## Tarseins Mathematics Student's Companion





# Tarsetins Maile Mailes Student's Companion

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## Preface

The Targeting Mathematics Student's Companion series provides additional exercises and practices for pupils to reinforce concepts learnt.

#### Exercises -

The **exercises** follow the learning points of the **Textbook**. Upon completing a chapter of the **Textbook**, pupils can proceed to complete the same chapter in the **Student's Companion**. Additional questions are also included to stretch the pupils further.





Let's Reason and Problem Solving provide pupils with opportunities to develop a deeper understanding of mathematical concepts as they attempt to solve the problems.

Challenge provides questions that draw on processing and reasoning skills to solve non-routine problems.

#### Parent Pointers •

Parent Pointers provides parents with learning outcomes, rubrics to assess their child's work and tips for teaching mathematical concepts.

Mid-Year Review

Mid-Year Review provides questions for revision.

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Write the number represented by the number discs.



n figures:	
n words:	



In figures:	
In words:	



2

#### How much money is there? Write in figures.



(b)



#### Read the article. Then write the numbers in words.

During a cycling event, **35 260** people participated. There were **18 246** men, **12 004** women and **5010** children. There were **6242** more men than women.

(a)	35 260			
(b)	18 246			
(c)	12 004			
(d)	5010			
(e)	6242			







(a) In 87 506, the digit 8 stands for \_\_\_\_\_, the digit 7 stands for

\_\_\_\_\_ and the digit 6 stands for \_\_\_\_\_\_.

(b) In 79 042, the digit \_\_\_\_\_\_ stands for 70 000, the digit \_\_\_\_\_\_

stands for 0 and the digit \_\_\_\_\_ stands for 40.





#### Fill in the blanks.

	ln 6	2 048,
		the digit 6 is in the place.
		the digit 2 is in the place.
		the digit 0 is in the place.
		the digit 4 is in the place.
		the digit 8 is in the place.
8	Fill	in the blanks.
	(a)	In 90 872, the digit 9 is in the place and the
		digit 7 is in the place.
	(b)	In 72 016, the digit is in the thousands place and
		the digit is in the hundreds place.
0	Fill	in the missing numbers.
	(a)	43 825 = 40 000 + 3000 + + 20 + 5
	(b)	74 560 = 70 000 + 4000 + 500 +
	(c)	= 80 000 + 300 + 20 + 2
	(d)	95 128 = 95 000 +
	(e)	+ 408 = 88 408

## Part 2 Comparing and Ordering Numbers up to 100 000

Fill in the blanks.





#### Use some of the cards below to write your sentences.



#### Example

3

1000 more than 26 135 is 27 135. 36 125 is 10 less than 36 135.

(a)		
()		
(b)		
	-	
(c)		



Number Patterns within 100 000

Part 3

1

0	Complete the number patterns.				
	(a)	12 305, 13 305, 14 305, 15 305,,,			
	(b)	45 465, 44 465, 43 465, 42 465,,,			
	(c)	50 305, 50 205, 50 105, 50 005,,			
	(d)	,,, 89 085, 89 095, 89 105, 89 115			
2	<b>Wri</b> Who	<b>te the rule to find the next number in each number.</b> at is the next number in each pattern?			
	(a)	24 279, 24 379, 24 479, 24 579,			
		Rule:			
	(b)	25 405, 25 305, 25 205, 25 105,			
		Rule:			
	(c)	73 234, 72 234, 71 234, 70 234,			
		Rule:			
	(d)	99 939, 99 929, 99 919, 99 909,			
		Rule:			









357 ≈ \_\_\_\_\_

Mark the given number on the number line and round it to the nearest ten.



#### Round each given number to the nearest hundred.







Mark these numbers on the number line. Then round the numbers to the nearest hundred.



Number	Round to the nearest hundred
1530	1530 ≈ 1500
1540	1540 ≈
1550	1550 ≈
1580	1580 ≈
1595	1595 ≈



Round each number to the nearest hundred.





Write the lower thousand, midpoint and upper thousand in the boxes. Mark the given number on the number line and round it to the nearest thousand.



(a) 42 360

8



(b) 85 640







Round each given number to the nearest thousand. Use the number line to help you.



Number	Round to the nearest thousand
7200	7200 ≈ 7000
7500	~
8600	
9200	
9800	







9

#### Read the article.

Underline the numbers that are rounded to the nearest ten. Circle the numbers that are rounded to the nearest hundred.





12 Circle the correct numbers. Which of the following numbers when rounded to the nearest thousand is 25 000?





Round each amount correctly.

Amount		Round to the nearest \$10	Round to the nearest \$100	Round to the nearest \$1000
(a)	\$5285			
(b)	\$12 649			
(c)	\$28 816			



#### Fill in the correct numbers. A whole number is 2000 when rounded to the nearest ten.

(a) What is the greatest possible number?



The greatest possible number is \_\_\_\_\_.

(b) What is the smallest possible number?



The smallest possible number is \_\_\_\_\_

(c) What is the difference between the smallest possible number and the greatest possible number?



The difference between the smallest possible number and the

greatest possible number is \_\_\_\_\_.



#### Speed Up (Duration: 30-45 minutes)



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#### Section A: MCQ (1 mark each)

For each question, write the correct answer in the brackets provided.

- In 61724, what is the value of the digit 1?
  - (1) 10
  - (2) 100
  - (3) 1000
  - (4) 10 000

2

65 234 is \_\_\_\_\_ more than 55 234.

- (1) 100
- (2) 1000
- (3) 10 000
- (4) 100 000

3 How many thousands are there in 25 000?

- (1) 25
- (2) 250
- (3) 2500
- (4) 25 000

What is the missing number in the number pattern?

16 810, 16 910, \_\_\_\_\_, 17 110, 17 210

- (1) 16 010
- (2) 17 010
- (3) 18 010
- (4) 19 010

A number rounded to the nearest hundred is 600. Which of the following could be the original number?

- (1) 545
- (2) 549
- (3) 649
- (4) 650



#### Section B: Short answer questions (1 mark each) For each question, fill in the blank with the correct answer.

Sixty-seven thousand, nine hundred and two written as a numeral is



Write 72 148 in words.



In 86 570, the digit 8 is in the \_\_\_\_\_ place.

10 000 + 600 + 80 + 8 = \_\_\_\_\_.

Form the greatest 5-digit number with the digits 3, 5, 8, 0 and 9.



Arrange the following numbers in increasing order. 64 833, 46 833, 64 383, 46 338





Round 12 862 to the nearest thousand.

A four-digit number is made up of different odd digits.

What is the greatest possible number?

A number when rounded off to the nearest ten is 3000.

What is the greatest possible number?

I am a 4-digit number. The digit in the thousands place is 4. The digit in the hundreds place is 2 times the digit in the thousands place. The digit in the tens place is half of the digit in the ones place. The 4 digits add up to 21.

What number am I?





Ken was told to arrange the following numbers from the greatest to the smallest.



This was the method he used:







7 friends want to buy a computer for Sam as his birthday gift.

- (a) The price of a computer is \$964. These are some ways they use to estimate the amount each person has to pay.
  - (1) 950 ÷ 7
  - (2) 900÷7
  - (3) 910 ÷ 7
  - (4) 980÷7

Which of the above statements would you use to estimate the amount? Explain your choice.

(b) In the end, they buy a cheaper computer that costs \$839.Show how you can estimate the amount each person has to pay.





The prices of 5 toys sold at a shop are shown below. Mrs Lin bought 3 toys at the toy shop for \$271 altogether.

Тоу	A	В	С	D	E
Price	\$28	\$99	\$124	\$36	\$207

Which were the toys she bought?

Answer: .





Form 5-digit numbers with the numeral cards below. Use all the digits only once for each number formed.



Form the greatest 5-digit number and the smallest 5-digit number.

Greatest 5-digit number: \_\_\_\_\_

Smallest 5-digit number: \_\_\_\_\_

The difference between the two numbers is \_\_\_\_\_



Peter wrote a 3-digit number. The digit in the hundreds place is 6. The digit in the tens place is twice the digit in the ones place. The sum of the 3 digits is 18. What number did Peter write?

Peter wrote the number \_\_\_\_\_.



Jun Wei and Li Yi had \$1000 at first. Beginning from January, Jun Wei started to save \$50 every month. In January, Li Yi started to save \$10. Every month, she saved \$10 more than the previous month.

(a) Who would have more money after 6 months? How much more?



In which month would they have the same amount of money? (b)





### Parent Pointers



#### Learning outcomes

By the end of this chapter, your child should be able to:

- count in ones, tens, hundreds, thousands, ten thousands for numbers up to 100 000.
- read and write numbers in numerals and in words up to 100 000.
- compare and order numbers up to 100 000.
- complete number patterns.
- round numbers to the nearest 10, 100 or 1000.

#### Assessment

Use the table below to calculate your child's score for this chapter. Colour the correct number of stars in the Checkpoint section.

	Needs Improvement 1 point	Good 2 points	Excellent 3 points	Score
Speed	Questions were not completed by the given time.	Questions were completed by the given time.	Questions were completed ahead of the given time.	
Concepts	Many questions were answered incorrectly.	A couple of questions were answered incorrectly.	All questions were answered correctly.	
Language	Many words and phrases were not understood.	A couple of words or sentences were not understood.	All words and sentences were understood.	
3–4 points =	l star 5–7 points = 2 sta	rs 8–9 points = 3 stars	Total	

#### Teach-At-Home Tips

Play a game with your child by using 5-digit numbers that you see around you. For example, receipt numbers and so on.

Do not use numbers that start with the digit '0'.

- Have your child identify the greatest and the smallest 5-digit numbers.
- Have your child compare all the numbers collected and arrange them in order.

You can ask your child to round the numbers to the nearest 10, 100 or 1000.




# Find the factors of these numbers.





2

#### Divide the numbers.

(a) 12 ÷ 6 = \_\_\_\_\_

Is 6 a factor of 12? Circle 'Yes' or 'No'.

Explain why.

(b) 63 ÷ 2 = \_\_\_\_\_

Is 2 a factor of 63? Circle 'Yes' or 'No'.

Explain why.



## List all the factors of each pair of numbers. Then find their common factors.

	Number	Factors	Common Factors
(a)	6		
	18		
(b)	24		
	28		
(c)	63		
	84		



(a) What are the common factors of 14 and 21?

(b) What are the common factors of 64 and 80?

Look at the numbers in the box.

- (a) Which numbers have 3 as a factor? Circle (O) them.
- (b) Which numbers have 5 as a factor? Cross (X) them out.

:					
	44		10	12	
Ę.		7	15	24	
	30		9	52	

(c) Which numbers have both 3 and 5 as factors?





## List the first 10 multiples of each number.





### Fill in the correct multiples.

(a) Write the fifth multiple of 9.

Answer: \_\_\_\_\_

(b) Write a multiple of 9 that is between 60 and 70.

Answer: \_\_\_\_\_

Find the first two common multiples of 4 and 6. (c)







### Fill in the blanks.

(a) The product of the 4th multiple of 5 and the 3rd multiple of 2 is

(b) The sum of the first four multiples of 3 is \_\_\_\_\_

(c) 14, 21, 35, 49 and 63 are all multiples of \_\_\_\_\_\_.

- 4 Look at the numbers in the box.
  - (a) Which numbers are multiples of 2? Circle (O) them.
  - (b) Which numbers are multiples of 7? Cross (X) them out.



(c) Which numbers are multiples of both 2 and 7?



# Speed Up (Duration: 30-45 minutes)



### Section A: MCQ (1 mark each)

For each question, write the correct answer in the brackets provided.

0	Whi	ch one of the following is <b>not</b> a factor of 64?		
	(1)	8		
	(2)	2		
	(3)	3		
	(4)	4	(	)
0		is a factor of 20 and 24		
0	(1)			
	(1)	0		
	(2)	5		
	(3)	3		
	(4)	4	(	)
3		$\times$ 4 = 96. The missing number is		
	(1)	4		
	(2)	24		
	(3)	92		
	$(\Delta)$	96	1	١
	()		(	,
4		is a multiple of 7 and 35.		
	(1)	14		
	(2)	70		
	(3)	28		
	(4)	42	(	)
0	1.222			
5	Who	at is the sixth multiple of 8?		
	(1)	40		
	(2)	48		
	(3)	56		
	(4)	64	(	)
			-	Λ
				37

### Section B: Short answer questions (1 mark each) For each question, fill in the blank with the correct answer.





10 The difference between the 6th multiple of 8 and the 3rd multiple of 7 is



0	The first common multiple of 3 and 5 is
12	The common factors of 54 and 30 are
13	18 is a common multiple of a few numbers smaller than 10. The numbers are 3, and
14	24 is a common multiple of a few numbers smaller than 10. The numbers are 2, 4, and

A number is between 30 and 40.
It can be divided by 3 and 6.
It is also a multiple of 9.

The number is \_\_\_\_\_.





A given number is a multiple of 6. It is between 14 and 30. It is also a factor of 48. What is the number?





What are two possible numbers represented by

y 🔶 ?

Show your working.





Susan has 90 sweets, 36 chocolates and 60 jellies. She wants to pack the items equally into goodie bags without any item left over.

- (a) What is the greatest number of goodie bags she can pack?
- (b) How many items will there be in each goodie bag?



### 2 Jack has some stickers.

When he gives 7 stickers to each of his friends, he will have 3 stickers left. When he gives 8 stickers to each of his friends, he is short of 3 stickers. How many stickers does Jack have?





Raju goes to the library once every 3 days. Ali goes to the library once every 5 days. They first met on 2nd April. On which day will they meet again?



I completed this chapter on / /



Approved by: .



# Parent Pointers



#### Learning outcomes

By the end of this chapter, your child should be able to:

- understand factors and multiples and their relationships.
- determine if a 1-digit number is a factor of a given number and find the factors of the given number.
- find the common factors of two given numbers.
- determine if a number is a multiple of a given 1-digit number and find the multiples of the 1-digit number.
- find the common multiples of two given 1-digit numbers.

