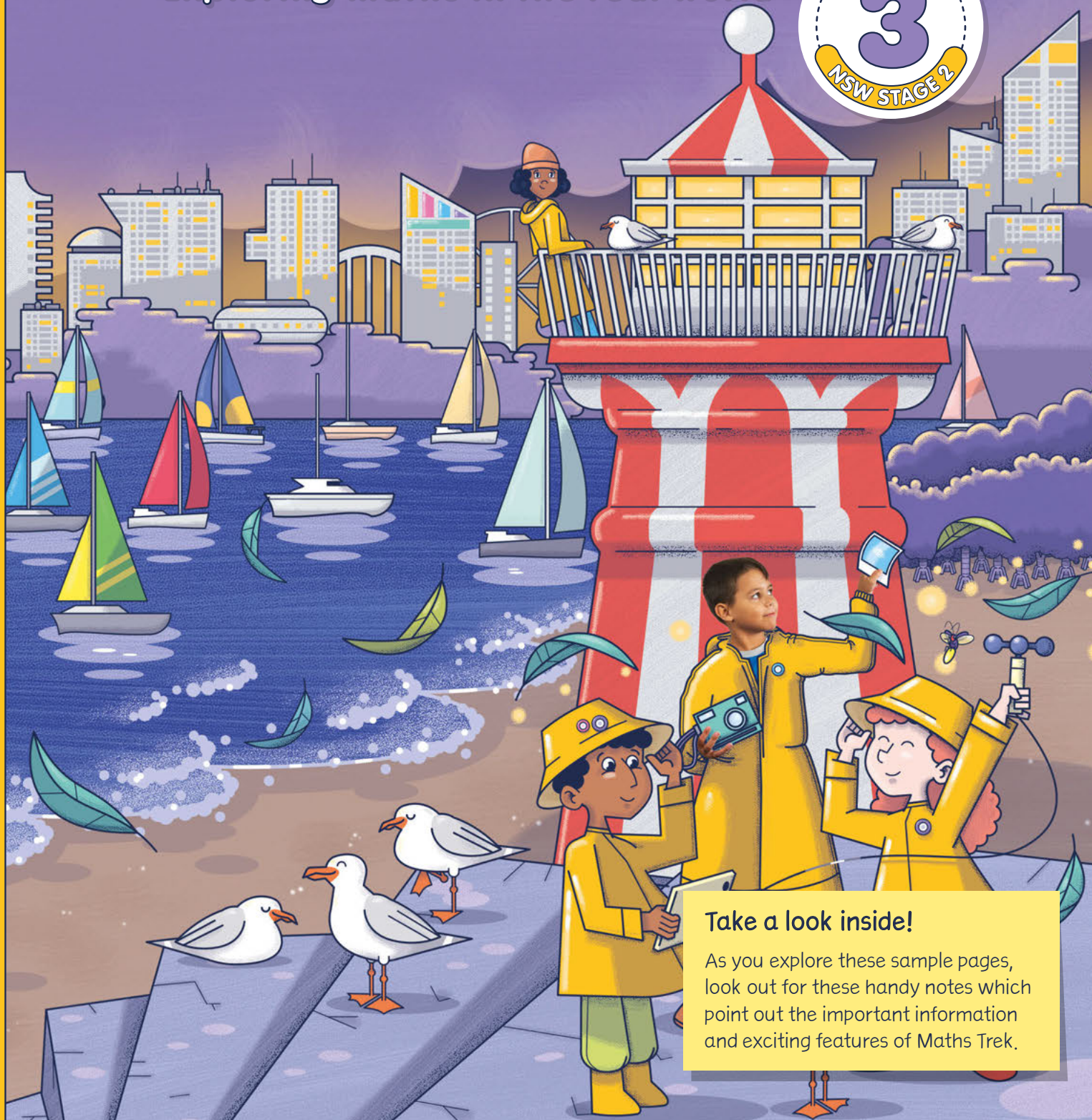


Maths Trek

Exploring maths in the real world

3

NSW STAGE 2



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
(NSW Syllabus 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.

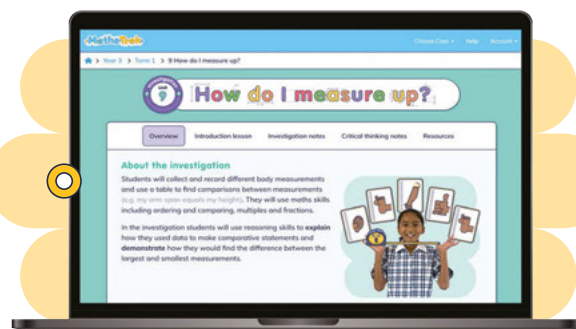
An adventure in maths for every student from Kindergarten to Year 6!



