2025 Maths Games Junior - Years 5 & 6
Resource Kit 3
Teaching Problem Solving

Problem Solving Strategies

This resource kit focuses on the following problem solving strategies:

1. Solve a Simpler Related Problem

Many hard problems are actually simpler problems that have been extended to larger numbers.

Patterns can sometimes be identified by trying the problem with smaller numbers.

2. Eliminate All But One Possibility

Deciding what a quantity is not, can narrow the field to a very small number of possibilities.

These can then be tested against the conditions of the original problem.

It follows on from strategies introduced in the preparation resource kit and resource kits 1 and 2:

Guess, Check and Refine

Draw a Diagram

Find a Pattern

Build a Table

Work Backwards

Make an Organised List

Resource Kit 3 focuses on:

Solve a Simpler Related Problem

Eliminate All But One Possibility

Set Yellow

Example problems for which full worked solutions are included.

Set Green

Problems that are designed to be similar to Set Yellow, but with fewer difficult elements.

Set Orange

Problems that are similar in mathematical structure to the corresponding Yellow problems.

Further questions and solution methods can be found in the APSMO resource book "Building Confidence in Maths Problem Solving", available from www.apsmo.edu.au.

How to use these problems

At the start of the lesson, present the problem and ask the students to think about it. Encourage students to try to solve it in any way they like. When the students have had enough time to consider their solutions, ask them to describe or present their methods, taking particular note of different ways of arriving at the same solution.

Each question includes at least one solution method that the majority of students should be able to follow. By participating in lessons that demonstrate achievable problem solving techniques, students may gain increased confidence in their own ability to address unfamiliar problems.

Finally, the consideration of different solution methods is fundamental to the students' development as effective and sophisticated problem solvers. Even when students have solved a problem to their own satisfaction, it is important to expose them to other methods and encourage them to judge whether or not the other methods are more efficient.

Preparation Kit

Guess, Check and Refine

This involves making a reasonable guess of the answer, and checking it against the conditions of the problem. An incorrect guess may provide more information that may lead to the answer.

Draw a Diagram

A diagram may reveal information that may not be obvious just by reading the problem.

It is also useful for keeping track of where the student is up to in a multi-step problem.

Resource Kit 1

Find a Pattern

A frequently used problem solving strategy is that of recognising and extending a pattern.

Students can often simplify a difficult problem by identifying a pattern in the problem situation.

Build a Table

A table displays information so that it is easily located and understood.

A table is an excellent way to record data so the student doesn't have to repeat their efforts.

Resource Kit 2

Work Backwards

If a problem describes a procedure and then specifies the final result, this method usually makes the problem much easier to solve.

Make an Organised List

Listing every possibility in an organised way is an important tool.

How students organise the data often reveals additional information.

Resource Kit 3

Solve a Simpler Related Problem

Many hard problems are actually simpler problems that have been extended to larger numbers.

Patterns can sometimes be identified by trying the problem with smaller numbers.

Eliminate All But One Possibility

Deciding what a quantity is not, can narrow the field to a very small number of possibilities.

These can then be tested against the conditions of the original problem.

Resource Kit 4

Convert to a More Convenient Form

There are times when changing some of the conditions of a problem makes a solution clearer or more convenient.

Divide a Complex Shape

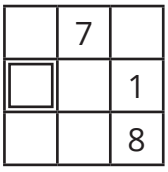
Sometimes it is possible to divide an unusual shape into two or more common shapes that are easier to work with.

Set Yellow

3.1) Find the sum of 33 + 34 + 35 + 36
+ 43 + 44 + 45 + 46
+ 53 + 54 + 55 + 56
+ 63 + 64 + 65 + 66.

3.2) The numbers from 1 to 9 can be placed in these boxes so that every row, column and diagonal add up to give the answer 15.

What number goes in the box that looks like this: ☐ ?



3.3) Lily, Ella, Polly, and Kim each do a different water sport: surfing, diving, swimming and rowing.
The diver borrowed Lily's towel and Ella's sunglasses.
Ella and Kim helped the rower load her boat onto the trailer.
The surfer and the diver live on either side of Kim's house.
What is Ella's sport?

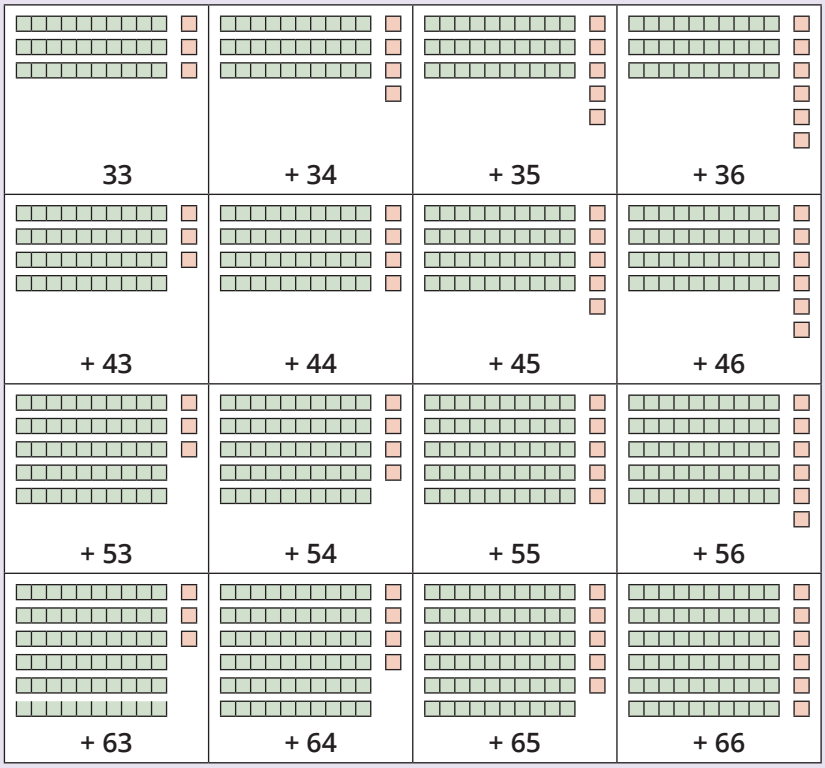
3.4) Three machines can make ninety doughnuts in two minutes.
How many doughnuts will four machines make in three minutes?