#### Assessment

Use the table below to calculate your child's score for this chapter. Colour the correct number of stars in the Checkpoint section.

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Language	Many words and phrases were not understood.	A couple of words or sentences were not understood.	All words and sentences were understood.	
3-4 points -	star 5-7 points - 2 sta	rs 8-9 points - 3 stars	Total	

### **Teach-At-Home Tips**

Play a game with your child using counters or coins to learn about factors and multiples.

For example, take 20 counters. Divide the counters into groups of 5 counters. You may ask your child these questions:

- How many groups of 5 counters are there?
- What are the factors of 20?
- What are the multiples of 5?

You may ask your child to show different groupings to find the other factors of 20.





Solve the puzzle. Show your working in the space provided on the next page.



Across	Down
3. 2496 × 3	1. 3983 × 7
4. 5 × 2089	2. 2241 × 4
5. 3890 × 4	3. 8060 × 9
6. 6 × 1290	7. 3 × 7352



# Working:

Across	Down
2496 × 3 =	3983 × 7 =
5 × 2089 =	2241 × 4 =
3890 × 4 =	8060 × 9 =
6 × 1290 =	3 × 7352 =

2

Multiplication by a 2-Digit Number



48

Part 2

5	Esti	mate and then multiply. Check if each answer	is r	eas	ond	able.
	(a)	Estimate:				
		22 × 44 ≈ ×		2	2	
			×	4	4	
		=				
		22 × 44 =				
		Is your answer reasonable? Circle 'Yes' or 'No'.				
		Explain.			Ŧ	
	(b)	Estimate:				
		94 × 58 ≈ ×		9	4	
			×	5	8	
		94 × 58 =				
		Is your answer reasonable? Circle 'Yes' or 'No'.				
		Explain				
		Fatimenta				
	(C)	Estimate:				
		39 × 75 ≈ ×		3	9	
		=	_×	/	5	
		39 × 75 =				
		is your answer reasonable? Circle Yes' or 'No'.				
		Explain				

49





# Write the letters that match the answers to find the missing word.

Be					
	29 160	7733	3304	3304	23 100



# Division by a 1-Digit Number



# Divide.

Part 3

Check if each answer is reasonable.



(c) 6717 ÷ 6	(d) 2621 ÷ 4
6)6717	4)2621
The quotient is	The quotient is
The remainder is	The remainder is
(e) 2560 ÷ 8	(f) 4211 ÷ 7
8)2560	7)4211
The quotient is	The quotient is
The remainder is	The remainder is

I

# Fill in the blanks. Show your working in the space provided.

(a) The product of two numbers is 1225.If one number is 5, what is the other number?

The other number is \_\_\_\_\_\_.

(b) When a number is divided by 9, the quotient is 382 and the remainder is 3. What is the number?

The number is \_\_\_\_\_.





#### Solve the word problems.



During an award ceremony, pupils are seated in rows in an auditorium. There are 45 rows and 35 chairs in each row in the auditorium. 48 chairs are empty. How many pupils are there altogether?



Mrs Gomez bought 152 items for her shop. Each item cost \$26. She bought some racks to display these items. The racks cost \$1175. How much money did Mrs Gomez spend altogether?





A machine can make 7520 toys in 8 hours. How many toys can 2 such machines make in 1 hour?



Mrs Lim buys 12 boxes of chocolates. There are 264 chocolate bars in a box. She packs 7 chocolate bars into a plastic bag. (a) How many bags of chocolate bars does Mrs Lim pack?

(b) How many chocolate bars are not packed?



At first, Kim and Sharon had 6730 beads altogether. After Sharon used 1984 beads to make necklaces, Kim and Sharon each had the same number of beads. How many beads did Kim have?

6

A grocer had 22 crates of oranges. Each crate contained 48 oranges. He sold 332 oranges and packed the rest into packets of 4 oranges each.

How many packets of oranges were there?



0

Mrs Ravi bought 18 packets of lollipops for a birthday party. There were 12 lollipops in one packet. Her sons and daughters ate 7 lollipops before the party. Mrs Ravi took the rest of the lollipops and put an equal number of lollipops on each of the 9 tables.

Find the greatest number of lollipops on each table.

Mr Bala paid \$594 for 6 adult tickets and 4 child tickets to a concert. Mr Tan paid \$486 for 5 adult tickets and 3 child tickets to the same concert.

An adult ticket cost three times as much as a child ticket. How much did one adult ticket cost?



Kenneth had 365 stamps at first. Then Kenneth gave 26 stamps to Derrick. Kenneth had thrice as many stamps as Derrick now. How many stamps did Derrick have at first?

The difference between two numbers is 3288. The greater number is 4 times the smaller number. Find the sum of the two numbers.



Speed Up (Duration: 30-45 minutes)



### Section A: MCQ (1 mark each) For each question, write the correct answer in the brackets provided.

	The	product of 3478 and 7 is		
	(1)	497		
	(2)	20 356		
	(3)	24 346		
	(4)	29 349	(	)
2	Wh	en 1792 is divided by 7, the quotient is		
	(1)	113		
	(2)	256		
	(3)	254		
	(4)	246	(	)
3	Divi	de 2456 by 7. The remainder is		
	(1)	1		
	(2)	5		
	(3)	6		
	(4)	4	(	)
4	600	0 ÷ 10 has the same answer as		
	(1)	60 × 10		
	(2)	600 × 10		
	(3)	6 × 1000		
	(4)	60 × 100	(	)
5	74 >	< 16 =		
	(1)	4		
	(2)	444		
	(3)	518		
	(4)	1184	(	)

Section B: Short answer questions (1 mark each) For each question, fill in the blank with the correct answer.

6 412 × 8 = \_\_\_\_ × 8 + 12 × 8



When you divide 3433 by 8, the quotient is \_\_\_\_\_



How many eights are there in 1912? \_\_\_\_\_



When a number is divided by 7, it gives a quotient of 672 and a remainder of 9.

The number is \_\_\_\_\_\_.



Subtract 600 from the product of 249 and 56.

The answer is \_\_\_\_\_\_.



There were 156 men and 224 women who bought tickets for a concert.

If each ticket cost \$35, the total amount collected was \$\_\_\_\_\_.







The product of 46 and 27 is \_\_\_\_\_\_ more than the quotient of 6432 divided by 8.

The sum of two numbers is 4568. The difference between the two numbers is 360. What is the smaller number?





The digit in the 4 boxes is the same. What is the missing digit?



Kelvin is thinking of a number.
He subtracts 9 from the number.
Then, he divides the answer by 5.
Finally, he multiplies the quotient by 2.
If the final answer is 840, what is the number that Kelvin is thinking of?





Vince and Ben had the same amount of money at first. Ben spent \$3600 on a computer. In the end, Vince had 4 times as much money as Ben. How much money did Vince have at first? Weihan bought a camera for \$165. He used \$10 and \$5 notes to pay for the camera. He used a total of 20 notes. How many of each note did Weihan use?




Study the number pattern below.

 $13 \times 77 = 1001$   $26 \times 77 = 2002$   $39 \times 77 = 3003$   $\downarrow$ ?  $\times 77 = 7007$ 

What is the missing number? \_\_\_\_\_





Row	Numbers							
А	1,	6,	7,	12,	13,	18,	19,	
В	2,	5,	8,	11,	14,	17,	20,	
С	3,	4,	9,	10,	15,	16,	21,	



Josh counted the number of digits of all the page numbers in a book. He found that a total of 123 digits were used. How many pages were there in the book?





### Parent Pointers



#### Learning outcomes

By the end of this chapter, your child should be able to:

- multiply up to a 4-digit number by a 1-digit number.
- multiply up to a 3-digit number by a 2-digit number.
- divide up to a 4-digit number by a 1-digit number.
- solve up to 3-step word problems involving the 4 operations.

#### Assessment

Use the table below to calculate your child's score for this chapter. Colour the correct number of stars in the Checkpoint section.

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3-4 points = 1	star $5-7$ points = 2 sta	rs $8-9$ points = 3 stars	Total	

#### Teach-At-Home Tips

Play a game with your child.

Challenge your child to use any 5-digit number to create 4-digit by 1-digit multiplication and division equations.

For example, using the 5-digit number, 12 465, the following multiplication and division equations can be created:

 $1246 \times 5 = 6230$ ,  $1245 \times 6 = 7470$ ,  $1265 \times 4 = 5060$ , etc.

1246 ÷ 5 = 249 R1, 1245 ÷ 6 = 207 R3, 1265 ÷ 4 = 316 R1, etc.





Colour the diagrams to show the following mixed numbers.











\_\_\_\_\_ litres





Write the mass of each object as a mixed number.

(a)



Write the length of the pen as a mixed number.



The pen is \_\_\_\_\_ cm long.



Mark each mixed number with a cross ( $\times$ ) on the number line.

An example is shown.

$$5\frac{2}{5} \qquad 6\frac{1}{5} \qquad 6\frac{4}{5}$$





Express the mixed number shown by the shaded parts of the diagrams in its simplest form.

9







What is the length of the ribbon? Express your answer as a mixed number in its simplest form.



The ribbon is \_\_\_\_\_ cm long.





(a) An example is shown.



Write the mixed number shown on each number line. Express your answer in the simplest form.





# Part 2 Improper Fractions



(a) These are fifths.



(b) These are eighths.





Write the improper fractions for each of the following.

- (a) 5 halves =
- (c) 11 ninths =

- (b) 7 sixths =
- (d) 9 quarters =







### Express each diagram as a mixed number and an improper fraction.

Example	
	Mixed number = $\frac{l\frac{2}{3}}{\frac{5}{3}}$ Improper fraction = $\frac{\frac{5}{3}}{\frac{5}{3}}$
(a)	
	Mixed number =
	Improper fraction =
(b)	
	Mixed number =
	Improper fraction =
(c)	
	Mixed number =
	Improper fraction =
(d)	
$\wedge \wedge \wedge \wedge$	Mixed number =
	Improper fraction =



# Part 3 Conversion of Fractions



81



### 2 Draw to show the mixed numbers as improper fractions.

Improper fraction





Express each mixed number as an improper fraction.

(a) 
$$3\frac{1}{4} =$$
  
(b)  $6\frac{2}{3} =$   
(c)  $5\frac{3}{5} =$   
(d)  $4\frac{4}{7} =$   
(e)  $3\frac{8}{9} =$ 



Express each improper fraction as a mixed number in its simplest form.



84

# Express each improper fraction as a mixed number in its simplest form.





## Part & Comparing and Ordering Fractions

#### Compare the fractions. Which is the greater fraction?



#### Compare the fractions. Which is the smaller fraction?



87

3 Arrange each set of numbers in decreasing order.

$$(a) \quad \frac{1}{4}, \quad \frac{5}{6}, \quad \frac{5}{12}$$

$$(b) \quad 1\frac{5}{8}, \quad 2, \quad \frac{11}{4}, \quad 1\frac{1}{2}$$



88

Arrange each set of numbers in increasing order.

Adding and Subtracting Fractions



Part 5

#### Add the following fractions.



### Output the following fractions.



#### Add the following fractions.

3

Give each answer as a mixed number in its simplest form.

(a)	$\frac{4}{5} + \frac{3}{10} =$	(b)	$\frac{3}{8} + \frac{5}{6} =$	
ί.				

Subtract the following fractions.

(a) 
$$\frac{6}{7} - \frac{2}{5} =$$
 (b)  $3 - \frac{5}{9} =$ 

5 Fill in the boxes with the correct fractions. Give your answers in the simplest form.

(a) 
$$\frac{1}{5} + \frac{3}{10} + = \frac{9}{10}$$
 (b)  $\frac{2}{7} + = 1$   
(c)  $\frac{7}{10} - = \frac{3}{10}$  (d)  $4 - = 3\frac{5}{8}$ 



6 Find the sum of  $\frac{1}{3}$  and  $\frac{4}{9}$ .



Subtract 2 thirds from 1 whole.



Subtract the following fractions. Express your answer as a mixed number.

(a) 
$$\frac{12}{7} - \frac{2}{3} =$$
 (b)  $\frac{14}{5} - \frac{5}{6} =$ 



# Part 6 Word Problems

#### Solve the word problems.

Express each answer as a fraction in its simplest form.

Mrs Tan needs  $\frac{1}{4}$  m of ribbon to tie a present and  $\frac{5}{12}$  m to tie a bouquet of flowers.

How much ribbon does Mrs Tan need in all?



Rama took  $\frac{3}{10}$  h to complete his homework.

Cai Ling took  $\frac{4}{5}$  h to complete her homework.

How much longer did Cai Ling take to complete her homework than Rama? Express your answer as a fraction in its simplest form.





Package B contains  $\frac{1}{5}$  kg more beans than Package A.

- (a) What is the mass of beans in Package B?
- What is the total mass of beans in packages A and B? (b) Express your answer as a mixed number in its simplest form.



Ann ate  $\frac{2}{5}$  of a pie.

John ate  $\frac{1}{6}$  more of the same pie than Ann.

- (a) How much pie did John eat?
- What fraction of the pie did both of them eat? (b)



During a football match, <sup>1</sup>/<sub>2</sub> of the spectators were children and <sup>4</sup>/<sub>12</sub> of them were men. The rest were women. What fraction of the spectators were women?





Mary mixes 3/8 l of rose syrup and 1/4 l of evaporated milk to 2 l of water to make rose syrup drink. How much rose syrup drink is there? Express your answer as a fraction in its simplest form.

Ann bought  $\frac{1}{2}$  kg of plain flour,  $\frac{2}{3}$  kg of self-raising flour and  $\frac{3}{4}$  kg of rice flour.

What was the total mass of all the flour that Ann bought? Express your answer as a mixed number.



The sum of the two fractions is  $\frac{10}{12}$ . The smaller fraction is  $\frac{1}{3}$ . What is the difference between the two fractions?