Maths Trek Online

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

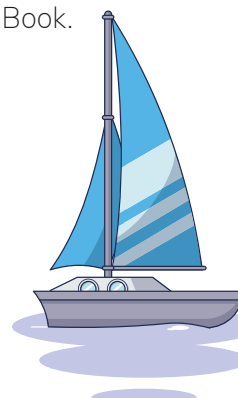
You will also find investigation notes, Student Book answers, and preparation and planning documents at Maths Trek Online.



Maths Trek Student Book

The Student Book is packed with modelled examples, as well as 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.

Discuss any modelled examples and complete the *Work together* activities with your students. Then students 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.

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

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

Assessment

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



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Want more investigations?

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

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.

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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: It's on the cards**
-  **Investigation: Trash or treasure**
-  **Investigation: Top team**
-  **Investigation: Sprouting surprises**

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

Cover hunt

Look at the front cover of your book.
Tally the pictures, then write the totals.

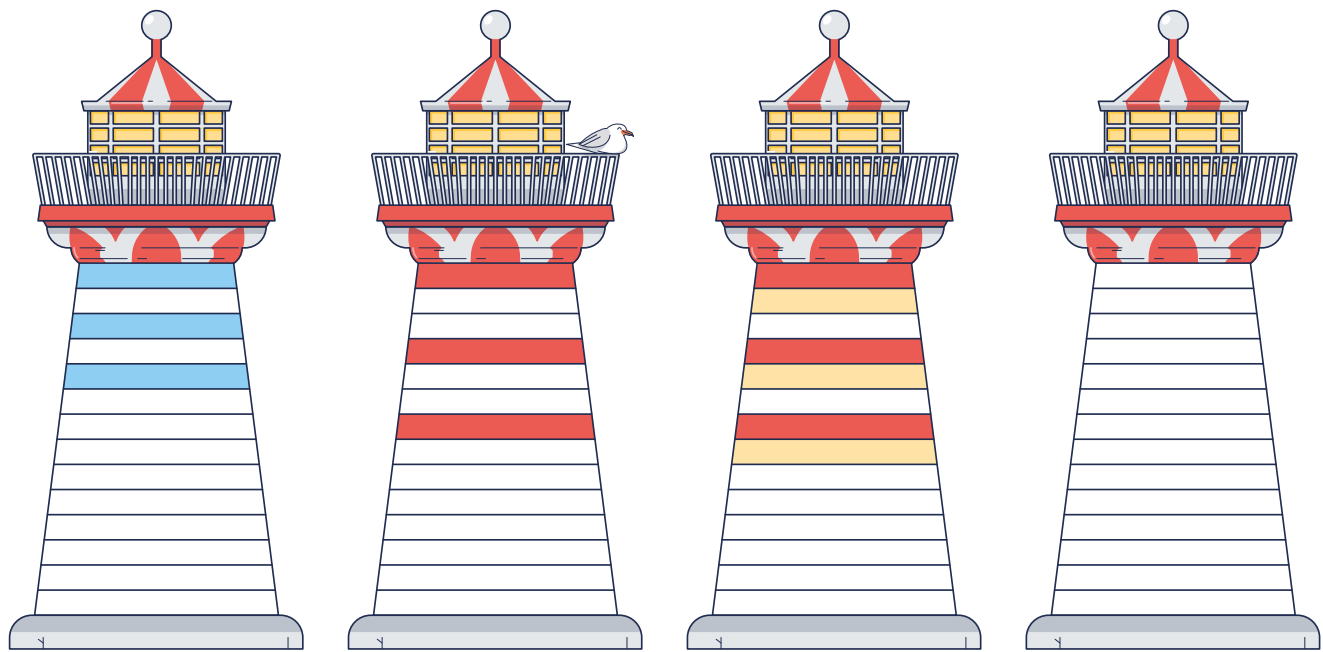
Picture	Tally	Total
 Seagull		
 Hat		
 Leaf		



Lighthouse patterns

Complete the repeating patterns on the lighthouses.

Make your own repeating pattern.