Maths Games Example Solution 3.1 - Yellow

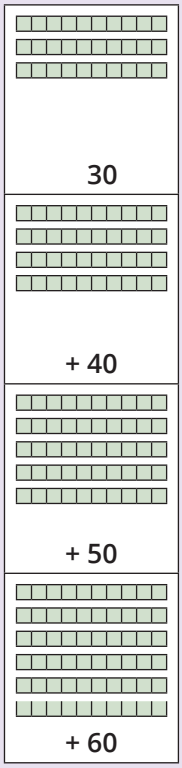
Find the sum of 33 + 34 + 35 + 36
+ 43 + 44 + 45 + 46
+ 53 + 54 + 55 + 56
+ 63 + 64 + 65 + 66.

Strategy 1: Solve a Simpler Related Problem

We can begin by visualising the numbers that are being added.



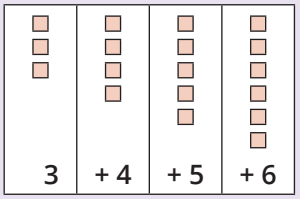
In each column, we have



30 + 40 + 50 + 60 = 180.

Since there are four columns, the sum of all of the values in the tens place is 4 × 180 = 720.

In each row, we have:



3 + 4 + 5 + 6 = 18.

With 4 rows, the sum of the values in the ones place is 4 × 18 = 72.

The sum of the sixteen numbers is 720 + 72 = **792**.

Strategy 2: Solve a Simpler Related Problem (Alternative Approach)

We begin by finding that 33 + 34 + 35 + 36 = 138.

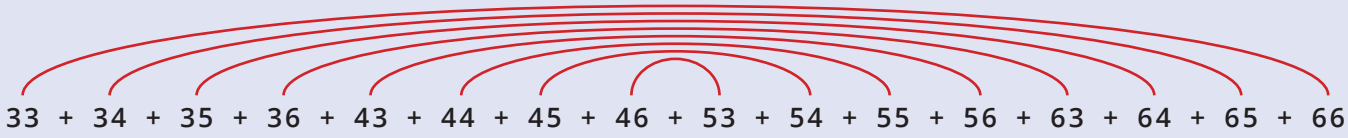
$$\begin{array}{r} 33 \\ 34 \\ 35 \\ +\ 36 \\ \hline 138 \end{array}$$

Each row is 4 × 10 = 40 more than the previous row.

Then: 43 + 44 + 45 + 46 = 138 + 40,
53 + 54 + 55 + 56 = 138 + 40 + 40, and
63 + 64 + 65 + 66 = 138 + 40 + 40 + 40.

The sum of the sixteen numbers is 4 × 138 + 6 × 40 = 552 + 240 = **792**.

Strategy 3: Solve a Simpler Related Problem (Another Approach)



The sums 33 + 66, 34 + 65, 35 + 64, and so on, all equal 99.

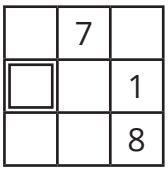
The sum of the sixteen numbers is 8 × 99 = 8 × 100 – 8 = **792**.

Answer **792**

Maths Games Example Solution 3.2 - Yellow

The numbers from 1 to 9 can be placed in these boxes so that every row, column and diagonal add up to give the answer 15.

What number goes in the box that looks like this: □ ?

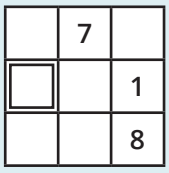


Strategy 1: Eliminate All But One Possibility

We know that all together, the boxes contain each number from 1 to 9.

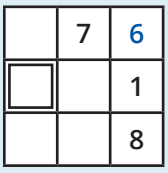
We also know that each row, column and diagonal adds up to 15.

Let's fill in any boxes we can figure out.



The rightmost column has □ + 1 + 8 = 15.

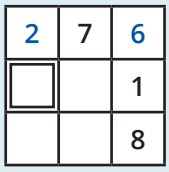
So □ + 9 = 15, and □ = 6.



The top row has □ + 7 + 6 = 15.

So □ + 13 = 15

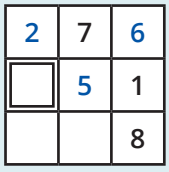
and □ = 2.



The diagonal from top left has 2 + □ + 8 = 15.

So □ + 10 = 15

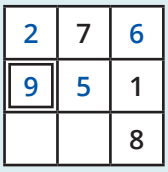
and □ = 5.



The middle row has □ + 5 + 1 = 15.

So □ + 6 = 15

and □ = 9.



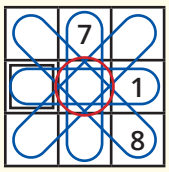
The number in the □ box is a **9**.

Strategy 2: Eliminate All But One Possibility (Alternative Approach)

The box in the centre is included in *one row*, *one column* and *both diagonals*.

We need four different ways to make **15** using this centre number, plus two more numbers.

Let's find all of the different ways we can make **15** using three different numbers.



We can't have, for example, 1 + 2 + 12 because 12 is not a one-digit number.

