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.



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Sample Student Book Pages (NSW Syllabus Edition)

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Maths \bigcirc

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 \bigcirc

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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.

Student Book (NSW Syllabus Edit

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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.

Race around Aus

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



O 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.

O Revision

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

OProblem-solving

Use the 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.

O 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.

O 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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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, 180 extended maths problems. 182 You'll find four assessments in the Yearly Plan too - one for each term. They assess each student's 184 understanding of the preceding topics and are

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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.

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

XX Investigation: Twinkle twinkle Investigation: If I were a Martian S Investigation: Never a cross word Investigation: Finals fever

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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.

Icy angles

Look at the path left by the icebreaker.

- Colour any acute angles blue.
- Colour any right angles green.
- Colour any obtuse angles **red**.

What other angles can you find?

Waddle waddle!

An emperor penguin can waddle 40 metres in a minute. How far can it waddle in an hour?

Seals and snowcats

A king penguin has a mass of 15 kg. 10 king penguins weigh as much as a male fur seal. 100 male fur seals weigh as much as a snowcat vehicle. Work out the mass of a fur seal, then a snowcat.





Work together

I	Millions group			ousands gro	Thousands group Ones group		Ones group						
hundred Millions	ten Millions	Millions	hundred Thousands	ten Thousands	Thousands	hundreds	tens	5	on	ies			
hM	tM	M O	hT 1	tT o	T 7	h	t o		(
		0		0	/	9	0			>			
1) Write the place value name of each 8 in the number 8 187 985.													
8 1 8 7	′ 9 8 5	Millic	ns				and						
2 Write	the place	value name	e of each 2	in the num	bers.								
<mark>a</mark> 26	63 2 514				and								
b 92	2 57 2 03				and								
Your tu	ທ												
3 Write	the place	value name	e of the bol	d digit.									
a 54	4 9 1 600 [c 8	22 5 061 (
b 13	303 824				<mark>d</mark> 6	000 007 (
(4) Write	the numbe	ers in the pl	ace value d	chart.			М	hT	tT	Т	h	t	0
a tw	o million, si	x hundred (and twelve	thousand, a	one hundre	d and forty	,						
b nir	ne million, tv	wo hundrec	l and fifty th	nousand, fiv	ve hundred	and fifteer	1						
c fou	ur million, or	ne hundred	and eleven	thousand,	six hundred	d and two							
5 Match	n the words	s to the nur	nerals.										
a six million, six hundred and five thousand, five hundred and sixty-two													
bs	ix million, fiv	/e hundred	and twenty	-six thousa	nd, five hun	dred and si	ixty-two	0	•	6	60	55	62
c S	ix million, si:	x hundred c	ind twenty-	five thousa	nd, six hunc	dred and tw	venty-fi	ve	1	6	56	35	26
d s	ix million, fiv	/e hundred	and sixty-si	x thousand	, five hundr	ed and twe	enty-six)	66	52	6 5	62)

3 Write the place value name and value of the **bold** digit. The **70+ topics in every year**

	Number	Place value name	From number and algebra to statistics and probability, your students complete
a	80 2 431	Thousands	a wide variety of activities to apply wha
b	1 246 897		they've learned in each lesson.
С	4 6 2 873		the year to consolidate learning.
d	3 560 1 27		
е	8 1 4 2 789		
f	26 7 3 0		
g	9 8 23 517		
h	5 639 400		

Write the Australian states and territories that match the areas labelled on the number line. The first one is done for you.



7)



Coordinates and directions

Work together

(2)



c The direction from Dolphin Bay to Old Lighthouse.



Your turn

- A) Write the coordinates for the Cedartown street intersections.
 - a Main Drive and Third Avenue
 - **b** Lake Street and Fourth Avenue
 - c First Avenue and King Street



- Draw the icons on the map.
 - S A school at (5, 4) a
 - A hospital at (1, 3) b
 - Traffic lights at (4, 5) С



3 Use the clues to find buried treasure. Mark your travels on the *Treasure Map* and write the coordinates after each clue.