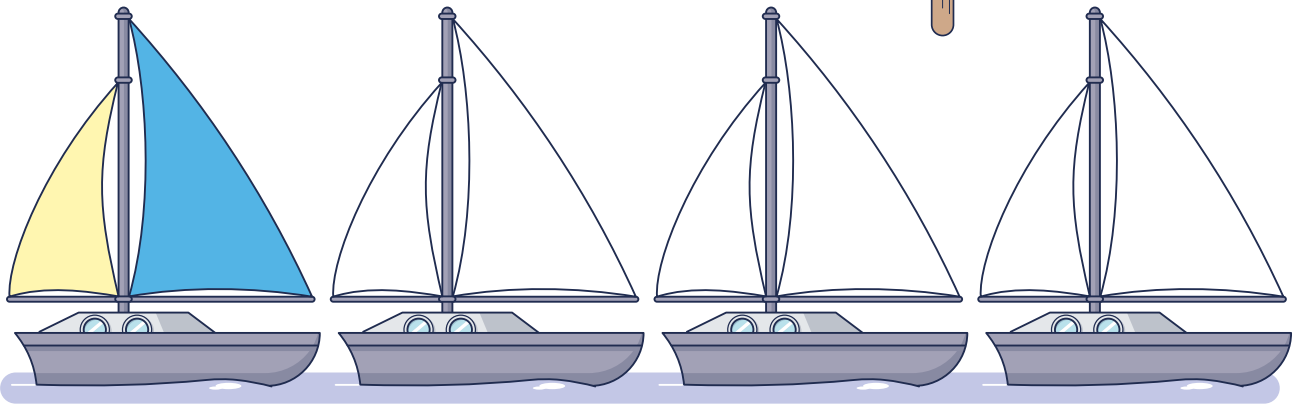
Engaging activities from day one

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.

Colour combos

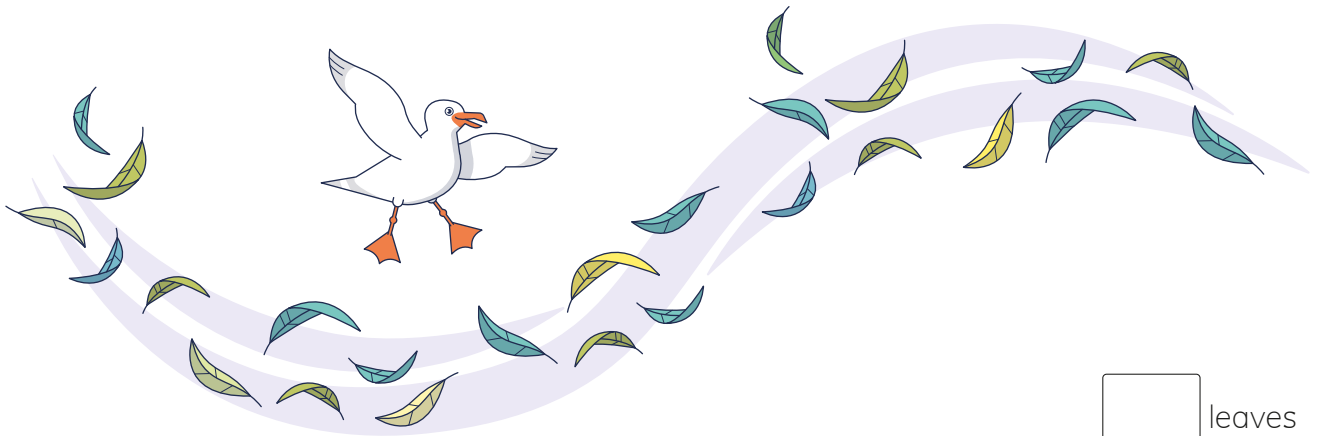
Sandy Shipwright builds sailboats with one small sail and one large sail. The small sail can be **yellow** or **green**. The large sail can be **blue** or **red**.

Show all the different sail combinations Sandy can make.



Autumn leaves

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



leaves

So many sails!

There are lots of sailboats in the bay. There are:

- 10 yellow sailboats
- 8 blue sailboats
- 5 pink sailboats.

If each sailboat has two sails, how many sails altogether?

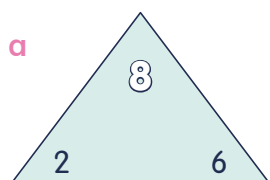
sails



Fact families for addition and subtraction

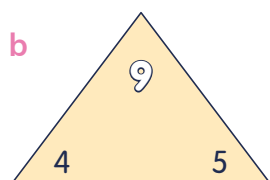
Work together

- 1 Every pair of addition facts is related to a pair of subtraction facts. Complete each set of four related facts.