We also can't have 1 + 7 + 7 because the numbers are not all different.

1 + 5 + 9	2 + 4 + 9	3 + 4 + 8	4 + 5 + 6
1 + 6 + 8	2 + 5 + 8	3 + 5 + 7	
	2 + 6 + 7		

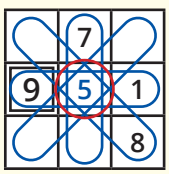
Looking at these possibilities, we can see that 5 is the only number that appears four times.

1 + 5 + 9	2 + 4 + 9	3 + 4 + 8	4 + 5 + 6
1 + 6 + 8	2 + 5 + 8	3 + 5 + 7	
	2 + 6 + 7		

Therefore, the centre box must be a 5.

The middle row has □ + 5 + 1 = 15, so, □ = 15 – 6.

Since 15 – 6 = 9, the number in the □ box must be **9**.



Answer 9

Maths Games Example Solution 3.3 - Yellow

Lily, Ella, Polly, and Kim each do a different water sport: surfing, diving, swimming and rowing.

The diver borrowed Lily's towel and Ella's sunglasses.

Ella and Kim helped the rower load her boat onto the trailer.

The surfer and the diver live on either side of Kim's house.

What is Ella's sport?

Strategy 1: Eliminate All But One Possibility

Lily, Ella, Polly, and Kim each do a different water sport: surfing, diving, swimming and rowing.

Lily is a	surfer	diver	swimmer	rower
Ella is a	surfer	diver	swimmer	rower
Polly is a	surfer	diver	swimmer	rower
Kim is a	surfer	diver	swimmer	rower

The diver borrowed Lily's towel and Ella's sunglasses.

So neither Lily or Ella can be the diver.

Lily is a	surfer	~~diver~~	swimmer	rower
Ella is a	surfer	~~diver~~	swimmer	rower
Polly is a	surfer	diver	swimmer	rower
Kim is a	surfer	diver	swimmer	rower

Neither Ella nor Kim can be the rower, because they both helped the rower load her boat onto the trailer.

Lily is a	surfer	~~diver~~	swimmer	rower
Ella is a	surfer	~~diver~~	swimmer	~~rower~~
Polly is a	surfer	diver	swimmer	rower
Kim is a	surfer	diver	swimmer	~~rower~~

Kim is not the surfer or the diver, because they live on either side of Kim's house.

So, Kim must do swimming.

Lily is a	surfer	~~diver~~	swimmer	rower
Ella is a	surfer	~~diver~~	swimmer	~~rower~~
Polly is a	surfer	diver	swimmer	rower
Kim is a	~~surfer~~	~~diver~~	swimmer	~~rower~~

If Kim is the swimmer, then nobody else is the swimmer.

Since Ella is not the diver, or the rower, or the swimmer, Ella's sport is **surfing**.

Lily is a	surfer	~~diver~~	~~swimmer~~	rower
Ella is a	surfer	~~diver~~	~~swimmer~~	~~rower~~
Polly is a	surfer	diver	~~swimmer~~	rower
Kim is a	~~surfer~~	~~diver~~	swimmer	~~rower~~

Strategy 2: Eliminate All But One Possibility (Alternative Approach)

	Lily	Ella	Polly	Kim
Surfing				
Diving	✗	✗		
Swimming				
Rowing				

The diver borrowed Lily's towel and Ella's sunglasses.

	Lily	Ella	Polly	Kim
Surfing				
Diving	✗	✗		
Swimming				
Rowing		✗		✗

Ella and Kim helped the rower load her boat onto the trailer.

	Lily	Ella	Polly	Kim
Surfing				✗
Diving	✗	✗		✗
Swimming				✓
Rowing		✗		✗

Kim is not the surfer or the diver, so Kim must be the swimmer.

	Lily	Ella	Polly	Kim
Surfing		✓		✗
Diving	✗	✗		✗
Swimming	✗	✗	✗	✓
Rowing		✗		✗

Ella is not the swimmer, so Ella's sport is **surfing**.

Answer **Surfing**

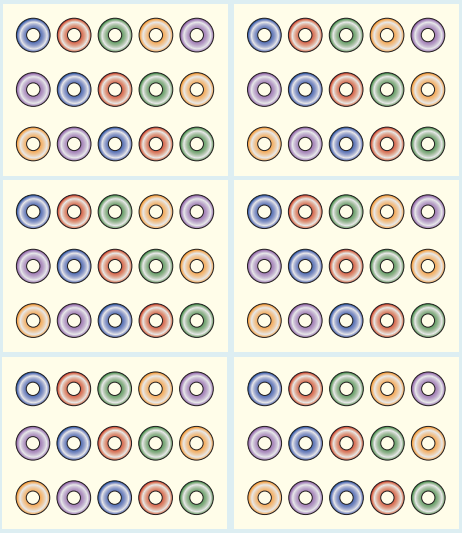
Maths Games Example Solution 3.4 - Yellow

Three machines can make ninety doughnuts in two minutes.

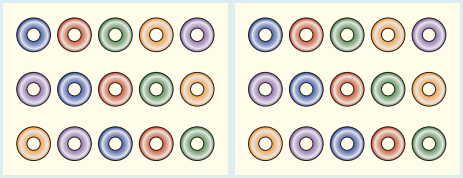
How many doughnuts will four machines make in three minutes?

Strategy: Solve a Simpler Related Problem

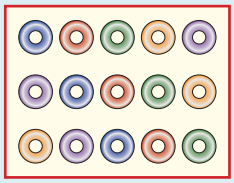
We know that 3 machines will make 90 doughnuts in 2 minutes.



So, in 2 minutes, 1 of the machines will make 90 ÷ 3 = 30 doughnuts.

