Targeting Mathematics

Workbook 6A

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Name: _____

Class: _____

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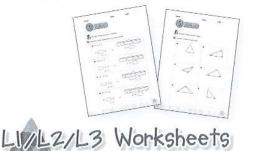
Preface

Targeting Mathematics is a series of textbooks and workbooks written based on the latest Primary Mathematics Syllabus provided by the Ministry of Education, Singapore. This series supports the Concrete-Pictorial-Abstract approach and uses ICT tools to enhance conceptual understanding. It incorporates the use of manipulatives, videos and online math activities as teaching aids in teaching mathematics.

The exercises in the workbooks are designed to support learning in a progressive manner. Through a combination of drilling, challenging and problem solving exercises, pupils can consolidate their mathematical concepts and build confidence in learning mathematics.
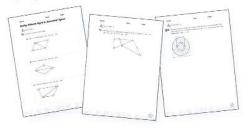
Features

Recall Worksheets

Allows pupils to revise what they have learnt before.

L1/L2/L3 Worksheets

L1 worksheets assess pupils' understanding of basic concepts and help them acquire the necessary process skills.

L2 worksheets assess pupils' understanding of moderately difficult concepts and help them acquire higher-order thinking skills.

L3 worksheets assess pupils' understanding of concepts at a deeper level and encourage creative and critical thinking to solve non-routine, challenging mathematics problems.

Review/Mid-Year Revision

Allows pupils to revise and consolidate mathematical concepts learnt.

Pupils can use their calculators to work out answers.

Performance Task

Serves as a form of alternative assessment for pupils to demonstrate their understanding of mathematical concepts and skill through hands-on approaches.

Math Journal

Allows pupils to reflect on their learning.

Problem Solving

Activities are designed to encourage pupils to adopt a 4-stage structured process of thinking and solving problems creatively.

CONTENTS

1 Algebra

Recall (Finding unknowns in equations)

1 Write the number represented by ★ in each equation.

(a) $5 + ★ = 18$

    ★ =

18	
5	★

(b) $★ + 9 = 20$

    ★ =

20	
★	9

(c) $★ - 10 = 8$

    ★ =

★	
10	8

(d) $17 - ★ = 12$

    ★ =

17	
★	12

2 Write the number represented by ♥ in each equation.

(a)

| $3 \times ♥ = 12$ | $♥ \times 3 = 12$ | $12 \div ♥ = 3$ | $12 \div 3 = ♥$ |

The value of ♥ is ( ).

(b)

| $♥ \times 6 = 54$ | $54 \div 6 = ♥$ | $54 \div ♥ = 6$ | $6 \times ♥ = 54$ |

The value of ♥ is ( ).

(c)

| $72 \div 9 = ♥$ | $9 \times ♥ = 72$ | $♥ \times 9 = 72$ | $72 \div ♥ = 9$ |

The value of ♥ is ( ).

3 Write the missing value in each equation.

(a) $12 + (\quad) = 16$

(b) $(\quad) - 14 = 6$

(c) $(\quad) \times 10 = 80$

(d) $4 \times (\quad) = 32$

(e) $(\quad) \div 7 = 5$

(f) $42 \div (\quad) = 7$

2

Algebraic Expressions

△L1 Worksheet 1

1   There are *k* marbles in a box at first. Some marbles are added to the original number of marbles in the box.

Write the algebraic expressions in the table to show the number of marbles.

	Number of marbles in the box
Number of marbles at first	
Add 1 more marble	
Add 4 more marbles	
Add 10 more marbles	

2   A container has *w* buttons at first. Some buttons are removed from the original number of buttons in the container.
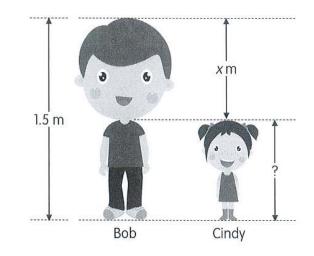
Write the algebraic expressions in the table to show the number of buttons.