The difference between two fractions is <sup>3</sup>/<sub>8</sub>.
 The greater fraction is <sup>5</sup>/<sub>6</sub>.
 What is the sum of the two fractions?
 Express your answer as a mixed number in its simplest form.









$$\frac{1}{4}$$
 of 4 = \_\_\_\_\_

2

 $\frac{1}{2}$  of 6 = \_\_\_\_\_



$$\frac{1}{3}$$
 of 9 = \_\_\_\_\_

 $\frac{1}{5}$  of 15 = \_\_\_\_\_





 $\frac{1}{2}$  of 4 = \_\_\_\_\_

Fill in the blanks. Use the models to help you find the fraction of a set.





3

Work out the following.



Match the letters with the answers below. What word do you get?

24 21 24 54 35 63 4 24

## Word Problems (Fraction of a Set)

#### Solve the word problems.



Part 8

Meiyan bought 12 cupcakes. She ate 3 of them. What fraction of the cupcakes did Meiyan eat? Express your answer in its simplest form.



There are 3 marbles in  $\frac{1}{5}$  of a set. How many marbles are there in the set?




In a class of 40 pupils, 15 of them are girls.

(a) What fraction of the pupils are girls?

(b) What fraction of the pupils are boys?

Give your answer in its simplest form.



3

Soh Chun had 150 beads.

 $\frac{1}{5}$  of them are red and the rest are yellow.

- (a) How many red beads are there?
- (b) How many yellow beads are there?



Jenny had \$64.

She spent  $\frac{5}{8}$  of the money on storybooks.

- (a) How much money did she spend?
- (b) How much money had she left?

O There are 560 books in a library.

 $\frac{4}{7}$  of them are English books,  $\frac{1}{7}$  of them are Malay books and the rest are Chinese books.

(a) How many English books are there?

(b) How many non-English books are there?



Mr Lim had 35 cartons of fruits. He sold  $\frac{4}{5}$  of them. How many cartons of fruits did Mr Lim have left?

A tank can hold 21 ℓ of water when full. The tank is <sup>4</sup>/<sub>7</sub> full. How many more litres of water are needed to fill the tank?





Rani had \$72.

She spent  $\frac{3}{8}$  of her money on some groceries. How much money did Rani have left?



Ahmad had 108 stamps. He gave some stamps to Raj and had  $\frac{5}{9}$  of his stamps left. How many stamps did Ahmad give Raj?





 $\bigcirc Sue gave \frac{2}{5} of her storybooks to Aili.$ Sue gave Aili 8 storybooks. How many storybooks did Sue have at first?





Mary spends  $\frac{1}{12}$  of an hour brushing her teeth,  $\frac{1}{6}$  of an hour getting ready for school and  $\frac{1}{4}$  of an hour eating breakfast.

What is the total time taken by Mary? Give your answer in minutes. (1 h = 60 min)



There are some green and blue marbles in a container.

 $\frac{2}{9}$  of the marbles are green.

The difference between the number of green and blue marbles is 45. How many marbles are there in the container?



# Speed Up | (Duration: 30-45 minutes)



## Section A: MCQ (1 mark each) For each question, write the correct answer in the brackets provided.





4	The sum of $\frac{3}{8}$ and $\frac{5}{12}$ is	
	(1) $\frac{19}{24}$	
	(2) $\frac{8}{12}$	
	(3) $\frac{19}{8}$	
	$(4) \frac{8}{3}$	I
	20	1
5	$\frac{2}{9} + \underline{\qquad} = \frac{28}{45}$	
	(1) $\frac{9}{45}$	
	(2) $\frac{5}{2}$	
	$(3) \frac{2}{2}$	
	(5) 5 (1) 2	
	$(4) {45}$	(
6	The difference between $\frac{4}{7}$ and $\frac{1}{4}$ is	
	(1) $\frac{23}{28}$	
	(2) $\frac{9}{28}$	
	(3) $\frac{3}{7}$	
	(4) $\frac{3}{4}$	(

)

)

)



Section B: Short answer questions (2 marks each) For each question, fill in the blank with the correct answer.

Express  $5\frac{1}{9}$  as an improper fraction.





Arrange these fractions in increasing order.

 $1\frac{1}{6}$ ,  $1\frac{2}{3}$ ,  $\frac{1}{2}$ 





Arrange these fractions in decreasing order.

$$\frac{6}{5}, \frac{7}{6}, 1\frac{1}{3}$$

2 Subtract 
$$\frac{2}{3}$$
 from 2 wholes.



Subtract 
$$\frac{1}{3}$$
 from the sum of  $\frac{1}{6}$  and  $\frac{5}{12}$ .







15 How many quarters are there in  $6\frac{1}{2}$ ?



Tom had \$20 at first. He spent  $\frac{1}{5}$  of his money. How much money did he spend?



 $\frac{3}{4}$  of the class are girls.

If there are 18 girls, how many boys are there?



# Speed Up 2 (Duration: 30-45 minutes)

Word problems (4 marks each) Solve the following word problems. Show your working clearly.



An empty tank has a mass of  $\frac{5}{9}$  kg.

When it is filled with sand, the total mass is 5 kg. Find the mass of the sand.



 Mr Tan used 400 ml of petrol to drive from his house to the office. He used <sup>1</sup>/<sub>10</sub> of the petrol. How much petrol was there at first? Give your answer in litres. (1 *ℓ* = 1000 ml)



3  $\frac{1}{3}$  of the passengers in the bus were adults and the rest were children. There were 14 children.

How many adults were there?



Susan bought a pizza. She ate  $\frac{1}{7}$  and Limei ate  $\frac{2}{7}$  of it. What fraction of the pizza was left?



5 Mrs Wee bought  $\frac{1}{4}$  kg of vegetables and  $\frac{3}{8}$  kg more fish than vegetables. What is the total mass of the fish and vegetables?

 $\frac{3}{5}$  of a pole is painted green and  $\frac{1}{3}$  of it is painted blue while the rest is painted white.

What fraction of the pole is painted white?



Mother has 18 stalks of roses.

 $\frac{2}{3}$  of them are red, 4 are pink and the rest are yellow.

How many stalk of roses are yellow?

Susan and Mary had some money. When Susan spent  $\frac{1}{2}$  of her money and Mary spent  $\frac{3}{4}$  of hers, each of them had \$26 left. What was the original sum of money each girl had?





Is the final answer of  $\frac{3}{8}$  of 24 the same as that of 24 of  $\frac{3}{8}$ ? Show your working here.

Explain your answer.

Discuss if the following examples of mixed numbers are meaningful. Give reasons.







The total cost of a blouse and a skirt is \$75. The cost of the blouse is  $\frac{2}{3}$  the cost of the skirt. How much does the skirt cost?



The difference between the amount spent and not used was \$12. How much did Mary spend on the bag?





Jamie made some chocolates for her family.

She gave  $\frac{1}{4}$  of the chocolates to her brother,  $\frac{3}{8}$  of them to her sister and kept the rest for herself.

She kept 264 chocolates for herself.

How many more chocolates did Jamie give to her sister than brother?



Sam spent  $\frac{3}{5}$  of his money on 2 watches that cost the same price. He had \$48 left. How much did each watch cost?



Approved by: \_\_\_\_\_



# Parent Pointers



#### Learning outcomes

By the end of this chapter, your child should be able to:

- use fraction discs or number line to represent and interpret fractions greater than one whole as improper fractions and mixed numbers.
- compare two fractions using fraction discs or by changing to common denominators.
- compare and order whole numbers and fractions.
- convert between improper fractions and mixed numbers.
- divide a given set of objects into equal parts to find the fraction of a set.
- use model to represent and find a fraction of a quantity.
- add and subtract fractions and express the answer as a mixed number or improper fraction.
- solve 2-step word problems involving addition and subtraction.

### Assessment

Use the table below to calculate your child's score for this chapter. Colour the correct number of stars in the Checkpoint section.

	Needs Improvement 1 point	Good 2 points	Excellent 3 points	Score
Speed	Questions were not completed by the given time.	Questions were completed by the given time.	Questions were completed ahead of the given time.	
Concepts	Many questions were answered incorrectly.	A couple of questions were answered incorrectly.	All questions were answered correctly.	
Language	Many words and phrases were not understood.	A couple of words or sentences were not understood.	All words and sentences were understood.	
	200 C		Total	

3–4 points = 1 star 5–7 points = 2 stars 8–9 points = 3 stars

## Teach-At-Home Tips

Play a game with your child using counters or coins to learn about fraction of a set. For example, take 20 counters. Ask your child to show:

• 
$$\frac{1}{2}$$
 of 20 •  $\frac{1}{4}$  of 20 •  $\frac{3}{10}$  of 20

Find other ways to show a fraction of a set of 20.





## Write the names for the marked angles in these figures.



Mark the following angles *a*, *b* and *c* inside the figure.

- (a)  $\angle LMN = \angle a$
- (b)  $\angle JKL = \angle b$
- (c)  $\angle JNM = \angle c$







What is the size of each marked angle? Put a tick () in the correct box.









## What is the size of each angle in degrees?





Estimate and then use a compass to measure the following angles.





## Name the angles.





4



Draw each angle using the inner scale to show the given angle. Then mark the angle and label the lines.

An example is shown.



(a)  $\angle DEF = 85^{\circ}$ 

(b) ∠LMN = 43°



(c)  $\angle PQR = 124^{\circ}$ 





(d)  $\angle WXY = 108^{\circ}$ 





# 2

## Draw each angle using the outer scale to show the given angle. Then mark the angle and label the lines.

An example is shown.



(a)  $\angle JKL = 35^{\circ}$ 

(b)  $\angle DEF = 93^{\circ}$ 

(d)  $\angle QRS = 154^{\circ}$ 





(c) ∠GHI = 106°







Draw the missing line from Point E to the correct dot to show the angle. Then mark the angle.





3

## Use a ruler and a protractor to draw each angle. Then label the angle.

(a)  $\angle LMN = 24^{\circ}$  above the given line.

(b)  $\angle XYZ = 106^{\circ}$  below the given line.

- X

L



Use a ruler and a protractor to draw each angle. Then label the angle.

(a)  $\angle DEF = 150^\circ$ , line DE = 4 cm, line EF = 6 cm

(b)  $\angle PQR = 85^{\circ}$ , line PQ = 8 cm, line QR = 7 cm



# Part & Quarter, Half, Three-Quarter and Complete Turns

0

Count the number of quarter turns made and state if the turns made are clockwise or anti-clockwise.

Write the size of each angle. An example is shown.



## The circle is divided into quarters. Describe the turn made as shown by the arrow.

An example is shown.





135



Fill in the blanks to complete the points of the compass. Then answer the following questions.



(a) Which direction is opposite south? \_\_\_\_\_

(b) Which direction is opposite east? \_\_\_\_\_

(c) Which direction is between north and east? \_\_\_\_\_

(d) Which direction is between south and west? \_\_\_\_\_

(e) Which direction is opposite north-east?

(f) Which direction is opposite south-east?



Betty is facing the **school in the east** at first. Write the angle Betty needs to turn to face each place **from east**.



Place	Direction of turn	Angle turned through in degrees
(a) Bus Interchange	clockwise	
(b) House	anti-clockwise	
(c) Park	clockwise	
(d) Bus Interchange	anti-clockwise	



Study the figure below and answer the questions that follow.



- (a) If Amin is facing the school, how many quarter turn must he turn in the clockwise direction to face the MRT?
- (b) Amin is facing the school now. What will he be facing after turning an angle of 90° anti-clockwise?
- (c) Amin is facing the swimming pool now.What will he be facing after turning an angle of 270° clockwise?
- (d) After making a quarter turn in the anti-clockwise direction, Amin now faces the library.

What was he facing at first? \_\_\_\_\_

(e) After making a half turn in the clockwise direction, Amin now faces the shopping mall.

What was he facing at first? \_\_\_\_\_


# This is a map of a zoo showing the enclosures of the animals. **Fill in the directions.**

An example is shown.



# Example The tiger enclosure is \_\_\_\_\_\_ of the elephant enclosure. (a) The panda enclosure is \_\_\_\_\_\_ of the monkeys enclosure. (b) The crocodile enclosure is \_\_\_\_\_\_ of the tiger enclosure. (c) The panda is \_\_\_\_\_\_ of the tiger enclosure. (d) The snake enclosure is \_\_\_\_\_\_ of the panda enclosure.



The square grid shows the plan of a neighbourhood. Look at the diagram and answer the following questions.



- (a) Daniel was facing west at the market after making a <sup>3</sup>/<sub>4</sub> turn in a clockwise direction.
   In which direction was he facing before that?
- (b) Huiting was at the library.
   She turned north and walked 1 unit.
   Then, she turned east and walked 4 units.
   Where would she be at? \_\_\_\_\_\_
- (c) Lex was at the park facing east and he walked 2 units. Then, he turned north and walked 2 units.
   Next, he turned west and walked 3 units.
   Lastly, he turned north and walked 1 unit.
   Where would he be at? \_\_\_\_\_\_



Study the diagram below. Fill in the blanks with the correct answer.

6



- (a) Point \_\_\_\_\_ is west of Point R.
- (b) Point \_\_\_\_\_ is north-west of Point T.
- (c) Point Y is \_\_\_\_\_ of Point X.
- (d) Point T is \_\_\_\_\_ of Point R.
- (e) Point R is \_\_\_\_\_ of Point S.



# Speed Up (Duration: 30-45 minutes)

20

## Section A (2 marks each)

For questions 1 to 3 and 6, write your answers in the boxes. For questions 4 and 5, show your working in the space provided.

Use your protractor to measure the following angles.















Study the 8-point compass below.



Anna is standing in the middle of the 8-point compass facing east. Where will she be facing if she makes a 45° turn anti-clockwise from east?



# Section B (Total: 8 marks)

For each question, show the working clearly and write your answer in the space provided.



Study the square grid below and answer the following questions.

			Α	
В		с		
	D		E	
				Ņ
		F		

(a) Point D is north-west of Point \_\_\_\_\_. (1 m)

(b) Point E is \_\_\_\_\_ of Point A. (1 m)



Study the diagram below and answer the following questions.



Ray is standing in the middle. He turns west and walks 2 units. Then, he turns south and walks 3 units. Finally, he turns east and walks 3 units.