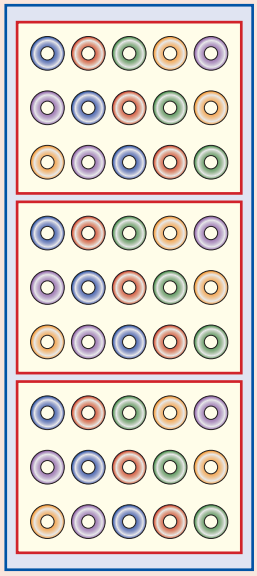


In 1 minute, 1 of the machines will make 30 ÷ 2 = 15 doughnuts.

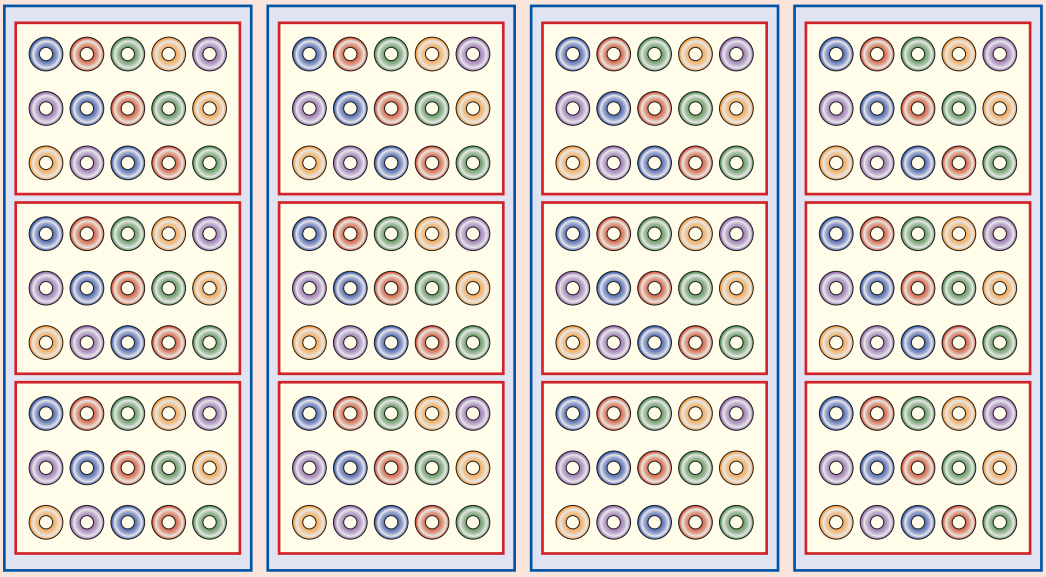


We now know that it takes 1 minute for 1 machine to make 15 doughnuts.

In 3 minutes, 1 machine will make 3 × 15 = 45 doughnuts.



If we run 4 of the machines for 3 minutes, together they will make 4 × 45 = 180 doughnuts.



In 3 minutes, 4 machines will make **180** doughnuts.

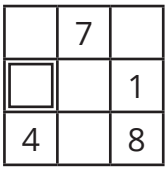
Answer 180

Set Green

3.1) Find the sum of 29 + 30 + 31
+ 39 + 40 + 41
+ 49 + 50 + 51.

3.2) The numbers from 1 to 9 can be placed in these boxes so that every row, column and diagonal add up to give the answer 15.

What number goes in the box that looks like this: □ ?



3.3) Lily, Ella, Polly, and Kim each do a different water sport: surfing, diving, swimming and rowing.
The diver borrowed Lily's towel and Ella's sunglasses.
Ella and Kim helped the rower load her boat onto the trailer.
The surfer and the diver live on either side of Kim's house.
What is Kim's sport?

3.4) One machine can make thirty doughnuts in two minutes.
How many doughnuts will four machines make in three minutes?

Preparation Task 1

A) Hugo and Bill are working on the problem on the right.

Hugo thought that

(1234 × 9) + 1234 = 1234 × 10

but wasn't sure he could explain why.

Check if Hugo is correct.

What is the value of this expression?

(1234 × 9) + 1234

B) Bill said, "I think I know why this works."

Bill started drawing a diagram. As he drew, he said:

"Let's say there are nine shepherds, and each shepherd has 1234 sheep.

So that's (9 × 1234) sheep.

Then, another shepherd joins them with another 1234 sheep.

Now there are ten shepherds, with 1234 sheep each.

So that's (10 × 1234) sheep."

Draw a diagram that illustrates Bill's idea.

C) Hugo says,

"So, let me see if I got this right.

If the question was (1234 × 12) + (1234 × 88), then the easiest way to solve this is to ..."

Finish Hugo's statement.

Maths Games Example Solution - Preparation Task 1

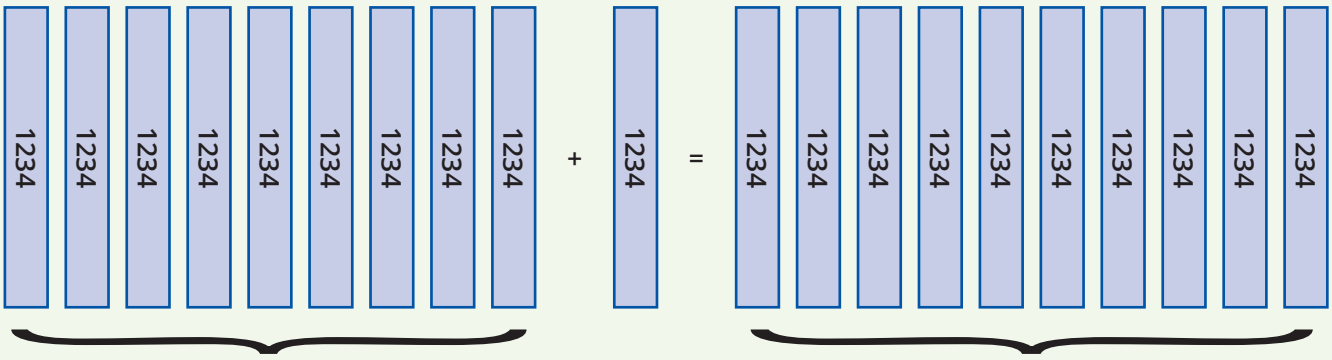
What is the value of this expression?