	Number of buttons in the container
Number of buttons at first	
Remove 1 button	
Remove 3 buttons	
Remove 9 buttons	

3 Fill in the blank.
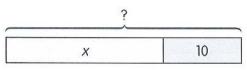
Find Cindy's height in terms of x.

Bob   Cindy

Cindy's height is _____ m.
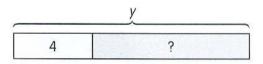
4 Write the algebraic expression for each of the following.

(a) Ravi has x marbles. Peter gives him 10 more marbles. How many marbles does Ravi have now?
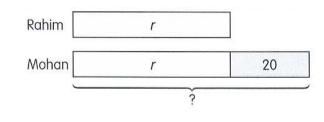
Ravi has _____ marbles now.

(b) There are y ℓ of water in a pail. Mrs Tan uses 4 ℓ of water from the pail. How much water is left in the pail?

_____ ℓ of water is left in the pail.

(c) Rahim is r cm tall. Mohan is 20 cm taller than Rahim. How tall is Mohan?
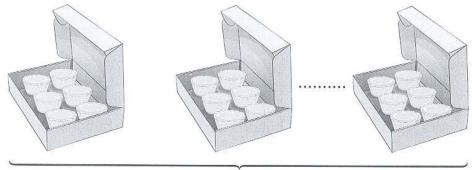
Mohan is _____ cm tall.

5 Fill in the blanks.
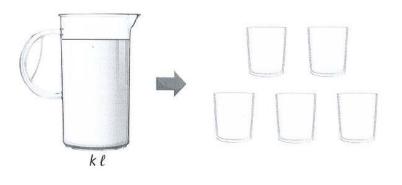
(a) There are q boxes. Each box has 6 tarts. Find the total number of tarts in terms of q.

q boxes

The total number of tarts is _____.

(b) A jug contains k ℓ of water. All the water in the jug is poured equally into 5 identical glasses. Find the volume of water in each glass in terms of k.

k ℓ
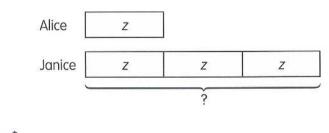
The volume of water in each glass is _____ ℓ.

6 Write the algebraic expression for each of the following.
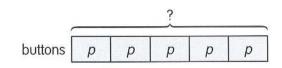
(a) Alice has \$$z$. Janice has 3 times as much money as Alice. How much money does Janice have?

Alice | z |

Janice | z | z | z |
?

Janice has \$ _____ .

(b) Mrs Tay has 5 boxes of buttons. Each box has p buttons. How many buttons does Mrs Tay have altogether?

?
buttons | p | p | p | p | p |

Mrs Tay has _____ buttons altogether.

(c) A sum of \$$q$ is shared equally among 3 boys. How much does each boy receive?
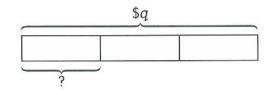
\$$q$
| | | |
?

Each boy receives \$ _____ .

7 Write an algebraic expression for each statement.

Statement	Algebraic expression
(a) Add c to 35	
(b) Subtract p from 18	
(c) Multiply 12 by y	
(d) Divide x by 4	
(e) Sum of 4 and $\dfrac{h}{2}$	
(f) Three times as many as z	

L2 Worksheet 2

Write an algebraic expression for each of the following.

1 Jane bought a table tennis bat for $15. She bought 4 ping pong balls at $q each.

(a) How much did she pay for the 4 ping pong balls?

(b) How much did she pay for the table tennis bat and the ping pong balls altogether?

2 n marbles were shared equally among Peter, Ravi and Faizal. Peter lost 6 of his marbles.

(a) How many marbles did Peter receive?

(b) How many marbles had Peter left in the end?

3 Siti saved $25. Danny saved $r more than Siti.

(a) How much did Danny save?

(b) How much did they save altogether?