(a) Mark his new position on the diagram with an 'x'. (1 m)

(b) He meets \_\_\_\_\_\_ along the way. (1 m)

(c) Tom is north of \_\_\_\_\_. (1 m)



Look at the diagram below and answer the questions that follow.



- (a) After making a quarter turn in the anti-clockwise direction, Eric now faces north-west.
   Which direction was he facing at first? (1 m)
- (b) Eric now faces north-west. What angle in the clockwise direction must he turn before he faces the south-west direction? (2 m)





Study the square grid below.



Describe how Raju can go from Point A to Point G if he has to pass through all the points in alphabetical order.

Write the instructions.

The first two has been done for you.

Walk 4 units to the north to Point B.

Then, turn east and walk 3 units to Point C.







Alice started to walk from Point A. Then she walked 3 units to the north, 2 units to the east, 6 units to the south and 1 unit to the west.

Which point did she end up at? Point



Read the story. Then mark and label the following places on the grid. Jolly's Cafe has been marked for you.



John and his friends were at Star Park last Saturday. They had their breakfast at Jolly's Cafe. Next, they cycled 500 m east from Jolly's Cafe to the playground.

Two hours later, they cycled 300 m north from the playground to a pavilion. They played for one hour at the pavilion before cycling 700 m south to a food centre to have their lunch. From the food centre, they decided to cycle 400 m west to a camping site.







Approved by: \_\_\_\_

# Parent Pointers



### Learning outcomes

By the end of this chapter, your child should be able to:

- use notation such as  $\angle ABC$  and  $\angle a$  to name angles.
- estimate and measure angles in degrees using a protractor.
- draw an angle of a given size using a protractor.
- relate quarter, half and complete turns to angles in degrees.
- name and label the directions on the 8-point compass.
- find directions using the 8-point compass.

## Assessment

Use the table below to calculate your child's score for this chapter. Colour the correct number of stars in the Checkpoint section.

	Needs Improvement 1 point	Good 2 points	Excellent 3 points	Score
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Language	Many words and phrases were not understood.	A couple of words or sentences were not understood.	All words and sentences were understood.	
3-4 points $-1$	star 5_7 points = 2 sta	rs 8-9 points - 3 stars	Total	

# Teach-At-Home Tips

Play a game with your child to learn more about angles. Take 2 ice-cream sticks or 2 strips of cardboard. Ask your child to show you how to form:

- $\frac{1}{4}$  turn clockwise
- $\frac{1}{4}$  turn anti-clockwise

•  $\frac{3}{4}$  turn clockwise

•  $\frac{3}{4}$  turn anti-clockwise

Ask your child to show half turns and complete turns, first clockwise and then anti-clockwise.

Does your child notice anything about the ending points?







Look at the picture below and fill in the blanks with the correct answer. ABCD is a square.



Name 4 pairs of **perpendicular lines**:

- AD 🔟 \_\_\_\_\_
- DC \_\_\_\_\_
- СВ⊥\_\_\_\_
- BA ⊥ \_\_\_\_\_

Name 2 pairs of **parallel lines**:

AB // \_\_\_\_\_

AD // \_\_\_\_\_

The **angle** of each side of a square is \_\_\_\_\_°.



Look at the picture below and fill in the blanks with the correct answer. ABCD is a rectangle.



- AB = \_\_\_\_\_ = 5 cm
- BC = \_\_\_\_\_ = 10 cm

Name 4 pairs of perpendicular lines:

- AD ⊥ \_\_\_\_\_
- DC ⊥ \_\_\_\_\_
- CB ⊥ \_\_\_\_\_
- BA ⊥ \_\_\_\_\_

Name 2 pairs of **parallel lines**:

AB // \_\_\_\_\_

AD // \_\_\_\_\_

The **angle** of each side of a rectangle is \_\_\_\_\_°.





The figure below is a square.



- (a) Use arrows to show a pair of parallel lines on the square.
- (b) The angle on each side of a square is \_\_\_\_\_°.
- (c) If line AB is 4 cm, the line BC is \_\_\_\_\_ cm.
- The figure below is a rectangle.



- (a) Use arrows to show a pair of parallel lines on the rectangle.
- (b) The angle on each side of a rectangle is \_\_\_\_\_°.
- (c) If line AB is 8 cm, line DC is \_\_\_\_\_ cm.
- (d) If the perimeter of the rectangle is 24 cm, line AD is \_\_\_\_\_ cm.





# **Draw and label four squares on the square grid.** A side of the square has been drawn for you.

(a) Square ABCD



Square PQRS (b)



Square WXYZ (c)



Square EFGH (d)







# Oraw and label four rectangles on the square grid.

Two sides of the rectangle have been drawn for you.

Rectangle KLMN (a)



(b) **Rectangle STUV** 



#### **Rectangle EFGH** (c)



#### (d) Rectangle UVWX







3 Use a ruler and a set square to draw a square PQRS of side 5 cm. The line PQ has been drawn for you.

Ρ-- Q

4 Use a ruler and a set square to draw a square JKLM of side 6 cm. The line JK has been drawn for you.







# Draw the shapes with the given clues.

(a) This shape has 4 sides.
 The length of each side is 6 cm.
 The angle on each side is 90°.



(b) This shape is a 4-sided figure with two pairs of parallel lines. The first pair of parallel lines has a length of 8 cm. The second pair of parallel lines has a length of 4 cm. The angle on each side is 90°.



Part 3 Finding Unknown Sides and Angles Find the unknown sides of each square.



Find the unknown sides of each rectangle.







# Find each unknown angle.

(a) MNOP is a square. Find ∠OPN.



(b) PQRS is a rectangle. Find ∠PQS.



WXYZ is a rectangle. (c) Find ∠x.





(d) ABCD is a square. **Find ∠a**.



(e) EFGH is a square.
 Find ∠JEK.



(f) JKLM is a rectangle. Find  $\angle$  JMN.





(g) WXYZ is a rectangle.
 Find ∠w.



(h) ABCD is a rectangle.  $\angle x = \angle y$ . Find  $\angle x$ .





The figure below is made up of a rectangle ABCG and a square DEFG. **Find the lengths of AF and CD.** 





4

The figure below is made up of two rectangles. Find the lengths of AB and AG.





The figure is made up of two rectangles. Find the length of CD.





ABGH is a rectangle and CDEF is a square. Find the length of BC.





# Speed Up (Duration: 30-45 minutes)

Section A (2 marks each) Show the working for each question clearly. Then write your answer in the blank.

0

In the figure below, ABCD is a rectangle and DEFG is a square. **Find the length of AB.** 





20

Use a ruler and a protractor to draw a rectangle ABCD with length AB = 6 cm and breadth BC = 3 cm. Line AB has been drawn for you.

A. B









DEFG is a square. **Find ∠e.** 





∠p = \_\_\_\_\_

0

6

The figure below is made up of a square BCHG and a rectangle ADEF. Find the length of EF.



EF = \_\_\_\_\_ cm



MNPO is a rectangle and ORST is a square. Find the lengths of RP and MT.





MT = \_\_\_\_\_ cm



## Section B (4 marks each)

For each question, show the working clearly and write your answer in the space provided.



The given figure is made up of two identical overlapping rectangles. The overlapping portion forms a square. **Find the perimeter of the figure.** 



The figure below is made up of three identical squares of side 5 cm. **Find the perimeter of the figure.** 







The figure below is made up of 3 identical rectangles and 2 identical squares. The rectangles are shaded in purple and the squares are shaded in yellow. **Find the sum of the lengths of AB and CD.** 







The figure below is made up of 4 equal rectangles. What is the length of AB?









In the figure below, ABCD is a square, CEFG is a rectangle and  $\angle ACD = 45^{\circ}$ .

Find the difference between  $\angle p$  and  $\angle q$ .





The figure below is not drawn to scale. Find the length of FG.







Approved by: \_

)

# Parent Pointers



## Learning outcomes

By the end of this chapter, your child should be able to:

- describe the properties of rectangles and squares in terms of parallel and perpendicular lines.
- draw rectangles and squares on square grids.
- observe the different orientations of a rectangle or square when rotated through 90°, 180°, 270° and 360°, clockwise or anti-clockwise.
- draw rectangles and squares according to given lengths using a ruler, protractor and set square.

## Assessment

Use the table below to calculate your child's score for this chapter. Colour the correct number of stars in the Checkpoint section.

	Needs Improvement 1 point	Good 2 points	Excellent 3 points	Score
Speed	Questions were not completed by the given time.	Questions were completed by the given time.	Questions were completed ahead of the given time.	
Concepts	Many questions were answered incorrectly.	A couple of questions were answered incorrectly.	All questions were answered correctly.	
Language	Many words and phrases were not understood.	A couple of words or sentences were not understood.	All words and sentences were understood.	
3-4 points -	star 5-7 points - 2 sta	rs 8 0 points - 2 stars	Total	

## Teach-At-Home Tips

Help your child learn more about squares and rectangles using items found at home. Ask your child to show you some square or rectangular objects. For example, take a rectangular shaped book and ask your child these questions.

- Where are the parallel lines?
- Where are the perpendicular lines?

With a ruler, you can ask your child to measure the sides of the book. If you have a protractor, ask your child to check the angles at the corners of the book. Ask your child what does he or she observe?




A number when divided by 6 gives a quotient of 832 and a remainder of 3. What is the number?

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- (1) 138
- (2) 141
- (3) 4992
- (4) 4995

Which of the following numbers is 3 hundreds more than 48 tens?

- (1) 348
- (2) 780
- (3) 3048
- (4) 5110



5

Mrs Tan packed 456 cupcakes into boxes of 8. She sold each box for \$12.

How much did she earn in all?

- (1) \$57
- (2) \$96
- (3) \$171
- (4) \$684

Which of the following is **not** an equivalent fraction of  $\frac{2}{3}$ ?

- (1)  $\frac{4}{6}$ (2)  $\frac{4}{9}$ (3)  $\frac{8}{12}$
- (4)  $\frac{10}{15}$





The figure below shows a square. Find  $\angle y$ .



- (1) 28°
- (2) 45°
- (3) 56°
- (4) 62°

Which of the following letters has perpendicular lines?

- (1)
- (2) \$
- (3)
- (4) C

)

(

(

)

15 The figure below is made up of a rectangle ABCG and a square CDEF. Find the length of GF.



- (1) 4 cm (2) 7 cm
- (3) 10 cm
- (4) 11 cm

)

(

## Section B (2 marks each) $(20 \times 2 = 40 \text{ marks})$

Write your answers in the space provided and give your answers in the units stated. Show all working clearly.



What is the greatest 5-digit number that can be formed using all the digits below?

1, 0, 7, 3, 6



What is the missing number? 57 827 = 50 000 + 7000 + \_\_\_\_\_ + 7

A 4-digit number when rounded to the nearest hundred becomes 8400. What is the smallest possible number?



Find the product of 327 and 45.



A given number is between 10 and 20. It is a multiple of 4 and a factor of 36. What is the number?





2 Express  $5\frac{4}{7}$  as an improper fraction.



Arrange the following fractions in decreasing order.

5	~1	3	13
12'	2-3'	4'	6

Answer: \_

Subtract  $\frac{2}{12}$  from 2. Express your answer in its simplest form.



Ali spent \$16 on a book, \$8 on food and had \$36 left. What fraction of his money was spent on the book? Express your answer in its simplest form.



25 Mrs Tan used  $\frac{3}{5}$  kg of flour to bake a cake. How many kilograms of flour did she use to bake two cakes? Express your answer as a mixed number in its simplest form.

Jane bought 
$$\frac{11}{12} \ell$$
 of milk.  
She used  $\frac{1}{4} \ell$  to make waffles and  $\frac{3}{8} \ell$  to make scrambled eggs.  
How much milk did she have left?



Susan is facing her school. If she makes a  $\frac{3}{4}$  turn in the clockwise direction, she will be facing \_\_\_\_\_.





27

Measure and write the value of  $\angle y$ .







The figure below shows a square ABCE and a triangle CDE. How many pairs of parallel lines are there in the figure?



 $\underbrace{30}_{2} \frac{1}{2} \text{ of a number is 18.} \\ \text{What is } \frac{1}{3} \text{ of the same number?}$ 

3

Using a ruler and a set square, draw a line passing through X that is perpendicular to AB.



٠X





The figure below shows a rectangle. Find  $\angle y$ .



Siew Mei has some money to put into red packets for Chinese New Year. When she puts \$6 into each packet, she will have \$2 left over. When she puts \$8 into each packet, she will be short of \$2. Siew Mei has more than \$50 but less than \$80. What is the amount of money Siew Mei has?









WXYB is a square and ABCD is a rectangle. Find the length of AW.





### Section C (Total: 30 marks)

Questions 36 to 41 carry 3 marks each and Questions 42 to 44 carry 4 marks each.

For each question, show your working clearly and write your answer in the space provided.



Box A and Box B contain a total of 300 paper clips. Box B has 68 more paper clips than Box A. How many paper clips are there in Box A?

\_\_\_\_\_ (3 m)

3240 pupils took part in a sports carnival.

 $\frac{3}{8}$  of them won a prize each.

How many of the pupils did not win any prizes?



\_ (3 m)

# 33 A basket containing 4 apples have a total mass of $\frac{7}{8}$ kg.

Each apple has the same mass and 2 apples have a total mass of  $\frac{1}{4}$  kg.

- (a) What is the mass of 4 apples? Express your answer in its simplest form.
- (b) What is the mass of the basket?

\_\_\_\_\_ (1 m) (a)

(b) \_\_\_\_\_ (2 m)

Use a ruler and a protractor to draw a rectangle ABCD with AB = 6 cm and BC = 2 cm. The line AB has been drawn for you. (3 m)

6 cm

Δ-





The figure below is made up of 2 rectangles. Find  $\angle x$ .





Linda bought 6 boxes of sweets. She packed 12 sweets into each plastic bag for sale in her shop. She packed 185 such bags of sweets and had 6 sweets left. How many sweets were in each box at first?



(3 m)

Study the patterns below carefully.