(1234 × 9) + 1234

Strategy 1: Solve a Simpler Related Problem

Multiplication is commutative, so we know that **1234 × 9 = 9 × 1234**.

By thinking of multiplication as repeated addition, we can construct the following representation.



9 × 1234 + 1234 = 10 × 1234

To multiply by **10**, we can use the properties of our decimal place value system.

Multiplication by **10** is the same as moving all of the digits up one place value.

10000s	1000s	100s	10s	1s	×	10	=	10000s	1000s	100s	10s	1s
	1	2	3	4	×	10	=	1	2	3	4	0

The value of (1234 × 9) + 1234 is **12340**.

We can also multiply using an area model.

10	10 × 1000 = 10000	10 × 200 = 2000	300	40
	1000	200	30	4

The value of (1234 × 9) + 1234 is 10000 + 2000 + 300 + 40 = **12340**.

Strategy 2: Perform the Calculation

To find the value of (1234 × 9) + 1234, we would begin by finding the value of the bracketed expression.

$$\begin{array}{r} 1\,2\,3\,4 \\ \times \quad 9 \\ \hline 1\,1\,1\,0\,6 \end{array}$$

$$\begin{array}{r} {\scriptstyle 1} \\ 1\,1\,1\,0\,6 \\ +\ 1\,2\,3\,4 \\ \hline 1\,2\,3\,4\,0 \end{array}$$

(1234 × 9) + 1234 = **12340**.

9	9 × 1000 = 9000	9 × 200 = 1800	270	36
	1000	200	30	4

The value of (1234 × 9) + 1234 is 9000 + 1800 + 270 + 36 + 1234 = **12340**.

Answer **12340**

Preparation Task 2

A) Amelia and Blake know that the digits are:

- increasing, and
- add to 9 or 18.

Complete the following lists of numbers for Amelia and Blake.

Numbers with a digit sum of 9:

126, 135,

Numbers with a digit sum of 18:

189, 279,

Each person has some information about a secret number.

- **Amelia knows that the sum of the digits is either 9 or 18.**
- **Blake knows that it is a 3-digit number where the three digits are different and in increasing order.**
- **Chelsea knows that the difference between the last and middle digits does not equal the difference between the middle and first digits.**
- **Daniel knows that neither 1 nor 9 is used anywhere as a digit.**

What is the secret number?

B) Daniel says,

"We should cross out any numbers that have a 1 or a 9 in it."

What numbers remain after doing this?

C) Chelsea says,

"I'm trying to make sense of my clue. I think it's saying that the middle digit is not halfway between the first digit and the last digit?"

Use Chelsea's clue to eliminate more numbers.

What is the secret number?

Maths Games Example Solution - Preparation Task 2

Each person has some information about a secret number.

- Amelia knows that the sum of the digits is either 9 or 18.
- Blake knows that it is a 3-digit number where the three digits are different and in increasing order.
- Chelsea knows that the difference between the last and middle digits does not equal the difference between the middle and first digits.
- Daniel knows that neither 1 nor 9 is used anywhere as a digit.

What is the secret number?

Strategy 1: Eliminate All But One Possibility

Together, Amelia and Blake know that the number has increasing digits, and the digit sum is **9** or **18**.

	H	T	O	H	T	O	H	T	O	H	T	O	H	T	O
Digit sum is 9	1	2	6	2	3	4									
	1	3	5												
Digit sum is 18	1	8	9	2	7	9	3	6	9	4	5	9	5	6	7
							3	7	8	4	6	8			

Chelsea knows that the difference between the last and middle digits does not equal the difference between the middle and first digits.

Finally, Daniel knows that neither **1** nor **9** is used anywhere as a digit.

H	T	O	H	T	O	H	T	O	H	T	O	H	T	O
~~1~~	~~2~~	~~6~~	~~2~~	~~3~~	~~4~~									
~~1~~	~~3~~	~~5~~												
~~1~~	~~8~~	~~9~~	~~2~~	~~7~~	~~9~~	~~3~~	~~6~~	~~9~~	~~4~~	~~5~~	~~9~~	~~5~~	~~6~~	~~7~~
						3	7	8	~~4~~	~~6~~	~~8~~			

The secret number must be **378**.

Strategy 2: Eliminate All But One Possibility (Alternative Approach)

Together, Blake and Daniel know that the number is between **234** and **678** inclusive, with increasing digits.

H	T	O	H	T	O	H	T	O	H	T	O	H	T	O
2	3	4	3	4	5	4	5	6	5	6	7	6	7	8
2	3	5	3	4	6	4	5	7	5	6	8			
2	3	6	3	4	7	4	5	8	5	7	8			
2	3	7	3	4	8	4	6	7						
2	3	8	3	5	6	4	6	8						
2	4	5	3	5	7	4	7	8						
2	4	6	3	5	8									
2	4	7	3	6	7									
2	4	8	3	6	8									
2	5	6	3	7	8									
2	5	7												
2	5	8												
2	6	7												
2	6	8												
2	7	8												

Amelia knows that the sum of the digits is either **9** or **18**.