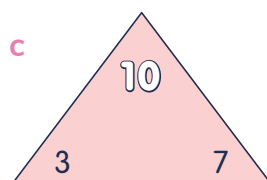
$2 + 6 = 8$

$6 + 2 = 8$



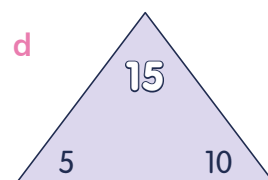
$9 - 4 = 5$

$9 - 5 = 4$



$7 + 3 = 10$

$10 - 7 = 3$



$5 + 10 = 15$

$15 - 5 = 10$

Your turn

- 2 Colour each set of four facts the same. The first one is done for you.

$5 + 2 = 7$

$2 + 5 = 7$

$7 - 5 = 2$

$6 + 3 = 9$

$7 + 5 = 12$

$12 - 5 = 7$

$7 - 2 = 5$

$9 - 3 = 6$

$3 + 6 = 9$

$8 + 9 = 17$

$5 + 7 = 12$

$12 - 7 = 5$

$4 + 6 = 10$

$6 + 4 = 10$

$9 - 6 = 3$

$9 + 8 = 17$

$17 - 8 = 9$

$17 - 9 = 8$

$2 + 8 = 10$

$10 - 4 = 6$

$5 + 6 = 11$

$13 - 6 = 7$

$13 - 7 = 6$

$7 + 6 = 13$

$8 + 2 = 10$

$10 - 6 = 4$

$6 + 5 = 11$

$11 - 5 = 6$

$11 - 6 = 5$

$6 + 7 = 13$

$10 - 2 = 8$

$10 - 8 = 2$

- 3 Complete the doubles facts up to $10 + 10$.

$1 + 1 = 2$

$2 + 2 = 4$

$3 + 3 = 6$

$4 + 4 = 8$

$5 + 5 = 10$

f

g

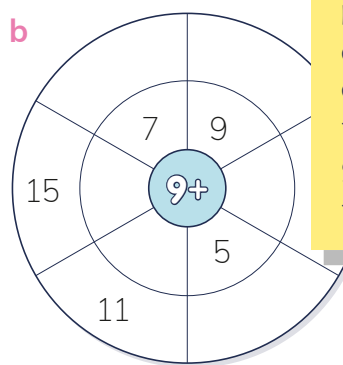
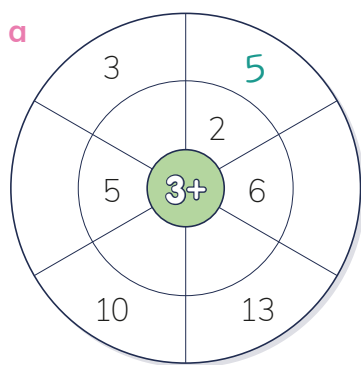
h

i

j

$3 + 3 = 6$

- 4 Use addition and subtraction facts to complete the circle.

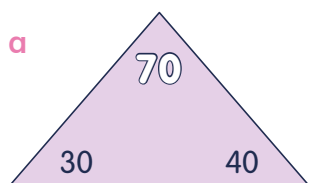


70+ topics in every year

From number and algebra to statistics and probability, your students complete a wide variety of activities to apply what they've learned in each lesson.

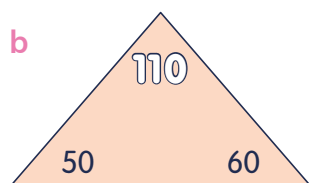
Some concepts are revisited throughout the year to consolidate learning.

- 5 Complete each set of four related facts.



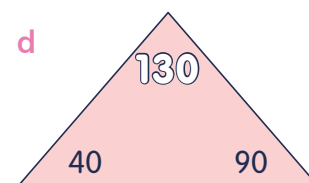
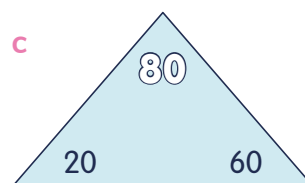
$$30 + 40 = 70$$