- (a) How many shaded squares are there in Pattern 4?
- (b) How many shaded squares are there in Pattern 44?
- (c) In which pattern will there be 36 shaded squares?

Pattern number	Number of shaded squares
1	4
2	6
3	8
4	(a) (1 m)
44	(b) (1 m)

(c) \_\_\_\_\_ (2 m)

Minah has 6 m of cloth.

She used  $\frac{1}{2}$  of it to sew a skirt and  $\frac{2}{5}$  of it to sew a blouse. How many metres of cloth does Minah have left? Express your answer as a fraction in its simplest form.

\_\_\_\_\_ (4 m)



At first, Alice, Bala and Calvin had \$900 altogether.

Alice spent  $\frac{1}{2}$  of her money, Bala spent \$60 and Calvin spent 3 times as much money as Alice.

They had the same amount of money left. How much money did Alice have at first?



## Answers

1 Whole Numbers Part 1: Numbers to 100 000 1. (a) 23 514 (b) 45 320 2. (a) 58 506 Fifty-eight thousand, five hundred and six (b) 80 639 Eighty thousand, six hundred and thirty-nine 3. (a) 24 335 (b) 35 046 4. (a) Thirty-five thousand, two hundred and sixty (b) Eighteen thousand, two hundred and forty-six (c) Twelve thousand and four (d) Five thousand and ten (e) Six thousand, two hundred and forty-two 5. (a) 2 9 3 6 7 9 70 600



- 6. (a) 80 000, 7000, 6 (b) 7, 0, 4
- 7. ten thousands, thousands, hundreds, tens, ones
- 8. (a) ten thousands, tens (b) 2, 0
- 9. (a) 800 (b) 60 (c) 80 322 (d) 128 (e) 88 000

### Part 2: Comparing and Ordering Numbers up to 100 000

- 1. (a) 63 295, 63 275 (b) 63 385, 63 185 (c) 64 285, 62 285
- 2. 36 000, 32 000, 36 000, 39 000
- 3. (a) 27 135 is 1000 more than 26 135. (b) 36 235 is 100 more than 36 135. (c) 26 225 is 10 less than 26 235.

#### Part 3: Number Patterns within 100 000

- 1. (a) 16 305, 17 305
   (b) 41 465, 40 465

   (c) 49 905, 49 805
   (d) 89 065, 89 075
- 2. (a) 24 679; Add 100 to get the next number.
  (b) 25 005; Subtract 100 to get the next number.
  (c) 69 234; Subtract 1000 to get the next number.
  (d) 99 899; Subtract 10 to get the next number.



#### Part 4: Rounding Numbers

1. (a) 40, 50,	40, 40	(b) 50, 40, 50	), 50
2. (a) 350, 30 (c) 360, 30	50, 350, 350 50	(b) 350, 360,	360, 360
3. (a) 3290, 3 (c) 3300, 3	3290 3300	(b) 3300, 330	00
4. (a) 600	(b) 1750	(c) 27 150	(d) 70 490
5 (a) 300 40	00 300 300	(b) 400 300	400 400

5. (d) 300, 400, 300, 300 (l) (c) 300, 400, 400, 400

(b)	400,	300,	400,	4

Number	Round to the nearest hundred
1530	1530 ≈ 1500
1540	1540 ≈1500
1550	1550 ≈1600
1580	1580 ≈1600
1595	1595 ≈1600

- 7. (a) 500 (b) 800 (c) 1100 (d) 4100 (e) 36 500 (f) 68 100
- 8. (a) 42 360 42 000 42 500 43 000 42 360 = 42 000 (b) 85 640 = 1



85 640 ~ 86 000



Number	Round to the nearest thousand			
7200	7200 ≈ 7000			
7500	7500 ≈ 8000			
8600	8600 ≈ 9000			
9200	9200 ≈ 9000			
9800	9800 ≈ 10 000			

10. (a) 9000	(b) 5000	(c) 28 000
(d) 34 000	(e) 62 000	(f) 84 000
(g) 41 000	(h) 56 000	

11.

	On the first day of a carnival, there were
•	about <b>10 500</b> adults and <b>4350</b> children.
•	Mr Lim collected about \$3200 from the sales of
	chicken wings. Mdm Rosnah collected about
	<b>\$2160</b> from selling packets of nasi lemak.
	On the second day of the carnival, there
	were about 1080 senior citizens. They had
	a wonderful time playing the games! 1500 free
	bottles of water were given out to the senior
	citizens.
	Altogether, there were about 24 830 people
	who visited the 2-day carnival. They spent a
1	total of about \$49 600 on food, drinks and

C games.



3.	Amount	Round to the nearest \$10	Round to the nearest \$100	Round to the nearest \$1000
	(a) \$5285	\$5290	\$5300	\$5000
	(b) \$12 649	\$12 650	\$12 600	\$13 000
	(c) \$28 816	\$28 820	\$28 800	\$29 000
4.	(a) 2004	(b) 1995	5 (c) 9	)
p	eed Up			
ie	ction A	(3) 3 (1	) 4 (2)	5 (3)
ie	ction B 67 902 Seventy-two ten thousand 98 530 13 000	thousand, one ds 9. 10 6 11. 46 3 13. 975	hundred and 88 338, 46 833, 64 3	forty-eight 1 383, 64 833
4	2999	15,483	6	

#### Let's Reason

- 1. (a) Yes
- (b) No, his method was not correct. His method may not work for other numbers. He should compare the digit in the ten thousands place first, then the digit in the thousands place. The digit in the ones place may be the greatest but the value of a 5-digit number is the greatest when the digit in the ten thousands place is the greatest.
- (a) Statements (1) and (2) are not easy to calculate mentally as there will be a remainder. Statements (3) and (4) can be calculated mentally quickly as the numbers can be divided by 7 with no remainder. Statement (4) is better than statement (3) as 980 is closer to 964 as compared to 910. So, the best estimation is statement (4) 980 ÷ 7.

(b) Possible answers:

(1) \$839 ÷ 7	or	(2) \$839 ÷ 7
≈ \$840 ÷ 7		= \$700 ÷ 7
= \$120		= \$100
(This can be used		
if a pupil can		
mentally calculate		
84 ÷ 7.)		

#### **Problem Solving**

Understand the problem or let's reason. What do I know?

- (1) 271: The last digit '1' is an odd number.
- (2) 3 toys were bought. The cost of 1 toy must be an odd number.

What am I supposed to find? 3 toys that add up to \$271.



What is the method? Here are three possible methods. (A) Make a list of 3 numbers that end with digit '1'.

(B) Make an estimation: Estimate the cost of 3 different toys and see which total is close to \$271.

(C) Can also use 'Guess and Check'.

#### Solve using Method A:

Odd numbers: 99, 207 Even numbers: 28, 36, 124

	Odd number	Even number		When last digits are added	Last digit	
1	99	28	36	9+8+6	3	X
2	99	28	124	9 + 8 + 4	1	Possible
3	99	36	124	9+6+4	9	X
4	207	28	36	7 + 8 + 6	1	Possible
5	207	28	124	7 + 8 + 4	9	X
6	207	36	124	7+6+4	7	X

Check:

Add the 2 possible sets of numbers. Set 2:  $99 + 28 + 124 = 251 \times$ Set 4:  $207 + 28 + 36 = 271 \quad \checkmark$ 

The 3 toys she bought were Toys A, D and E.

Solve using Method B:

	Odd number		Odd Even number		
	99	207	28	36	124
Estimation	100	210	30	40	120

1 2 3 4 5 6	Odd number	Ev	ven nber	Estimated total cost	
1	100	30	40	170	Х
2	100	40	120	260	Possible
3	100	30	120	250	Possible
4	210	30	40	280	Possible
5	210	40	120	370	х
6	210	30	120	360	х

Check:

Set 2: 99 + 36 + 124 = 259 × Set 3: 99 + 28 + 124 = 251 × Set 4: 207 + 28 + 36 = 271  $\checkmark$ 

The 3 toys she bought were Toys A, D and E.

#### Challenge

1. Greatest 5-digit number: \_\_\_\_\_98 750 Smallest 5-digit number: \_\_\_\_\_50 789

98 750 - 50 789 = 47 961

2. 18 - 6 = 12

3 units = 12 1 unit = 12  $\div$  3 = 4 The digit in the ones place is 4.

#### 12 - 4 = 8

The digit in the tens place is 8. Peter wrote the number 684.

3. (a)

		1st	2nd	3rd	4th	5th	6th
Jun Wei	\$1000	\$1050 (\$1000 + \$50)	\$1100 (\$1050 + \$50)	\$1150 (\$1100 + \$50)	\$1200 (\$1150 + \$50)	\$1250 (\$1200 + \$50)	\$1300 (\$1250 + \$50)
Li Yi	\$1000	\$1010 (\$1000 + \$10)	\$1030 (\$1010 + \$20)	\$1060 (\$1030 + \$30)	\$1100 (\$1060 + \$40	\$1150 (\$1100 + \$50)	\$1210 (\$1150 + \$60)

Jun Wei would have more savings.

\$1300 - \$1210 = \$90 Jun Wei would have \$90 more.

(b)

	6th	7th	8th	9th
Jun Wei	\$1300	\$1350 (\$1300 + \$50)	\$1400 (\$1350 + \$50)	\$1450 (\$1400 + \$50)
Li Yi	\$1210	\$1280 (\$1210 + \$70)	\$1360 (\$1280 + \$80)	\$1450 (\$1360 + \$90)

They would have the same amount of money in the 9th month.

2 Factors And Multiples

#### Part 1: Factors

1. (a) 12

Working:  $1 \times \frac{12}{2} = 12$  $2 \times \frac{6}{6} = 12$  $3 \times \frac{4}{4} = 12$ 

The factors of 12 are 1, 2, 3, 4, 6 and 12.

(b) 36

Working:  $1 \times 36 = 36$   $2 \times 18 = 36$   $3 \times 12 = 36$   $4 \times 9 = 36$  $6 \times 6 = 36$ 

The factors of 36 are <u>1</u>, <u>2</u>, <u>3</u>, <u>4</u>, <u>6</u>, <u>9</u>, <u>12</u>, <u>18</u> and <u>36</u>.

(c) 42

Working:	$1 \times 42 = 42$
	$2 \times 21 = 42$
	$3 \times 14 = 42$
	$6 \times 7 = 42$

The factors of 42 are <u>1</u>, <u>2</u>, <u>3</u>, <u>6</u>, <u>7</u>, <u>14</u>, <u>21</u>, and <u>42</u>.

2. (a)	16	1, 2, 4, 8, 16	
(b)	24	1, 2, 3, 4, 6, 8, 12, 24	
(c)	32	1, 2, 4, 8, 16, 32	
(d)	56	1, 2, 4, 7, 8, 14, 28, 56	
(e)	64	1, 2, 4, 8, 16, 32, 64	

- 3. (a) 2. Yes. 12 can be divided exactly by 6. There is no remainder.
  - (b) 31 R1. No. 63 cannot be divided exactly by 2. There is a remainder.

•	Number	Factors	Common Factors		
(a)	6	1, 2, 3, 6	1, 2, 3, 6		
	18	1, 2, 3, 6, 9, 18	1		
(b)	24	1, 2, 3, 4, 6, 8, 12, 24	1, 2, 4		
	28	1, 2, 4, 7, 14, 28			
(c)	63	1, 3, 7, 9, 21, 63	1, 3, 7, 21		
	84	1, 2, 3, 4, 6, 7, 12, 14, 21, 28, 42, 84			

- 5. (a) Factors of 14: 1, 2, 7, 14 Factors of 21: 1, 3, 7, 21 The common factors of 14 and 21 are 1 and 7.
  - (b) Factors of 64: 1, 2, 4, 8, 16, 32, 64 Factors of 80: 1, 2, 4, 5, 8, 10, 16, 20, 40, 80 The common factors of 64 and 80 are 1, 2, 4, 8 and 16.
- 6. (a) 9, 12, 15, 24, 30 (b) 10, 15, 30
  - (c) 15 and 30

#### Part 2: Multiples

1

(a)	3	3, 6, 9, 12, 15, 18, 21, 24, 27, 30
(b)	6	6, 12, 18, 24, 30, 36, 42, 48, 54, 60
(c)	8	8, 16, 24, 32, 40, 48, 56, 64, 72, 80
(d)	9	9, 18, 27, 36, 45, 54, 63, 72, 81, 90

- 2. (a) 5th multiple of 9 = 5 × 9 = 45 Answer: <u>45</u>
  (b) Multiples of 9: 9, 18, 27, 36, 45, 54, 63, 72
  - Answer: <u>63</u> (c) Multiples of 4: 4, 8, 12, 16, 20, 24
  - Multiples of 6: 6, 12, 18, 24 Answer: <u>12</u> and <u>24</u>
- 3. (a) 4th multiple of  $5 = 4 \times 5 = 20$ 3rd multiple of  $2 = 3 \times 2 = 6$ Product of 4th multiple of 5 and the 3rd multiple of 2  $= 20 \times 6$  = 120
  - (b) The first four multiples of 3: 3, 6, 9, 12 Sum of the first four multiples of 3 = 3 + 6 + 9 + 12= 30
  - (c) All the numbers 14, 21, 35, 49 and 63 can be divided by 7 exactly.
    - 14, 21, 35, 49 and 63 are all multiples of 7.

4. (a) 4, 10, 14, 28 (b) 14, 21, 28, 35 (c) 14 and 28

#### Speed Up

Se	ction A				
1.	(3)	2. (4)	3. (2)	4. (2)	5. (2)

Section B

- 6. Third multiple of  $8 = 3 \times 8$ = 24
- 7. Sum of the first two multiples of 9 = 9 + 18= 27
- 8. 1, 2, 4, 8, 16, 32 and 64
- 9. 63 ÷ 3 = 21
- 10. 6th multiple of  $8 = 6 \times 8$ = 48 3rd multiple of  $7 = 3 \times 7$ = 21 48 - 21 = 27
- Multiples of 3: 3, 6, 9, 12, 15 Multiples of 5: 5, 10, 15 The first common multiple of 3 and 5 is 15.
- 12. Factors of 54: 1, 2, 3, 6, 9, 18, 27, 54 Factors of 30: 1, 2, 3, 5, 6, 10, 15, 30 The common factors of 54 and 30 are 1, 2, 3 and 6.
- 13.6,9

14.6,8

15.36

#### Let's Reason

- 1. Multiples of 6 between 12 and 30: 18, 24, 30 Factors of 48: 1, 2, 3, 4, 6, 8, 12, 16, 24, 48 The number is 24.
- 2. The estimated quotient must be between 45 and 49, so that it is 50 when rounded to the nearest ten.