H	T	O	H	T	O	H	T	O	H	T	O	H	T	O
2	3	4	3	4	5	4	5	6	5	6	7	~~6~~	~~7~~	~~8~~
~~2~~	~~3~~	~~5~~	~~3~~	~~4~~	~~6~~	~~4~~	~~5~~	~~7~~	~~5~~	~~6~~	~~8~~			
~~2~~	~~3~~	~~6~~	~~3~~	~~4~~	~~7~~	~~4~~	~~5~~	~~8~~	~~5~~	~~7~~	~~8~~			
~~2~~	~~3~~	~~7~~	~~3~~	~~4~~	~~8~~	~~4~~	~~6~~	~~7~~						
~~2~~	~~3~~	~~8~~	~~3~~	~~5~~	~~6~~	4	6	8						
~~2~~	~~4~~	~~5~~	~~3~~	~~5~~	~~7~~	~~4~~	~~7~~	~~8~~						
~~2~~	~~4~~	~~6~~	~~3~~	~~5~~	~~8~~									
~~2~~	~~4~~	~~7~~	~~3~~	~~6~~	~~7~~									
~~2~~	~~4~~	~~8~~	~~3~~	~~6~~	~~8~~									
~~2~~	~~5~~	~~6~~	3	7	8									
~~2~~	~~5~~	~~7~~												
~~2~~	~~5~~	~~8~~												
~~2~~	~~6~~	~~7~~												
~~2~~	~~6~~	~~8~~												
~~2~~	~~7~~	~~8~~												

Finally, Chelsea knows that the difference between the last and middle digits does not equal the difference between the middle and first digits.

This information eliminates all but **378**.

Answer 378

Preparation Task 3

A) Nicole and Jo are working on this problem.

Nicole says,

"If there were just 2 students - like us - and we each bring a book for each other, then that's two books ... right?"

She builds a table to help think through her idea.

Fill in Nicole's table.

There are ten students in the book club.

For an end of year celebration, each student brought one book each for everyone else in the club.

How many books were there all together?

Number of students	2	3	4	5	
Number of books	2				

B) Jo says,

"To work out how many books there are, we've been doing the same procedure every time. Is this a pattern?"

Can you see a pattern? Explain a procedure that Nicole and Jo might have been using, to work out the number of books.

C) How many books would there be if there were 10 students?

How about 20 students?

Show your working.

Maths Games Example Solution - Preparation Task 3

There are ten students in the book club.

For an end of year celebration, each student brought one book each for everyone else in the club.

How many books were there all together?

Strategy 1: Solve a Simpler Related Problem

Let's pretend there are only **2** students: Adam and Bella.

Adam would give 1 book to Bella.

Bella would give 1 book to Adam.

In total, there are 1 + 1 = 2 books.

Let's pretend there are **3** students: Adam, Bella and Cam.

Adam would give 1 book to Bella, and 1 book to Cam.

Bella would give 1 book to Adam, and 1 book to Cam.

Cam would give 1 book to Adam, and 1 book to Bella.

In total, there are 2 + 2 + 2 = 6 books.

Is there a pattern?

Adam gives books to everyone but himself.

So, if there are 5 students, then Adam would bring 5 – 1 = 4 books.

Each student does the same thing, so with 5 students, there would be 5 × 4 = 20 books.

With 10 students, each student would bring 10 – 1 = 9 books.

There would be 10 × 9 = **90 books**.

Strategy 2: Build a Table

There are 10 students in the book club.

Let's call them Adam, Bella, Cam, Danny, Evie, Frances, George, Henry, Imogen and Jake.

Adam would give 1 book to each of the other students in the club.

Adam brings a book for	~~A~~	B	C	D	E	F	G	H	I	J

Bella would also give 1 book to everyone except herself.

Adam brings a book for	~~A~~	B	C	D	E	F	G	H	I	J
Bella brings a book for	A	~~B~~	C	D	E	F	G	H	I	J

The same happens for Cam, Danny, and everyone else.

Our table shows that there would have been 10 × 10 = 100 books if all of the students brought a book for everyone, *including* themselves.

Since none of the students brought books for themselves, the number of books is reduced by 10.

In total, there were 100 – 10 = **90** books.

Adam brings a book for	~~A~~	B	C	D	E	F	G	H	I	J
Bella brings a book for	A	~~B~~	C	D	E	F	G	H	I	J
Cam brings a book for	A	B	~~C~~	D	E	F	G	H	I	J
Danny brings a book for	A	B	C	~~D~~	E	F	G	H	I	J
Evie brings a book for	A	B	C	D	~~E~~	F	G	H	I	J
Frances brings a book for	A	B	C	D	E	~~F~~	G	H	I	J
George brings a book for	A	B	C	D	E	F	~~G~~	H	I	J
Henry brings a book for	A	B	C	D	E	F	G	~~H~~	I	J
Imogen brings a book for	A	B	C	D	E	F	G	H	~~I~~	J
Jake brings a book for	A	B	C	D	E	F	G	H	I	~~J~~

Answer 90

Preparation Task 4

A) Compare each arrangement to the details in the question.

Use the space in the middle of each circle to explain how you know that it is incorrect.

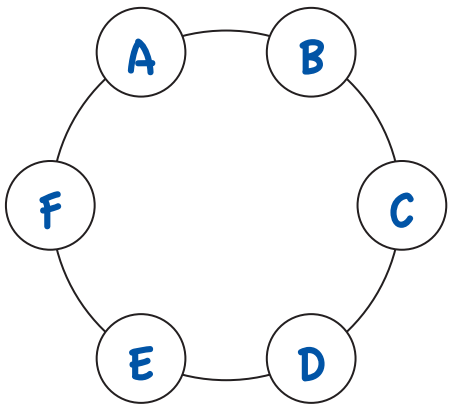
Adam, Bree, Chloe, Duncan, Elena and Fahim are holding hands in a circle, facing the centre.