4 The mass of a papaya is *z* kg. A watermelon is 2 times as heavy as the papaya. A banana is 3 kg lighter than the watermelon.
  (a) What is the mass of the watermelon?
  (b) What is the mass of the banana?

5 Mary has a red ribbon and a green ribbon. The red ribbon is *y* cm long. The green ribbon is 15 cm shorter than the red ribbon.
  (a) What is the length of the green ribbon?
  (b) What is the total length of the 2 ribbons?

6 A rectangle measures 8 cm by *a* cm. Find the area of the rectangle.

a cm

8 cm

Simplifying Algebraic Expressions

LI Worksheet 3

1 Simplify the following algebraic expressions.

(a) $p + p + p =$	**(b)** $q + q - q =$
(c) $7n + 3n =$	**(d)** $12k - 11k =$
(e) $10r + 12r + 4r =$	**(f)** $20g + 6g - 8g =$
(g) $6h + 5h - 8h =$	**(h)** $4t - t - t + 6t =$
(i) $12y + 3y - 2y - 4y =$	**(j)** $20z - 4z + 5z - 6z =$

2 Simplify the following algebraic expressions.

(a) $3a + 8a + 5 =$	**(b)** $10x + 2x + 11 =$
(c) $y - 7 + 3y =$	**(d)** $2 + j + 7 + 7j =$
(e) $12q - 5q - 6 + 6q =$	**(f)** $4 + 15m + 6 - 4m =$
(g) $15k - 1 + 8k - 20k =$	**(h)** $20p - 15p + 3 - 3p =$
(i) $25s + 10 - 4s + 6s - 8 =$	**(j)** $15 + 36v - 4v - 8v - 10 =$

Evaluating Algebraic Expressions

LI Worksheet 4

1 Find the value of the following algebraic expressions for each given value of *z*.

Algebraic expression	$z = 5$	$z = 7$
$z + 10$		
$z - 5$		
$2z$		
$\dfrac{z}{5}$		

2 Find the value of each expression when $a = 4$.

(a) $4a + 3 =$	(b) $17 + 12a =$
(c) $3a - 2 =$	(d) $10a - 13 =$
(e) $2a \div 5 = \dfrac{2a}{5}$	(f) $\dfrac{7a}{6} =$

3 Find the value of each expression when $b = 10$.

(a) $\dfrac{b+6}{2} =$

(b) $\dfrac{5b+12}{4} =$

(c) $\dfrac{b-2}{6} =$

(d) $\dfrac{3b-10}{5} =$

(e) $\dfrac{6+5b}{8} =$

(f) $\dfrac{50-3b}{7} =$

(g) $\dfrac{7+4+4b}{3} =$

(h) $\dfrac{10+5b-6}{2} =$

4 Simplify each expression. Find its value when $d = 8$.

(a) $2d + 4d + 9 =$	**(b)** $6d + 12 + 3d =$
(c) $10d - 2d + 7 =$	**(d)** $9d - 14 - 5d =$

5 Simplify each expression. Find its value when $g = 12$.

(a) $8g - 25 - 2g$	**(b)** $20 + 10g - 6g$

6   Simplify $7f + 9 - 3f - 6$. Find its value when

(a) $f = 0$,   (b) $f = 1$.

$f = 0$	$f = 1$

7   Simplify $10 + 6q - 3q + 8$. Find its value when

(a) $q = 2$,   (b) $q = 10$.

$q = 2$	$q = 10$

L2 Worksheet 5

Solve the word problems.

1 Mrs Tan had $5m$ kg of sugar. She then bought another 3 packets of sugar. The mass of each packet of sugar was m kg.

    (a) How much sugar did Mrs Tan have altogether in terms of m?

    (b) If $m = 2$, find the mass of sugar Mrs Tan had altogether.

2 Selvi bought q boxes of chocolates at $9 each. She paid with a $50 note.

    (a) What was the change Selvi received in terms of q?

    (b) If $q = 5$, how much change did Selvi receive?