$$70 - 30 = 40$$

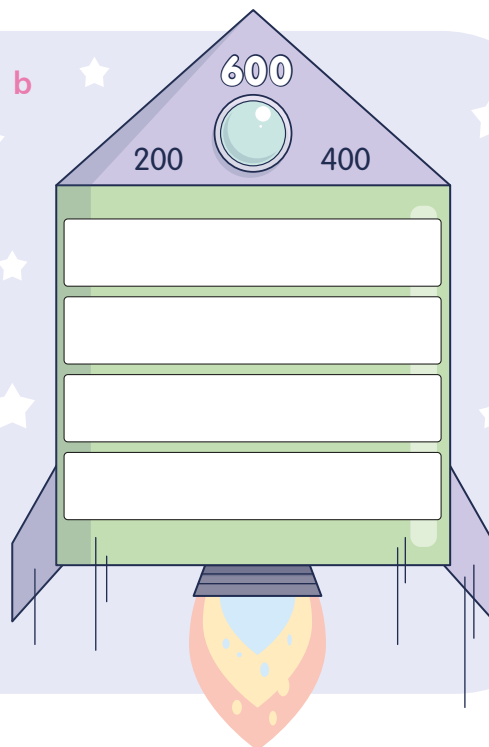
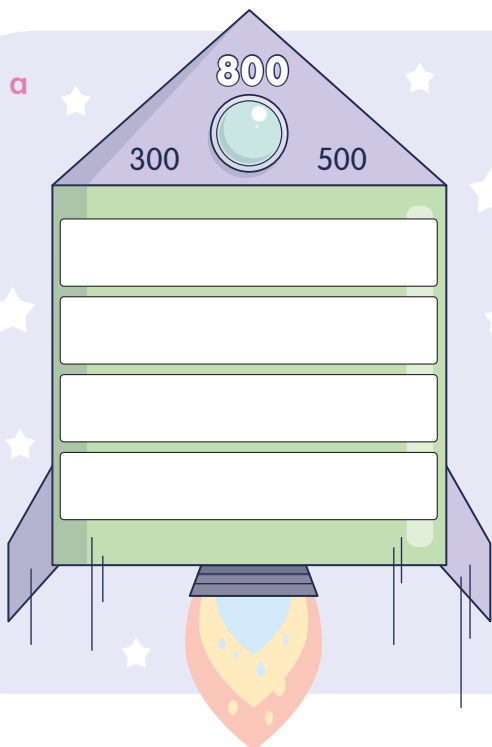


$$50 + 60 = 110$$

$$110 - 60 = 50$$



- 6 Complete each set of four related facts.



Work together

1 Match each problem to a bar model.

Ten birds sat on a fence.
Ten more flew over to join them.
How many birds in total?

Jarli put 7 apples in one bag
and 7 apples in another bag.
How many apples altogether?

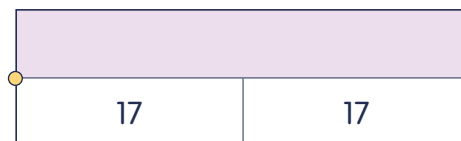
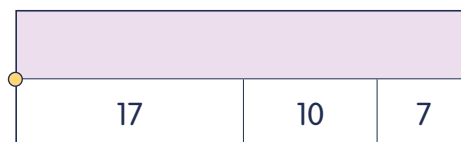
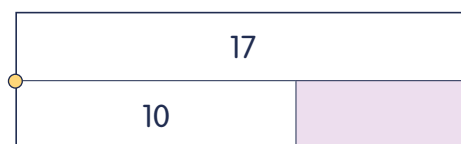
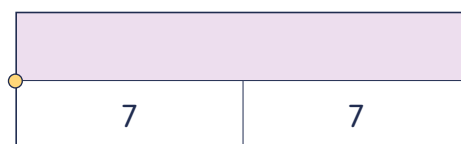
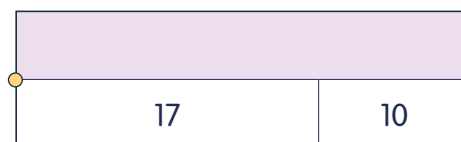
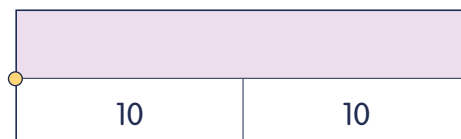
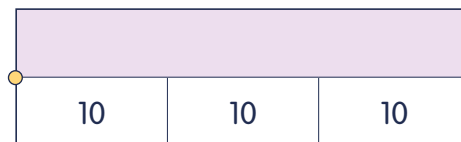
Three brothers were given
\$10 each to buy their lunch.
How much altogether?