Clues

- **a** Start at Port Swashbuckle.
- **b** Journey south, crossing the river to the castle.
- c Head north-east to the coast for supplies.
- d Sail south-east to collect a treasure map from Skull Island.
- e Voyage north 2 km, then north-east to a small isle.
- f Head south-east to Stone Steps.



- **h** Travel north for a key to gold.
- i Go south-west to the intersection.
- j Cross a bridge north-west to the next intersection.
- k Quickly head west and dig near water. The treasure is here!







Challenge

Write a clear set of directions for the journey home to Port Swashbuckle by sea and land based on question 6. Start at the location of the treasure, and try to find the shortest way to Port Swashbuckle. Remember you left your ship at Stone Steps!

Revision Units 1-4



Unit

Complete each set of four related facts.







2 Write a number sentence for each division model.



6 Use rounding to give reasonable estimates.



- Archie rides his bike home each school day. The table shows the times he leaves school and arrives home.
 - **a** Work out the travel time for each day and complete the table.
 - **b** On which day does Archie take the longest time to ride home?
 - c Once a week Archie stays after school for footy practice until 4:00 pm. On which day?
 - d Archie has to be home 5 minutes before guitar practice at 3:30 pm. On which day?



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.

		Arrives	Traveltime
Day	school	home	(min)
Monday	15:10	15:35	
Tuesday	15:05	15:35	
Wednesday	15:20	15:40	
Thursday	16:05	16:27	
Friday	15:05	15:25	





(3) Show the corresponding times across the three Australian time zones.

	Western (AWST)	Central (ACST)	Eastern (AEST)
	10:00 am	11:30 am	12:00 pm
a		9:30 am	
b	3:15 pm		
С		7:30 pm	



- (2) a What is the direction from Lighthouse Island to Double Island?
 - **b** What is the direction from Coconut Island to Lighthouse Island?
 - c Which island is south-east of Double Island?
 - d Which island is 3 km west of the ship?
 - e How far is Coconut Island from the ship?
 - f Which island is located at (4, 5) on the map?
 - **q** Write the coordinates of the ship.
 - **h** Write both coordinates on Double Island.







Investigation steps

Prepare your map

Mark each Australian capital city on the **Predicted flight map** is using the map references in the table. Use an atlas or online map to help you.

Find the location of your school and mark it on your **Predicted flight map** .

Map references						
City	Airport code	Coordinates				
Adelaide	ADL	(25, 10)				
Brisbane	BNE	(37, 18)				
Canberra	CBR	(33, 9)				
Darwin	DRW	(18, 31)				
Hobart	HBA	(32, 1)				
Melbourne	MEL	(30, 7)				
Perth	PER	(5, 14)				
Sydney	SYD	(35, 12)				

Predict the best route

Predict the best route around Australia, starting at the nearest capital city to your school and returning to your starting point. Include every capital city and mark a possible route on your **Predicted flight map**.

Use arrowed straight lines connecting the cities to show the flight directions.

3 Find flights and make a table

Plan your route using flight schedules from different airlines and travel websites. Record the date, stage, departure time, arrival time and duration for each flight in 24-hour time in your **Flights table D**.

You may need to adjust your route if you cannot find suitable flight times.

4 Calculate your total race time

Investigate a way to calculate how much time your entire journey took. Include waiting time between flights. Did you finish the race in more or less than 48 hours?

Calculate how close you were. Record the results on your **Flight map** .

Mark the flights on your map

Copy the capital cities onto your **Flight map**. Use arrowed straight lines connecting the cities to show your actual route.

Label the major and intermediate compass points on the compass on your **Flight map**. Then label the directions c the arrowed lines, for example north, south-east, north-wes How does this route compare to your predicted route?

Compare maps and tables

Compare your Flight map **(b)** and Flights table **(b)** with your classmates. Check the accuracy of the location of each capital city and each flight direction.