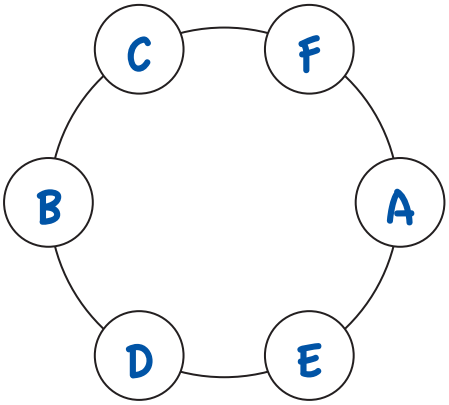
Adam is opposite Bree.

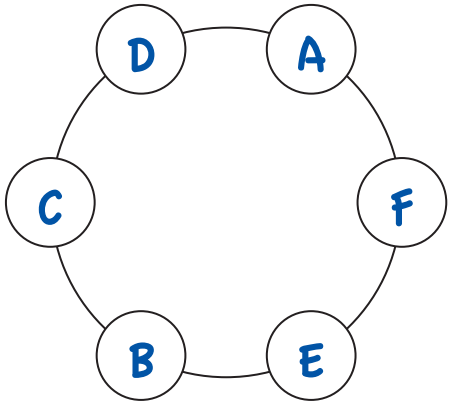
Duncan is holding Bree's left hand.

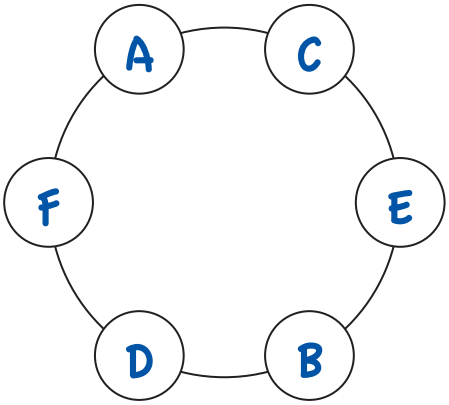
Elena is holding hands with both Adam and Fahim.

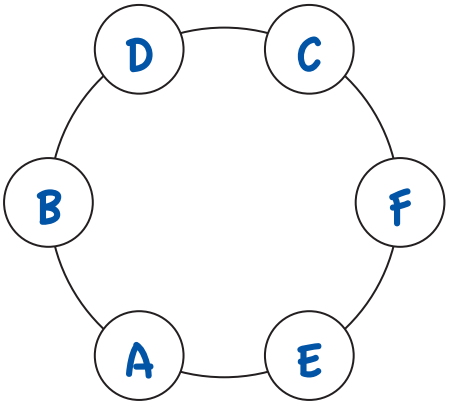
Who is holding Chloe's left hand?





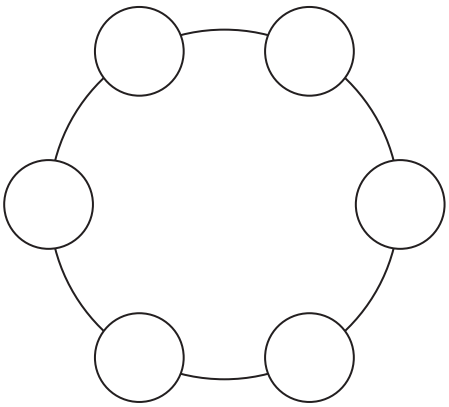






B) Use the blank diagram to place everyone in the correct places around the circle.

Who is holding Chloe's left hand?



Maths Games Example Solution - Preparation Task 4

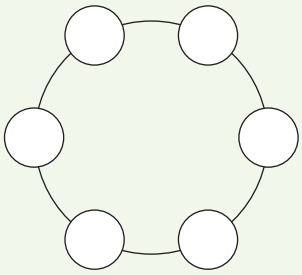
Adam, Bree, Chloe, Duncan, Elena and Fahim are holding hands in a circle, facing the centre.

Adam is opposite Bree. Duncan is holding Bree's left hand. Elena is holding hands with both Adam and Fahim.

Who is holding Chloe's left hand?

Strategy 1: Eliminate All But One Possibility

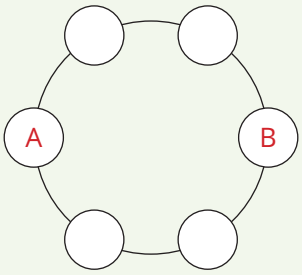
Let's draw a diagram showing how the children are standing.



Adam is opposite Bree.

Let's choose a position for Adam.

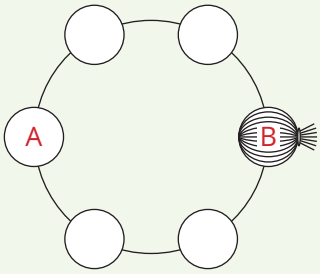
We will put Bree directly opposite.



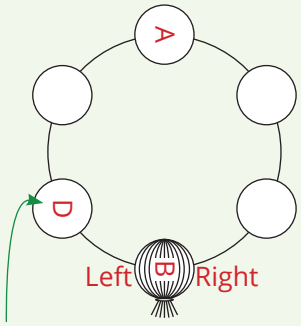
Duncan is holding Bree's left hand - but which side is Bree's left?

The children are facing the centre of the circle.

Let's draw Bree with a ponytail, so that we can imagine her facing the centre.