Mia is 10 years younger than
her cousin Jarli. Jarli is 17.
How old is Mia?

Mia counted 17 cows in one field
and 10 cows in another field.
How many cows altogether?

Mia had 17 grapes and Jarli
also had 17 grapes. How many
grapes did they have altogether?

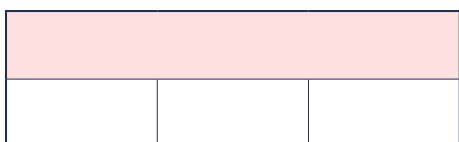
Mick is 17 years old, Rick is 10
and Nick is 7. What is the total
of their ages altogether?

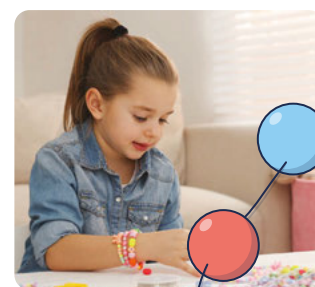


Your turn

2 Use the bar models to represent the problems, then solve them.

- a Sage made 3 bracelets for her friends. She put 5 beads on each bracelet. How many beads did Sage use?





- b** Sage added 22 more beads to her collection of 45. How many beads altogether?

- c** Sage had 64 beads to start with. She used 31 beads to make some more bracelets. How many were left?

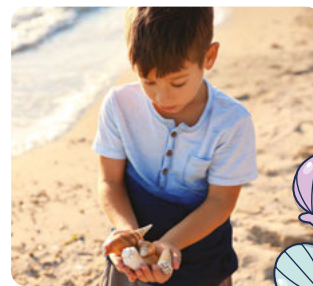
- 3** Use the bar models to represent the problems, then solve them.

- a** At the beach Luca sorted his shells into 4 piles. He had 10 shells in each pile. How many shells altogether?

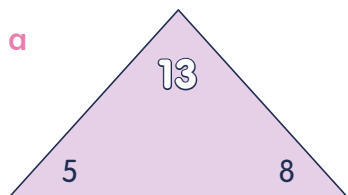
- b** Luca had 88 shells in his collection. He gave 16 away. How many shells were left?

- c** After his next holiday at the beach, Luca added 21 shells to his collection of 27. How many shells altogether?

- d** Luca sorted his shells into three buckets. The first bucket had 34, the second bucket had 20 and the third bucket had 11. How many shells altogether?