Did anyone take off from a city before their previous flight arrived? Who finished flying in the fastest time? How did they achieve this? Discuss how you identified your race route and calculated your total race time.

7 Critical thinking

Demonstrate how you calculated your total race time. **Explain** how you found the difference between 48 hours and your total race time.



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.



How much longer is three hours, two minutes and one second than one hour, two minutes and three seconds?



O Problem-solving strategy

Guessing and checking

Work together

Problem

Mae and Cleo collect beaded bracelets. Cleo has five more bracelets than Mae. They have 27 bracelets altogether.

How many bracelets does each of them have?

Unpacking the problem

a What is the problem asking us to do?

Work out how many bracelets ...

- 🔘 Cleo has
- O Mae has
- \bigcirc each of them has
- **b** Underline the important information in the problem.
- c Write, jot, draw or discuss what you know about the problem. Discuss how this helps us use guessing and checking to solve the problem.

Solving the problem

a Use guessing and checking to identify the number of bracelets Cleo and Mae have.



b Complete the statement.

Cleo has bracelets and Mae has bracelets.



Tip

We need to find a pair of numbers that

add to 27 and have a difference of 5.

Your turn

	Try using a bar model to help you solve each problem.
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· Problem A	
Toby and Rhett collect marbles. Rhett has nine more marbles than Toby. They have 41 marbles altogether.	
How many marbles does each of them have?	
	Nine problem-solving strategies
	Use the online teaching resources and scaffolded <i>Work together</i> problem to
Toby has marbles and Rhett has marbles.	explicitly teach each strategy. Then give
	applying the strategy as they complete
Problem B	the <i>Your turn</i> problems.
Emily surveyed her classmates about their pets. She learned	that
cats, and five more dogs than cats.	nder of
If Emily's classmates have 29 pets in total, how many cats c	nd dogs?
Emily's classmates have cats and dogs.	
Problem C	
Eve Lucas and Kelly all have net fish. Eve has the least num	her of fish and Kelly
has the most. Lucas has three more fish than Eve and Kelly I	has five more fish than
Eve. The three of them have 26 fish between them.	
Eve has tish, Lucas has fish and Kelly has	fish.



Problem-solving practice

Problem A

Jimmy is about to begin a high ropes course with his friends. The helmets and carabiners come in red, yellow, blue and green.

If Jimmy wants to wear a helmet in a different colour from his carabiner, how many combinations can he choose from?

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Jimmy can choose from	
-----------------------	--

different combinations.

Think critically

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

Guessing and checking	
A sting out the problem	

Acting out the problem

Solving a simpler problem
 Drawing a picture or diagram

Making a table or chart

🗌 Making an organised list

Finding smaller parts of a larger pro	blem
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Working backwards

Finding a pattern or using a rule

b What if there were purple helmets and orange carabiners as well? Is there a simple way to find the number of possible combinations?

Problem B

Three friends were riding laps around a bike track. While Eva took 4 minutes to complete one lap, Taylor took 6 minutes and Diego took 9 minutes. All three began at the starting line at 11:00 am. They stopped riding when Taylor completed her sixth lap.

How many laps did the three friends do altogether?



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 studen their solutions and expl used their chosen strate	ts to share ain how they egies.		
The three friends did laps of the b	oike track altogether.	Then discuss the extra r problem with your stud develop their critical thi	elated ents to further inking skills.		
Think crifically					
a How did you solve the problem? Tick the strategy or strategies you used.					
Guessing and checking	☐ Making an organis ☐ Making a table or	sed list chart			
Solving a simpler problem		urts of a larger problem			
		us			
Finding a pattern or using a rule					
 What if Eva took 4 minutes and 30 se Look for a simple way to work out hov 	conds to complete one v many laps Eva would	lap? I complete. Explain your o	answer.		

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.

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In this book students will find ...

- shared Work together activities
- modelled examples

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- 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 ...

Notched to

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- 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
- investigation videos
- digital and printable resources to guide students through every investigation
- o critical thinking lessons
- o 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.