Possible numbers represented by  $\uparrow$ : 2 × 45 = 90 2 × 46 = 92 2 × 47 = 94 2 × 48 = 96 2 × 49 = 98 Accept any of the two numbers.



1.

Factors of 90	Factors of 36	Factors of 60
1 × 90	1 × 36	1 × 60
2 × 45	2 × 18	2 × 30
3 × 30	3 × 12	3 × 20
5 × 18	4 × 9	4 × 15
6×15	6×6	5 × 12
9 × 10		6 × 10

(a) The greatest number of goodie bags she can pack is 6. (b) 90 + 36 + 60 = 186

 $186 \div 6 = 31$ 

There will be 31 items in each goodie bag.

Give 7:	7	14	21	28	35	42	49
Left 3 (+ 3):	10	17	24	31	38	45	52
Give 8:	8	16	24	32	40	48	
Short of 3 (- 3):	5	13	21	29	37	(45)	

Jack has 45 stickers.

#### Challenge

Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Raju			X			X			X			X			X
Ali					X					X					Х

They will meet on day 15th.

They first met on 2nd April, 15 days later will be 17th April.

#### 3 Four Operations Of Whole Numbers

#### Part 1: Multiplication by a 1-Digit Number

1.	(a)		1:	3	2 6	8		(b)			42	8	3 4	7
		×			100	3			×					5
		3	4	1 (	0	4		19		1	4	2	3	5
	(c)			3 4	5 4	6	0	(d)			1 5	3	4 0	7
		×					9		×					6
	ŝ	3	3	1	1	4	0	5		3	1	8	4	2
	(e)		(	5 (	ů,	4	2	(f)			8	0	0	4
		×					8		×					4
			4 8	3 3	3	3	6	3		3	2	0	1	6



#### Working:

Across	Down
2496 × 3 = <u>7488</u>	3983 × 7 = <u>27 881</u>
$ \begin{array}{r}     \begin{array}{r}             1 & 2 & 1 \\             2 & 4 & 9 & 6 \\             \times & & 3 \\             \hline             7 & 4 & 8 & 8 \end{array} $	
5 × 2089 = <u>10 445</u>	2241 × 4 = <u>8964</u>
$ \begin{array}{r} 2 & 0 & 8 & 9 \\ \times & 5 \\ \hline 1 & 0 & 4 & 4 & 5 \end{array} $	$ \begin{array}{r} 2 2 4 1 \\ \times 4 \\ \hline 8 9 6 4 \end{array} $
3890 × 4 = <u>15 560</u>	8060 × 9 = <u>72 540</u>
	$ \begin{array}{r} 8 \stackrel{5}{0} 6 0 \\ \times 9 \\ \hline 7 2 5 4 0 \end{array} $
6 × 1290 = <u>7740</u>	3 × 7352 = <u>22 056</u>
× 6 7740	$     \begin{array}{r}       7 \overline{3} 5 2 \\       \times 3 \\       \overline{2 2 0 5 6}     \end{array} $

#### Part 2: Multiplication by a 2-Digit Number

1. (a) 210	(b) 780
2. (a) 34 × 20	(b) 49 × 30
$= 34 \times 2 \times 10$	= 49 × 10 × _ 3
= <u>68</u> × 10	= 490 x 3
= 680	= 1470

3. (a) 29 × 5 = 145 (b)  $67 \times 6 = 402$  $29 \times 50 = 1450$  $67 \times 60 = 4020$ 

(c) 7 × 92 = \_644\_ (d) 8 × 73 = 584  $70 \times 92 = 6440$  $80 \times 73 = 5840$ 



2.

4. (a) $4 \times 5 = 20$ $4 \times 50 = 200$ $40 \times 50 = 2000$ (b) $8 \times 6 = 4$ $80 \times 6 = 4$ $80 \times 6 = 4$ $80 \times 60 = 4$	8 80 4800	(e) $\frac{46}{\times 5}$ $\frac{5}{2310}$	2 0 0	(f) 	1	5 9 8 4 2 1 9 6	; :
5. (a) Estimate: 2 2 $22 \times 44 \approx 20 \times 40 \times 44$	-			-	2 5	116	,
$= \frac{800}{968}$		Ве Н	A	P	Ρ		Y
Yes. 968		29 160	7733 3	304	3304	23	100
The estimation 800 is close to the actu	al answer 968.						
(b) Estimate:	94 I	art 3: Division by	a I-Digit Nu	mber			
$94 \times 58 \approx 90 \times 60$	× 58	(a) 1 1	78	(b) 2	2 6	4	8
94 × 58 = <u>5452</u>	4700	2) 2 3	5 6	3) 7	79	4	6
Yes	5452	2		6	5		
The estimation 5400 is close to the acti	Jal answer 5452.	3		1	9		
(c) Estimate:	39	2		1	8		
$39 \times 75 \approx 40 \times 80$ = 3200	195	1	5		1	4	
$39 \times 75 = 2925$	2730	1	4		1	2	
Tes.	2 9 2 5		1 6			2	6
The estimation 3200 is close to the acti			1 6			2	4
6. (a) Estimate:	308			-		2	-
= <u>9000</u>	1848		0				2
$308 \times 26 = 8008$	6160	The quotient	t is <u>1178</u> .	The q	uotient	is <u>264</u>	48
The estimation 0000 is close to the art	8008	The remaine	der is $\underline{0}$ .	The re	emaind	er is _	2
The estimation 9000 is close to the acti	iai answer 8008.	(c) 1 1	19	(d)	6	5 5	
(b) Estimate:	571	6) 6 7	17	4 2	2 6 2	2 1	•
$571 \times 39 \approx 600 \times 40$ × 40 × 40	5 1 3 9	6		2	2 4		2
571 × 39 = <u>22 269</u> 1	7 1 3 0	6			2 2	2	
The estimation 24 000 is close to the a	2 2 6 9	1	1 –	13	2 0	,	5
22 269.	lour unswei		5 7		2	o o	
(c) Ectimate	7 4 8		5 4			1	
$748 \times 42 \approx 700 \times 40$ ×	4 2		3				
$= \frac{28\ 000}{31\ 416}$	1 4 9 6	The quotient	t is <u>1119</u> .	The q	uotient	is <u>65</u>	5
Yes. <u>2</u>	1 4 1 6	The remaine	der is $\underline{3}$ .	The re	emaind	er is _	<u> </u>
The estimation 28 000 is close to the a	tual answer	(e) 3	2 0	(f)	6 0	) 1	
31 416.		8) 2 5	6 0	7 4	2 1	1	
7. (a) 118 (b) 2	0 9	2 4	4		2		e.
× 28 ×	3 7	i	6		,	7	
944 14	63		0	_		4	
<u> </u>	3 3		0				
		94548.01 (2783 //	0				
(c) $320$ (d) $4$ × 51 ×	7 2	The quotient	t is <u>320</u>	The q	uotient	is <u>60</u>	4
320 8	10			ine re	enande		
$\frac{16000}{16220} \qquad \frac{283}{201}$	5 0						
10.320 291							

2. (a) 
$$\begin{array}{c} 2 & 4 & 5 \\ 5 \end{array} \begin{array}{c} 1 & 2 & 2 & 5 \\ \hline 1 & 2 & 2 & 5 \\ \hline 1 & 0 \\ \hline 2 & 2 \\ \hline 2 & 0 \\ \hline \hline 2 & 5 \\ \hline 2 & 5 \\ \hline 0 \end{array}$$
 (b)  $\begin{array}{c} 7 & 1 \\ 3 & 8 & 2 \\ \hline 3 & 4 & 3 & 8 \\ \hline 3 & 4 & 3 & 8 \\ \hline 3 & 4 & 3 & 8 \\ \hline 3 & 4 & 3 & 8 \\ \hline 3 & 4 & 3 & 8 \\ \hline 3 & 4 & 3 & 8 \\ \hline 3 & 4 & 3 & 8 \\ \hline 3 & 4 & 3 & 8 \\ \hline 3 & 4 & 3 & 8 \\ \hline 1 & 0 \\ \hline 3 & 4 & 3 & 8 \\ \hline 3 & 4 & 3 & 8 \\ \hline 3 & 4 & 3 & 8 \\ \hline 1 & 0 \\ \hline 2 & 5 \\ \hline 2 & 5 \\ \hline 0 \\ \hline \end{array}$ 

The other number is 245

#### Part 4: Word Problems

1.  $35 \times 45 = 1575$ There is a total of 1575 chairs in the auditorium.

1575 - 48 = 1527There are 1527 pupils altogether.

2. 152 x \$26 = \$3952 Mrs Gomez spent \$3952 on 152 items.

\$3952 + \$1175 = \$5127 Mrs Gomez spent \$5127 altogether.

3. 7520 ÷ 8 = 940 A machine can make 940 toys in 1 hour.

 $2 \times 940 = 1880$ 2 such machines can make 1880 toys in 1 hour.

4.  $12 \times 264 = 3168$ There is a total of 3168 chocolate bars in 12 boxes.

3168 ÷ 7 = 452 R 4 (a) Mrs Lim packs 452 bags of chocolate bars. (b) 4 chocolate bars are not packed.

5. Before Kim Sharon 1984



6730 – 1984 = 4746 Kim and Sharon had 4746 beads after Sharon used 1984 beads to make necklaces.

6730

4746 ÷ 2 = 2373 Kim had 2373 beads. 6.  $22 \times 48 = 1056$ The grocer had 1056 oranges altogether.

1056 – 332 = 724 The grocer had 724 oranges left after he sold 332 oranges.

 $724 \div 4 = 181$ There were 181 packets of oranges.

 18 × 12 = 216 Mrs Ravi bought 216 lollipops.

216 - 7 = 209There were 209 lollipops left after Mrs Ravi's sons and daughters ate 7 lollipops.

 $209 \div 9 = 23 \text{ R} 2$ The greatest number of lollipops on each table is 23.

8. \$594 - \$486 = \$108

One adult ticket and one child ticket cost \$108.



3 units = 3 × \$27 = \$81

One adult ticket cost \$81.





Kenneth had 339 stamps after he gave 26 stamps to Derrick.

3 units = 339 1 unit = 339 ÷ 3 = 113

Derrick had 87 stamps at first.





Answer: 239

100

The missing digit is 7.

2. Use 'Working backwards'. 840 ÷ 2 = 420 420 × 5 = 2100 2100 + 9 = 2109

Kelvin is thinking of the number 2109.

#### **Problem Solving**



Vince had \$4800 at first.

Number of \$10 notes	Amount (\$)	Number of \$5 notes	Amount	Total Amount (\$)	Check
10	100	10	50	150	×
11	110	9	45	155	×
12	120	8	40	160	×
13	130	7	35	165	1

Weihan used 13 \$10 notes and 7 \$5 notes.

#### Challenge

1.  $(13 \times 1)$  13 × 77 = 1001 (13 × 2) 26 × 77 = 2002 (13 × 3) 39 × 77 = 3003 (13 × 7) 91 × 77 = 7007

The missing number is 91.

F	Row		R		Nu	umbe	ers		1	
	Α	1,	6,	7,	12,	13,	18,	19,		
	В	2,	5,	8,	11,	14,	17,	20,		
	С	3,	4,	9,	10,	15,	16,	21,		

Groups of 6:  $56 \div 6 = 9 \text{ R2}$ So, the number 56 will be in Row B.

For digit questions, try to form a pattern from each type of digits.

i.e.  $1-9 \rightarrow 9$  digits  $10-19 \rightarrow 10 \times 2 = 20$  digits  $20-29 \rightarrow 10 \times 2 = 20$  digits  $30-59 \rightarrow 30 \times 2 = 60$  digits 109 digits

Since there are 123 digits, subtract the difference to find the extra number of digits:

123 – 109 = 14 14 ÷ 2 = 7

59 + 7 = 66

There are 66 pages in the book.