1 Complete each set of four related addition and subtraction facts.

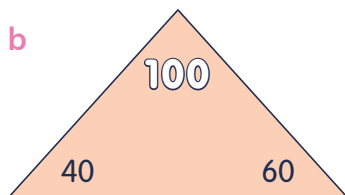


$$5 + 8 = 13$$

$$\square + \square = \square$$

$$13 - 5 = 8$$

$$\square - \square = \square$$

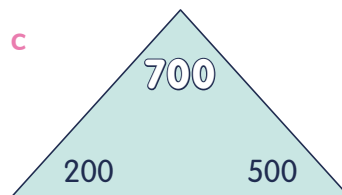


$$\square + \square = \square$$

$$60 + 40 = 100$$

$$\square - \square = \square$$

$$100 - 60 = 40$$



$$200 + 500 = 700$$

$$\square + \square = \square$$

$$\square - \square = \square$$

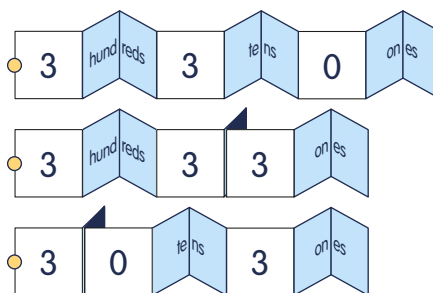
$$700 - 500 = 200$$

2 Match the numbers.

3 hundreds and 33 ones

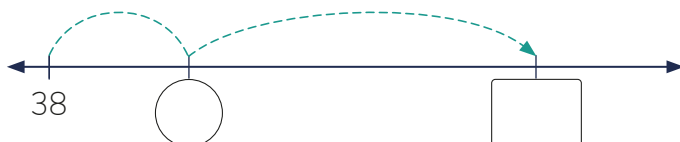
30 tens and 3 ones

3 hundreds and 3 tens



3 Use addition strategies to work out the answers.

a $38 + 7$



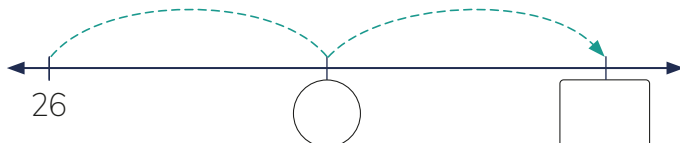
c $77 + 9 = \square$

d $25 + 9 = \square$

e $44 + 9 = \square$

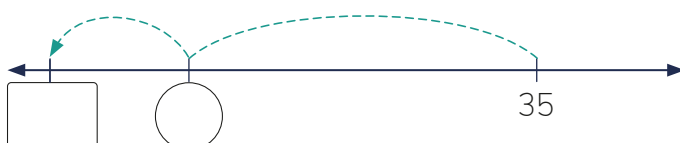
f $68 + 9 = \square$

b $26 + 8$



4 Use subtraction strategies to work out the answers.

a $35 - 7$



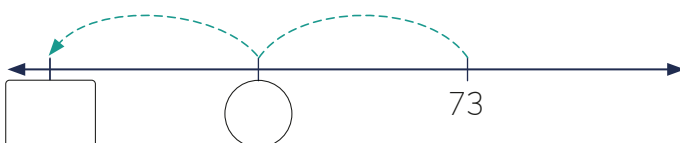
c $84 - 9 = \square$

d $67 - 9 = \square$

e $50 - 9 = \square$

f $92 - 9 = \square$

b $73 - 6$



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 Write the numbers in expanded notation.

a 7349 =

d 2920

b 6528 =

e 3034

c 4155 =

f 8080

6 Write the number shown by each expanded notation.

a = 9000 + 100 + 80 + 8

d = 4000 + 40 + 4

b = 1000 + 500 + 10 + 5

e = 8000 + 40

c = 3000 + 700 + 20 + 6

f = 2000 + 2

7 Write the missing numbers in each pattern. Colour the bubble to describe each pattern.

a

560	570	580		
-----	-----	-----	--	--

Counting by: ☐ 1 ☐ 10 ☐ 100

b

2377		2379		2381
------	--	------	--	------

Counting by: ☐ 1 ☐ 10 ☐ 100

c

1100			1400	1500
------	--	--	------	------

Counting by: ☐ 1 ☐ 10 ☐ 100

d

	600	610	620	
--	-----	-----	-----	--

Counting by: ☐ 1 ☐ 10 ☐ 100

e

4650		4850		5050
------	--	------	--	------

Counting by: ☐ 1 ☐ 10 ☐ 100

8 Compare the numbers. Write <, > or =.

a 482 2448

d 5333 4333

b 633 336

e 7200 7200

c 120 102

f 955 5950

Reminder

The **big** end of the sign always faces the larger number.

72 > **27**

72 > 27 means 72 is **greater than** 27.

27 < 72 means 27 is **less than** 72.

9 Split the numbers into tens and ones, then add or subtract the tens and the ones.

a 34 + 65

= +

= +

Add the tens and add the ones.

+ and +

= and

=

b 77 - 25

= +

= +

Subtract the tens and subtract the ones.

- and -

= and

=

Big \$pender

Imagine you have a total of \$99 to spend on eight special people in your life! Where could you go to find ideas and prices for the perfect presents?

Investigate how you can choose gifts that will total as close as possible to \$99. Each present must be a different, whole dollar price. If you have money left over, you may like to buy extra gifts for some people.

Happy shopping big spender!



Topics

Use what you learned in these topics to complete the investigation.

Unit 14.2 Subtraction with bar models.....	p 92
Unit 19.3 Subtraction with place value.....	p 126
Unit 20.1 Rounding to tens and hundreds.....	p 130
Unit 20.3 Multiplication problem-solving.....	p 134
Unit 21.1 Equivalent values of money.....	p 138
Unit 21.2 Dollars and cents.....	p 140
Unit 21.3 Inverse operations.....	p 142

Items to submit

At the end of this investigation you will need to submit:

- Cover sheet
- Gift list



Investigation steps

1 Decide who to buy for

You have \$99 to spend on gifts for eight people. Choose eight people you are buying perfect presents for and write their names on your [Gift list](#) .



2 Find gift ideas

Look through brochures, flyers, magazines, newspapers, catalogues or online stores for gift ideas. Cut out or draw pictures of a few gift ideas for each person you have chosen.

3 Spend your money

Choose one gift for the first person on your list. Draw or glue a picture of the gift in the gift column of your **Gift list**  beside the person's name. Write the price of the gift in whole dollars in the price column. Remember, you have a total of \$99 to spend.