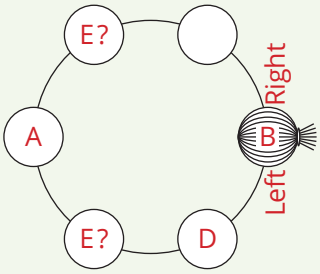
It is easier to find Bree's left hand if we rotate the picture so that we are in Bree's position.



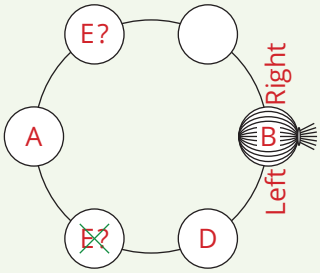
Now we can place Duncan, who is holding Bree's left hand.

Elena is holding hands with both Adam and Fahim.

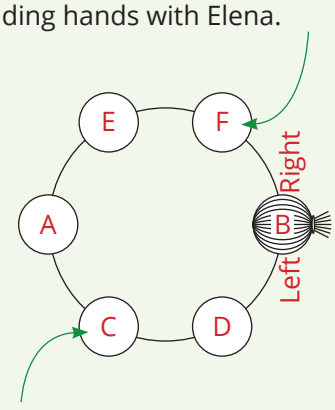
So Elena must be in one of the positions next to Adam.



Since Fahim is on Elena's other side, Elena can't be next to Duncan.

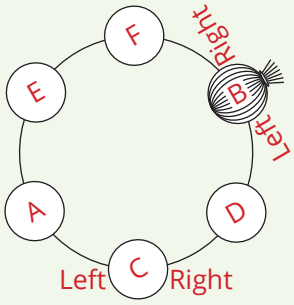


Now we can place Fahim, who is holding hands with Elena.



Chloe must be in the last remaining position.

To find Chloe's left hand, let's rotate the picture so we are in Chloe's position.



So **Adam** is holding Chloe's left hand.

Answer **Adam**

Set Orange

3.1) Find the sum of all integers from –2019 to +2022 inclusive.

3.2) In this puzzle square, each row contains all of the numbers 1, 2, 3 and 4, in some order.

Also, each column contains all of the numbers 1, 2, 3, 4.

What is the number that goes in the square that looks like this: □

2		3	
		2	
			4
	□		

3.3) Scarlet, Jade and Violet each play a different instrument: clarinet, drums, and guitar, although not necessarily in that order.

The guitarist is Jade's sister.

The drummer helped Violet and the guitarist pack up their music stands.

Who plays the drums?

3.4) If 4 people can paint 2 fences in 5 hours, how many hours will it take for 8 people to paint 8 fences?

Assume all painters work at the same rate for the full time, and all of the fences are the same size.

Example Problem 3.1 - Summary

Example Problem 3.1 - Green

Find the sum of 29 + 30 + 31
+ 39 + 40 + 41
+ 49 + 50 + 51.

Example Problem 3.1 - Yellow

Find the sum of 33 + 34 + 35 + 36
+ 43 + 44 + 45 + 46
+ 53 + 54 + 55 + 56
+ 63 + 64 + 65 + 66.

Example Problem 3.1 - Orange

Find the sum of all integers from –2019 to +2022 inclusive.

Example Problem 3.2 - Summary

Example Problem 3.2 - Green

The numbers from 1 to 9 can be placed in these boxes so that every row, column and diagonal add up to give the answer 15.

What number goes in the box that looks like this: ☐ ?

	7	
☐		1
4		8

Example Problem 3.2 - Yellow

The numbers from 1 to 9 can be placed in these boxes so that every row, column and diagonal add up to give the answer 15.

What number goes in the box that looks like this: ☐ ?

	7	
☐		1
		8

Example Problem 3.2 - Orange

In this puzzle square, each row contains all of the numbers 1, 2, 3 and 4, in some order.

Also, each column contains all of the numbers 1, 2, 3, 4.

What is the number that goes in the square that looks like this: ☐

2		3	
		2	
			4
	☐		

Example Problem 3.3 - Summary

Example Problem 3.3 - Green

Lily, Ella, Polly, and Kim each do a different water sport: surfing, diving, swimming and rowing.

The diver borrowed Lily's towel and Ella's sunglasses.

Ella and Kim helped the rower load her boat onto the trailer.

The surfer and the diver live on either side of Kim's house.

What is Kim's sport?

Example Problem 3.3 - Yellow

Lily, Ella, Polly, and Kim each do a different water sport: surfing, diving, swimming and rowing.

The diver borrowed Lily's towel and Ella's sunglasses.

Ella and Kim helped the rower load her boat onto the trailer.

The surfer and the diver live on either side of Kim's house.

What is Ella's sport?

Example Problem 3.3 - Orange

Scarlet, Jade and Violet each play a different instrument: clarinet, drums, and guitar, although not necessarily in that order.

The guitarist is Jade's sister.

The drummer helped Violet and the guitarist pack up their music stands.

Who plays the drums?

Example Problem 3.4 - Summary

Example Problem 3.4 - Green

One machine can make thirty doughnuts in two minutes.
How many doughnuts will four machines make in three minutes?

Example Problem 3.4 - Yellow

Three machines can make ninety doughnuts in two minutes.
How many doughnuts will four machines make in three minutes?

Example Problem 3.4 - Orange

If 4 people can paint 2 fences in 5 hours, how many hours will it take for 8 people to paint 8 fences?
Assume all painters work at the same rate for the full time, and all of the fences are the same size.

Answers

Set Yellow	
3.1	792
3.2	9
3.3	Surfing
3.4	180

Set Green	
3.1	360
3.2	9
3.3	Swimming
3.4	180

Preparation Tasks	
1	12340
2	378
3	90
4	Adam

Set Orange	
3.1	6063
3.2	3
3.3	Jade
3.4	10 (hours)