#### Part 1 : Mixed Numbers













#### Part 3: Conversion of Fractions







(b)  $\frac{20}{3}$ 

(e)  $\frac{35}{9}$ 

3. (a)  $\frac{13}{4}$ (d)  $\frac{32}{7}$ 

(c)  $\frac{28}{5}$ 



 $= 3\frac{1}{2}$ 



5. (a) 
$$4\frac{2}{5}$$
 (b)  $3\frac{1}{8}$   
(c)  $2\frac{2}{6} = 2\frac{1}{3}$  (d)  $6\frac{2}{4} = 6\frac{1}{2}$ 

#### Part 4: Comparing and Ordering Fractions

1. (a) 
$$\frac{2}{3} = \frac{8}{12}$$
  
 $\frac{3}{4} = \frac{9}{12}$   
 $\frac{3}{4} = \frac{9}{12}$   
(b)  $1\frac{2}{5} = \frac{7}{5} = \frac{14}{10}$   
 $1\frac{2}{5}$  is the greater fraction.  
2. (a)  $\frac{9}{2} = 4\frac{1}{2}$   
 $2\frac{1}{3}$  is the smaller fraction.  
(b)  $3\frac{4}{5} = 3\frac{12}{15}$   
 $3\frac{1}{3} = 3\frac{5}{15}$   
 $3\frac{1}{3} = 3\frac{5}{15}$   
 $3\frac{1}{3}$  is the smaller fraction.  
(c)  $1\frac{3}{4} = \frac{7}{4} = \frac{21}{12}$   
 $\frac{17}{12}$  is the smaller fraction.  
(d)  $\frac{23}{4} = 5\frac{3}{4}$   
 $\frac{19}{5} = 3\frac{4}{5}$   
 $\frac{19}{5}$  is the smaller fraction.  
3. (a)  $\frac{1}{4} = \frac{3}{12}$   
 $\frac{5}{6} = \frac{10}{12}$   
Answer:  $\frac{5}{6}$ ,  $\frac{5}{12}$ ,  $\frac{1}{4}$   
(b)  $\frac{11}{4} = 2\frac{3}{4}$   
 $1\frac{1}{2} = 1\frac{4}{8}$   
Answer:  $\frac{11}{4}$ , 2,  $1\frac{5}{8}$ ,  $1\frac{1}{2}$   
4. (a)  $1\frac{1}{2} = 1\frac{3}{6}$   
 $\frac{4}{3} = 1\frac{1}{3} = 1\frac{2}{6}$   
Answer:  $\frac{1}{4}$ ,  $\frac{4}{3}$ ,  $1\frac{1}{2}$ 

(b) 
$$1\frac{1}{3} = 1\frac{4}{12}$$
  
 $\frac{12}{3} = 4$   
 $\frac{1}{6} = \frac{2}{12}$   
Answer:  $\frac{1}{6}, \frac{11}{12}, 1\frac{1}{3}, \frac{12}{3}$ 

#### Part 5: Adding and Subtracting Fractions

1. (a) $\frac{1}{4} + \frac{2}{3} = \frac{3}{12} + \frac{8}{12}$	(b) $\frac{2}{5} + \frac{1}{2} = \frac{4}{10} + \frac{5}{10}$
= 11	$=\frac{9}{10}$
(c) $\frac{1}{3} + \frac{3}{7} = \frac{7}{21} + \frac{9}{21}$ = $\frac{16}{21}$	(d) $\frac{2}{7} + \frac{3}{8} = \frac{16}{56} + \frac{21}{56}$ $= \frac{37}{56}$
2. (a) $\frac{2}{5} - \frac{1}{3} = \frac{6}{15} - \frac{5}{15}$ $= \frac{1}{15}$	(b) $\frac{1}{2} - \frac{2}{7} = \frac{7}{14} - \frac{4}{14}$ = $\frac{3}{14}$
(c) $\frac{4}{9} - \frac{1}{4} = \frac{16}{36} - \frac{9}{36}$ = $\frac{7}{36}$	(d) $\frac{9}{10} - \frac{3}{4} = \frac{18}{20} - \frac{15}{20}$ = $\frac{3}{20}$
3. (a) $\frac{4}{5} + \frac{3}{10} = \frac{8}{10} + \frac{3}{10}$ = $\frac{11}{10}$ = $1\frac{1}{10}$	(b) $\frac{3}{8} + \frac{5}{6} = \frac{9}{24} + \frac{20}{24}$ = $\frac{29}{24}$ = $1\frac{5}{24}$
4. (a) $\frac{6}{7} - \frac{2}{5} = \frac{30}{35} - \frac{14}{35}$ = $\frac{16}{35}$	(b) $3 - \frac{5}{9} = 2\frac{9}{9} - \frac{5}{9}$ = $2\frac{4}{9}$
5. (a) $\frac{1}{5} + \frac{3}{10} + \frac{4}{10} = \frac{9}{10}$	(b) $\frac{2}{7} + \frac{5}{7} = 1$
(c) $\frac{7}{10} - \frac{4}{10} = \frac{3}{10}$	(d) $4 - \frac{3}{8} = 3\frac{5}{8}$
6. $\frac{1}{3} + \frac{4}{9} = \frac{3}{9} + \frac{4}{9}$ = $\frac{7}{9}$	
7. $1 - \frac{2}{3} = \frac{1}{3}$	
8. (a) $\frac{12}{7} - \frac{2}{3} = 1\frac{5}{7} - \frac{2}{3}$	(b) $\frac{14}{5} - \frac{5}{6} = 2\frac{4}{5} - \frac{5}{6}$
$=1\frac{13}{21}-\frac{14}{21}$ = 1 $\frac{1}{21}$	$=2\frac{24}{30}-\frac{23}{30}$ $=1\frac{54}{5}-\frac{25}{5}$
- '21	$= \frac{1}{30} = \frac{30}{30}$



#### Part 6: Word Problems

1. 
$$\frac{1}{4} + \frac{5}{12} = \frac{3}{12} + \frac{5}{12}$$
  
=  $\frac{8}{12}$   
=  $\frac{2}{3}$   
Mrs Tan needs  $\frac{2}{3}$  m of ribbon in all.  
2.  $\frac{4}{5} - \frac{3}{10} = \frac{8}{10} - \frac{3}{10}$   
=  $\frac{5}{10}$ 

Cai Ling took  $\frac{1}{2}$  h longer than Rama to complete her homework.

3. (a)  $\frac{5}{8} + \frac{1}{5} = \frac{25}{40} + \frac{8}{40}$ =  $\frac{33}{40}$ 

 $=\frac{1}{2}$ 

The total mass of beans in Package B is  $\frac{33}{40}$  kg.

(b) 
$$\frac{5}{8} + \frac{33}{40} = \frac{25}{40} + \frac{33}{40}$$
  
=  $\frac{58}{40}$   
=  $1\frac{18}{40}$   
=  $1\frac{9}{20}$ 

The total mass of beans in packages A and B is  $1\frac{9}{20}$  kg.

4. (a) 
$$\frac{2}{5} + \frac{1}{6} = \frac{12}{30} + \frac{5}{30}$$
  
 $= \frac{17}{30}$   
John ate  $\frac{17}{30}$  of a pie.  
(b)  $\frac{2}{5} + \frac{17}{30} = \frac{12}{30} + \frac{17}{30}$   
 $= \frac{29}{30}$   
Both of them ate  $\frac{29}{30}$  of a pie.  
5.  $\frac{1}{2} + \frac{4}{12} = \frac{6}{12} + \frac{4}{12}$   
 $= \frac{10}{12}$   
 $= \frac{5}{6}$   
 $1 - \frac{5}{6} = \frac{1}{6}$   
 $\frac{1}{6}$  of the spectators were women.  
6.  $\frac{1}{4} + \frac{1}{8} = \frac{2}{8} + \frac{1}{8}$   
 $= \frac{3}{8}$   
 $1 - \frac{3}{8} = \frac{5}{8}$ 

 $\frac{5}{8}$  of the cookies were left.

7. 
$$\frac{3}{8} + \frac{1}{4} = \frac{3}{8} + \frac{2}{8}$$
  
 $= \frac{5}{8}$   
 $\frac{5}{8} + 2 = 2\frac{5}{8}$   
There is  $2\frac{5}{8} \ell$  of rose syrup drink.  
8.  $\frac{1}{2} + \frac{2}{3} = \frac{3}{6} + \frac{4}{6}$   
 $= \frac{7}{6}$   
 $\frac{7}{6} + \frac{3}{4} = \frac{14}{12} + \frac{9}{12}$   
 $= \frac{23}{12}$   
 $= 1\frac{11}{12}$   
Ann bought  $1\frac{11}{12}$  kg of flour.  
9.  $\frac{10}{12} - \frac{1}{3} = \frac{10}{12} - \frac{4}{12}$   
 $= \frac{6}{12}$   
 $\frac{6}{12} - \frac{1}{3} = \frac{6}{12} - \frac{4}{12}$   
 $= \frac{2}{12}$   
 $= \frac{1}{6}$ 

The difference between the two fractions is  $\frac{1}{6}$ .

$$10. \ \frac{5}{6} - \frac{3}{8} = \frac{20}{24} - \frac{9}{24}$$
$$= \frac{11}{24}$$
$$\frac{5}{6} + \frac{11}{24} = \frac{20}{24} + \frac{11}{24}$$
$$= \frac{31}{24}$$
$$= 1\frac{7}{24}$$

The sum of the two fractions is  $1\frac{7}{24}$ .

Part 7: Fraction of a Set







3. (a)  $\frac{2}{5}$  of 55



$$\begin{array}{r} \text{Solute} = \underline{-35} \\ 1 \text{ unit} = \underline{55} \div \underline{5} \\ = \underline{-11} \\ 2 \text{ units} = \underline{2} \times \underline{-11} \\ = \underline{22} \end{array}$$

So, 
$$\frac{2}{5}$$
 of 55 = 22

(b)  $\frac{3}{7}$  of 49





Part 8: Word Problems (Fraction of a Set)

- 1.  $\frac{3}{12} = \frac{1}{4}$ Meiyan ate  $\frac{1}{4}$  of the cupcakes.
- 2. Number of marbles in 1 group = 3 Number of marbles in 5 groups =  $5 \times 3$ = 15
- There are 15 marbles in the set.
- 3. (a)  $\frac{15}{40} = \frac{3}{8}$  $\frac{3}{8}$  of the pupils are girls. (b)  $1 - \frac{3}{8} = \frac{5}{8}$ 
  - $\frac{5}{8}$  of the pupils are boys.
- 4. (a) 150 red yellow 5 units = 150 1 unit = 150  $\div$  5 = 30
  - = 30 There are 30 red beads.
  - (b) 150 30 = 120 There are 120 yellow beads.
- 5. (a)  $\frac{64}{564}$ storybooks left 8 units = \$64 1 unit = \$64 ÷ 8 = \$8 5 units = 5 × \$8 = \$40 She spent \$40.
  - (b) \$64 \$40 = \$24 She had \$24 left.



118
2  units = 8 1 unit = 8 ÷ 2
= 20
Sue had 20 storybooks at first.
12. $1 - \frac{4}{9} = \frac{5}{9}$
\$25
?
$1 \text{ unit} = \$25 \div 5$
= \$5 9 units = 9 x \$5
= \$45
Mena had \$45 at first.
13. $\frac{1}{12} + \frac{1}{6} = \frac{1}{12} + \frac{2}{12}$
$=\frac{3}{12}$
$\frac{3}{3} + \frac{1}{3} = \frac{3}{3} + \frac{3}{3}$
12 4 12 12
$=\frac{1}{12}$
$=\frac{1}{2}$
2 units = 60
$1 \text{ unit} = 60 \div 2$ = 30
Mary took 30 minutes.
14.
green blue
7 - 2 = 5 units
5 units = 45 1 unit = 45 ÷ 5
= 9
9 Units = 9 × 9 = 81
There are 81 marbles in the container.
Speed Up 1
Section A
1. (1) 2. (3) 3. (2) 4. (1) 5. (3) 6. (2)
Section B
7. $\frac{46}{9}$
8. 8
9. 7 <del>3</del>
8
10. $1\frac{2}{3} = 1\frac{4}{6}$
Answer: $\frac{1}{2}$ , $1\frac{1}{6}$ , $1\frac{2}{3}$

11. 
$$\frac{6}{5} = 1\frac{1}{5} = 1\frac{6}{30}$$
  
 $\frac{7}{6} = 1\frac{1}{6} = 1\frac{5}{30}$   
 $1\frac{1}{3} = 1\frac{10}{30}$   
Answer:  $1\frac{1}{3}, \frac{6}{5}, \frac{7}{6}$   
12.  $2 - \frac{2}{3} = 1\frac{3}{3} - \frac{2}{3}$   
 $= 1\frac{1}{3}$   
13.  $\frac{1}{6} + \frac{5}{12} = \frac{2}{12} + \frac{5}{12}$   
 $= \frac{7}{12}$   
 $\frac{7}{12} - \frac{1}{3} = \frac{7}{12} - \frac{4}{12}$   
 $= \frac{3}{12}$   
 $= \frac{1}{4}$   
14.  $1 - \frac{3}{4} = \frac{1}{4}$   
 $\frac{1}{4} + \frac{1}{2} = \frac{1}{4} + \frac{2}{4}$   
 $= \frac{3}{4}$   
15.  $6\frac{1}{2} = 6\frac{2}{4}$   
 $= \frac{26}{4}$   
Answer: 26  
16.  $\frac{520}{2}$   
 $\frac{2}{7}$   
 $5 \text{ units = $20 \text{ fm}}$   
 $1 \text{ unit = $20 \text{ fm}} = 520$   
 $1 \text{ unit = $20 \text{ fm}} = 54$   
Tom spent \$4.  
17.  $\frac{18}{2}$ 

### Speed Up 2

Word Problems 1.  $5 - \frac{5}{9} = 4\frac{4}{9}$ The mass of the sand is  $4\frac{4}{9}$  kg.

2. 400 ml  
i unit = 400 ml  
i unit = 10 x 400  
= 4000 ml  
= 4 
$$\ell$$
  
There was 4  $\ell$  of petrol at first.  
3.  $1 - \frac{1}{3} = \frac{2}{3}$   
 $\frac{2}{3}$  of the passengers were children.  
 $\frac{14}{\frac{7}{2}}$   
2 units = 14  
1 unit = 14 ÷ 2  
= 7  
There were 7 adults.  
4.  $\frac{1}{7} + \frac{2}{7} = \frac{3}{7}$   
Susan and Limei ate  $\frac{3}{7}$  of the pizza.  
 $\frac{7}{7} - \frac{3}{7} = \frac{4}{7}$   
 $\frac{4}{7}$  of the pizza was left.  
5.  $\frac{1}{4} + \frac{3}{8} = \frac{2}{8} + \frac{3}{8}$   
 $= \frac{5}{8}$   
Mrs Wee bought  $\frac{5}{8}$  kg of fish.  
 $\frac{1}{4} + \frac{5}{8} = \frac{2}{8} + \frac{5}{8}$   
 $= \frac{7}{8}$   
The total mass of the fish and vegetables is  $\frac{7}{8}$  kg.  
6.  $\frac{3}{5} + \frac{1}{3} = \frac{9}{15} + \frac{5}{15}$   
 $= \frac{14}{15}$   
 $\frac{14}{15}$  of the pole is painted green and blue.  
 $1 - \frac{14}{15} = \frac{1}{15}$   
 $\frac{1}{15}$  of the pole is painted white.  
7.  $\frac{18}{\frac{1}{15}}$   
There are 6 stalks of pink and yellow roses altogether.  
 $6 - 4 = 2$   
2 stalks of roses are yellow.