Use classroom money or subtraction to find out how much money you have left after this purchase. Write the balance. Keep shopping for the other seven people on your list, but remember no two people can have a gift worth the same amount.

4 Adjust your balance and check your shopping list

Look at your final balance. If you have leftover money, you can buy extra gifts for some of the people on your list. If you have spent too much money, you'll have to buy different gifts for some people and correct your balances. Try to have as little money left as possible.

Check all your calculations in your **Gift list** . Compare your final balance with your classmates' final balances. Did anyone have no money left at all?

5 Critical thinking

Prove that you have the correct first balance on your **Gift list** .

Explain how you changed your spending when you realised you had spent too much or not enough.

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.

Person	Gift	Price (in whole dollars)	Balance
Nanna		\$9	\$90
Jaarli		\$10	\$80

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.

Inquiry

Show the seven different combinations of notes needed to total \$45.



Making an organised list

Work together

Problem

Remy is making two-scoop ice cream cones! Each cone is made with two different flavours. There are four flavours to choose from.

There are six different ice cream cones Remy can make. List them all.

C chocolate **V** vanilla **S** strawberry **B** banana



Unpacking the problem

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

Work out the six different ice cream cones Remy can make with ...

- ☐ **one** flavour
☐ **two** different flavours
☐ **three** different flavours

- b** Underline the important information in the problem.

- c** Tell a classmate what you know about the problem.
Discuss how this helps us use an organised list to solve the problem.

Solving the problem

- a** List all the flavour combinations that include chocolate.



- b** List the remaining flavour combinations that include vanilla.



- c** List the remaining flavour combination that includes strawberry.



Tip

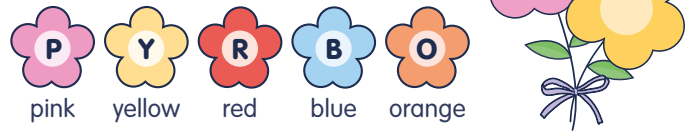
Chocolate and vanilla is the same combination as vanilla and chocolate.



Problem A

Lily is making flower posies. Each posy is made with two different-coloured flowers. There are five colours to choose from.

There are 10 different posies Lily can make. List them all.



Nine 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

Cameron has four number cards labelled 1, 2, 3 and 4. He uses the number cards to make 12 different two-digit numbers.

List the 12 numbers Cameron can make.



Tip

Try swapping the digits of a number around to see if you can create a new number.

Problem A

Rachel bought a new pen at the corner shop.
She paid with a \$5 note and received three coins as change.
Each coin was **round**.
Each coin was **different**.
Each coin had a value **greater than 10c**.
How much did the pen cost?



Rachel received \$ in change, which means the pen cost \$.

Think critically

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

- | | |
|--|--|
| ☐ Guessing and checking | ☐ Drawing a picture or diagram |
| ☐ Acting out the problem | ☐ Finding a pattern or using a rule |
| ☐ Solving a simpler problem | ☐ Making an organised list |
| ☐ Making a table or chart | ☐ Finding smaller parts of a larger problem |
| ☐ Working backwards | |

b What if Rachel used her change to buy a ruler for 50c?
What coins would Rachel have after buying the ruler?

Problem B

Lots of animals at the zoo eat cabbage. Zoe the zookeeper had a big bag of cabbages to feed the hippos, giraffes, rhinos and wombats.

First, she gave half of the bag of cabbages to the hippos.

Then she gave 12 to the giraffes, 8 to the rhinos and 7 to the wombats.

If Zoe has 3 cabbages left, how many cabbages did she start with?



Plenty of problem-solving practice

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

Zoe started with cabbages.

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 or strategies you used.

- | | |
|--|--|
| ☐ Guessing and checking | ☐ Drawing a picture or diagram |
| ☐ Acting out the problem | ☐ Finding a pattern or using a rule |
| ☐ Solving a simpler problem | ☐ Making an organised list |
| ☐ Making a table or chart | ☐ Finding smaller parts of a larger problem |
| ☐ Working backwards | |

b What if Zoe started with 80 cabbages?
How many cabbages would she have left after feeding the animals?

The Maths Trek Program

Maths Trek is a whole-school numeracy program for Kindergarten 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.



In this book students will find ...

- shared *Work together* activities
- modelled examples
- 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
- investigation 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 NSW Syllabus 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.