8. \$26 spent Susan 1 unit = \$26 2 units = 2 × \$26 = \$52 Susan had \$52 at first. \$26 spent

Mary 1 unit = \$26  $4 \text{ units} = 4 \times \$26$ = \$104 Mary had \$104 at first.

#### Let's Reason

- 1. Yes. Both require the multiplication of  $\frac{3}{8}$  and 24.  $\frac{3}{8}$  of 24 = 9 24 of  $\frac{3}{8} = 9$
- 2.  $2\frac{1}{2}$  persons  $2\frac{1}{2}$  oranges  $2\frac{1}{2}$  flowers

 $2\frac{1}{2}$  oranges and  $2\frac{1}{2}$  kg are both meaningful as oranges can be cut into half and mass can also be measured in halves. However,  $2\frac{1}{2}$  persons and  $2\frac{1}{2}$  flowers are not meaningful as humans and flowers cannot exist in halves.

 $2\frac{1}{2}$  kg

#### **Problem Solving**

\$75 1. 5 units = \$75 1 unit = \$75 ÷ 5 = \$15 3 units = 3 × \$15 = \$45 The skirt costs \$45.

2.  $1 - \frac{3}{7} = \frac{4}{7}$ 

 $\frac{4}{7}$  of the money was not used.

 $\frac{4}{7} - \frac{3}{7} = \frac{1}{7}$ 

The difference between the money spent and not used was  $\frac{1}{7}$ .

1 unit = \$12  $3 \text{ units} = 3 \times \$12$ = \$36 Mary spent \$36 on the bag.

#### Challenge

1.  $\frac{1}{4} + \frac{3}{8} = \frac{2}{8} + \frac{3}{8}$ Jamie gave  $\frac{5}{8}$  of the chocolates to her brother and sister.

 $1 - \frac{5}{8} = \frac{3}{8}$ Jamie had  $\frac{3}{8}$  of the chocolates left for herself.

3 units = 264 1 unit = 264 ÷ 3 = 88

Jamie gave 88 more chocolates to her sister than her brother.

#### 2. \$48

2 units = \$48 1 unit = \$48 ÷ 2 = \$24 3 units = 3 × \$24

 $572 \div 2 = 536$ Each watch cost \$36.

= \$72



#### Part 1: Naming Angles

- 1. (a)  $\angle b = \angle ABC = \angle CBA$ (b)  $\angle y = \angle XYZ = \angle ZYX$ (c)  $\angle q = \angle PQR = \angle RQP$ (d)  $\angle p = \angle ABC = \angle CBA$
- 2. (a)  $\angle a = \angle BAC = \angle CAB$ (b)  $\angle f = \angle WZY = \angle YZW$ (c)  $\angle m = \angle PQR = \angle RQP$ (d)  $\angle x = \angle CHG = \angle GHC$



#### Part 2: Measuring Angles in Degrees

1.	(a) $\angle a = 40^{\circ}$	(b) ∠b = 90°
	(c) $\angle c = 125^{\circ}$	(d) $\angle d = 26^{\circ}$
2.	(a) $\angle a = 70^{\circ}$	(b) ∠b = 90°
	(c) $\angle c = 38^{\circ}$	(d) ∠d = 130

- (e) ∠e = 45° (f)  $\angle f = 100^{\circ}$
- 3. For estimate, accept any answer that is close to the actual answer. (b)  $\angle h = 125^{\circ}$ (a)  $\angle g = 50^{\circ}$ (d)  $\angle j = 132^{\circ}$

(c) 
$$\angle i = 90^{\circ}$$
  
(e)  $\angle p = 60^{\circ}$ ;  $\angle q = 126^{\circ}$ ;  $\angle r = 60^{\circ}$ 

4. (a)  $\angle LMQ = 167^{\circ}$ ;  $\angle LMN = 180^{\circ}$ ;  $\angle LMP = 75^{\circ}$ ;  $\angle NMP = 105^{\circ}$ (b)  $\angle COX = 96^\circ$ ;  $\angle COW = 84^\circ$ ;  $\angle WOX = 180^\circ$ ;  $\angle BOX = 172^\circ$ ; ∠BOW = 8°





### Part 4: Quarter, Half, Three-Quarter and Complete Turns

- 1. (a)  $\frac{3}{4}$  turn <u>anti-clockwise</u>  $\frac{3}{4}$  turn = <u>270</u>° (b)  $\frac{1}{2}$  turn <u>anti-clockwise</u>  $\frac{1}{2}$  turn = <u>180</u>° (c)  $\frac{1}{2}$  turn <u>clockwise</u>  $\frac{1}{2}$  turn <u>clockwise</u>  $\frac{1}{2}$  turn <u>clockwise</u>  $\frac{3}{4}$  turn <u>clockwise</u>  $\frac{3}{4}$  turn <u>270</u>°
  - (e) 1 complete turn <u>anti-clockwise</u> 1 complete turn = <u>360</u> °

2. (a) It is a  $\frac{1}{2}$  turn or 180° turn in the clockwise direction.

(b) It is a  $\frac{3}{4}$  turn or 270° turn in the anti-clockwise direction.

- (c) It is a  $\frac{1}{4}$  turn or 90° turn in the anti-clockwise direction.
- (d) It is a complete turn or 360° turn in the clockwise direction.

#### Part 5: 8-point Compass



#### Speed Up







#### 6. NE or north-east



8. (a)



(b) Nina (c) May

9. (a) He was facing north-east at first. (b) He must turn 270° clockwise before he faces the south-west direction.

#### Let's Reason

Then, turn south and walk 2 units to Point D. Then, walk further south by 2 units and then turn east and walk 1 unit to Point E. Then, walk further east by 2 units and then turn north and walk 2 units to Point F. Finally, walk further north by 4 units to Point G.

#### **Problem Solving**

#### G

#### Challenge







Squares And Rectangles

Part 1: Properties of Squares and Rectangles





- 2. AB = <u>BC</u> = <u>CD</u> = <u>DA</u> = 5 cm
  - AD 1 DC DC 1 CB CB 1 BA BA 1 AD AB // DC

AD // \_\_\_\_BC

3.  $AB = \underline{DC} = 5 \text{ cm}$ BC =  $\underline{AD} = 10 \text{ cm}$ 

AD L	DC
DCI	CB
CB L	BA
BA 1	AD
AB // _	DC
AD // .	BC
90	





#### Part 2: Drawing Squares and Rectangles

1. (a) Square ABCD



(b) Square PQRS



(c) Square WXYZ



(d) Square EFGH



### 2. (a) Rectangle KLMN



### (b) Rectangle STUV



### (c) Rectangle EFGH



(d) Rectangle UVWX






## Part 3: Finding Unknown Sides and Angles

1.	(a) A B	B = C =	4 4	cm cm	
	(b) J	K = M = _	6 6	. cm . cm	
2.	(a) El G	H =	5 10	. cm . cm	
	(b) W W	/Z = _ /X = _	3 8	_ cm _ cm	
3.	(a) ∠	OPN	= 90° = 45°	– 45°	
	(b) ∠	PQS	= 90°	– 28°	
	(c)	۷×	= 62° = 90° = 17°	– 49°	– 24°

(d) 
$$\angle a = 90^{\circ} - 36^{\circ} - 25^{\circ}$$
  
  $= 29^{\circ}$   
(e)  $\angle JEK = 90^{\circ} - 42^{\circ} - 30^{\circ}$   
  $= 18^{\circ}$   
(f)  $\angle JMN = 90^{\circ} - 32^{\circ} - 12^{\circ}$   
  $= 46^{\circ}$   
(g)  $\angle w = 90^{\circ} - 39^{\circ} - 18^{\circ}$   
  $= 33^{\circ}$   
(h)  $\angle x + \angle y = 90^{\circ} - 40^{\circ}$   
  $= 50^{\circ}$   
  $\angle x = 50^{\circ} \div 2$   
  $= 25^{\circ}$   
4. CD = 9 cm - 5 cm  
  $= 4 \text{ cm}$   
AF = 3 cm + 5 cm  
  $= 20 \text{ cm}$   
AG = 22 cm - 5 cm  
  $= 17 \text{ cm}$   
6. DH = 7 cm - 3 cm  
  $= 4 \text{ cm}$   
CD = 8 cm - 4 cm  
  $= 4 \text{ cm}$   
7. BC = 10 cm - 4 cm - 2 cm  
  $= 4 \text{ cm}$   
5section A  
1. DE = AE - BC  
  $= 16 \text{ cm} - 12 \text{ cm}$   
  $= 4 \text{ cm}$   
DG = DE = 4 cm  
AB = DG + GC  
  $= 4 \text{ cm} + 10 \text{ cm}$   
  $= 14 \text{ cm}$   
2.

3.  $\angle p = 90^{\circ} - 50^{\circ}$ = 40° 4.  $\angle e = 90^{\circ} - 29^{\circ} - 12^{\circ}$ = 49°

6 cm

DC

3 cm

B



5. EF = 3 cm + 4 cm + 3 cm = 10 cm

6. RP = MN - OR = 15 cm - 6 cm = 9 cm MT = MO + OT = 7 cm + 6 cm

- = 7 cm + 6 cm
- = 13 cm

Section B

 7. Perimeter of figure
= 18 cm + 12 cm + 10 cm + 10 cm + 12 cm + 18 cm + 4 cm + 4 cm
= 88 cm

Perimeter of figure
5 cm + 5 cm + 5 cm + 3 cm + 5 cm + 3 cm + 5 cm + 5 cm + 3 cm + 5 cm + 3 cm
52 cm

## Let's Reason

1. AD = 3 × 7 cm = 21 cm BC = 2 × 5 cm = 10 cm AB + CD = 21 cm - 10 cm = 11 cm

## **Problem Solving**

From the figure, you can see that: length of rectangle =  $3 \times$  breadth of rectangle

 $9 \text{ m} \div 3 = 3 \text{ m}$ 

The length of AB is 3 m.

## Challenge

1.  $\angle q = 45^{\circ} - 26^{\circ}$  $= 19^{\circ}$  $\angle p = 90^{\circ} - 40^{\circ}$  $= 50^{\circ}$  $\angle p - \angle q = 50^{\circ} - 19^{\circ}$  $= 31^{\circ}$ 

2. FG = 3 cm + 8 cm = 11 cm

Mid-Year Review

Se	ction A								
1.	(4)	2.	(3)	3.	(3)	4.	(2)	5.	(4)
6.	(2)	7.	(4)	8.	(2)	9.	(3)	10.	(1)
11.	(1)	12.	(3)	13.	(4)	14.	(1)	15.	(4)

Section B 16. 76 310

17. 820

3 2 7 19. 4 5 × 1 6 3 5 1 3 0 8 0 1 4 7 1 5 20.12 21.  $\frac{39}{7}$ 22.  $\frac{3}{4} = \frac{9}{12}$  $\frac{13}{6} = 2\frac{1}{6}$  $2\frac{1}{3} = 2\frac{2}{6}$  $2\frac{1}{3}, \frac{13}{6}, \frac{3}{4}, \frac{5}{12}$ 23. 2  $-\frac{2}{12}$  $=1\frac{12}{12}-\frac{2}{12}$  $=1\frac{10}{12}$  $=1\frac{5}{6}$ 24. Total amount of money = \$16 + \$8 + \$36 = \$60 Fraction of money spent on book =  $\frac{16}{60}$  $=\frac{4}{15}$  $25.\frac{3}{5} + \frac{3}{5} = \frac{6}{5}$  $=1\frac{1}{5}$ Answer =  $1\frac{1}{5}$  kg  $26.\frac{1}{4} + \frac{3}{8} = \frac{2}{8} + \frac{3}{8}$  $=\frac{5}{8}$  $\frac{11}{12} - \frac{5}{8} = \frac{22}{24} - \frac{15}{24}$  $=\frac{7}{24}$ Answer =  $\frac{7}{24}\ell$ 27. Market 28. 53° 29. AB // EC, AE // BC, AD // BC, BE // CD; 4 pairs  $30.18 \times 2 = 36$  $\frac{1}{3}$  of 36 = 12

18. 8350





32.  $90^{\circ} - 50^{\circ} - 22^{\circ} = 18^{\circ}$ 

33.	Number of packets	1	2	3	4	5	6	7	8	9	10	11	12	13
	\$6 in each packet	6	12	18	24	30	36	42	48	54	60	66	72	78
	Amount of money	8	14	20	26	32	38	44	50	56	62	68	74	80
	\$8 in each packet	8	16	24	32	40	48	56	64	72	80	-		
	Amount of money	6	14	22	30	38	46	54	62	70	78			X

Siew Mei has \$62.

- 34. ∠AOE = 145° ∠COF = 128° 145° - 128° = 17° ∠AOE is bigger than ∠COF by 17°.
- 35. BY = 18 cm 6 cm = 12 cm WB = BY = 12 cm AW = 35 cm - 12 cm = 23 cm
- Section C
- 36. 300 68 = 232 232 ÷ 2 = 116 There are 116 paper clips in Box A.
- $37.1 \frac{3}{8} = \frac{5}{8}$

240 won prize did not win prize 8 units = 240 1 unit = 240 ÷ 8 = 30 5 units = 5 × 30 = 150 150 pupils did not win any prizes. 38. (a) Mass of 4 apples =  $\frac{1}{4} + \frac{1}{4}$ =  $\frac{1}{2}$  kg (b) Mass of basket =  $\frac{7}{8} - \frac{1}{2}$ =  $\frac{7}{8} - \frac{4}{8}$ =  $\frac{3}{8}$  kg





- 41. 12 × 185 = 2220 2220 + 6 = 2226 2226 ÷ 6 = 371 There were 371 sweets in each box at first.
- 42. (a) 4 + 4 + 1 + 1 = 10
  - (b) 44 + 44 + 1 + 1 = 90
  - (c) 36 2 = 34
  - 34 ÷ 2 = 17 There will be 17 shaded squares each on the top and bottom rows of the pattern. There will be 36 shaded squares in Pattern 17.







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