3 At a fruit stall, each papaya cost $k. A watermelon cost $3 more than the papaya. Mr Teng bought 3 such papayas and a watermelon.

(a) Find the total cost of the fruits in terms of k.

(b) If $k = 3$, find the total amount Mr Teng paid for the fruits.

4 John is p years old now. He is 4 years younger than his brother.

(a) How old will his brother be in 5 years' time in terms of p?

(b) If $p = 10$, how old will his brother be in 5 years' time?

5 Mr Smith spent $\$v$ on a tie and twice as much on a shirt. He also bought a belt for $20.

    (a) Express the total amount Mr Smith spent in terms of v.

    (b) If $v = 25$, how much did Mr Smith spend altogether?

6 The lengths of the sides of an isosceles triangle are d cm, d cm and $(d + 2)$ cm.

    (a) Express the perimeter of the triangle in terms of d.

    (b) Find the perimeter of the triangle if $d = 12$.

d cm $\qquad$ d cm

$(d + 2)$ cm

7 A blouse costs a. A skirt costs half as much as a blouse. A purse costs $5 less than a skirt.

(a) What is the cost of the purse in terms of a?

(b) If the blouse costs $40, what is the cost of the purse?

8 Mrs Lim baked 100 cookies. She gave w cookies to her neighbour and divided the remaining cookies equally into 4 boxes.

(a) What was the number of cookies in one box in terms of w?

(b) How many cookies were there in one box if $w = 40$?

Solving Equations

LI Worksheet 6

Solve the word problems.

1. Jane had x. Maggie had $10 more than Jane.

    (a) How much did Maggie have in terms of x?

    (b) If Maggie had $28, how much money did Jane have?

2 Peter had *y* marbles. Ravi had 4 times as many marbles as Peter.

(a) How many marbles did Ravi have in terms of *y*?

(b) If Ravi had 12 marbles, how many marbles did Peter have?

3 Huiling had *g* stamps. Janice had 5*g* stamps. They had 48 stamps altogether. How many stamps did Huiling have?

4 Mrs Tan had 2b eggs. She used b eggs and had 22 eggs left. How many eggs did Mrs Tan have at first?

L2 Worksheet 7

Solve the word problems.

1. There are 273 people at the cinema. There are 85 more children than adults. How many children are there at the cinema?

2 The sum of 3 numbers is 33. The second number is 2 more than the first number. The third number is 2 more than the second number. What is the smallest number?

3 When a number, p, is added to another number 3 times as large, the sum is 60. What are the two numbers?

4 Alex has q stickers. Bernice has 4 more stickers than Alex. Charles has 2 more stickers than Bernice. They have 70 stickers altogether. Find the number of stickers Alex has.

L3 Worksheet 8

Solve the word problems.

1 Tim is x years old now. John is 9 years older than Tim. In 4 years' time, the sum of their ages will be 91. How old is Tim now?

2 Mr Goh is 3 times as old as his son. His son is *w* years old. In 8 years' time, the sum of their ages will be 68. How old will his son be in 8 years' time?

Performance Task

Activity: Use the idea of balance to solve an equation.

The balance in the diagram shows the equation $x + 3 = 8$.

With the aid of the diagrams below, find the value of x in 2 steps.

Step 1

Step 2

(a) In Step 1, we remove _____ units from the left-hand side of the balance.

(b) In Step 2, we remove _____ units from the right-hand side of the balance.

(c) Find the value of x.

$$x + 3 - \underline{\hspace{2cm}} = 8 - \underline{\hspace{2cm}}$$

$$x = \underline{\hspace{2cm}}$$

Problem Solving

Some of the dates for March 2017 are covered as shown below. One of the dates has been replaced by the letter, *y*. Find the dates represented by A, B, C and D in terms of *y*.

March 2017

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1	2	3	4
5	6	7	8	A	10	11
12	13	14	B	*y*	C	18
19	20	21	22	D	24	25
26	27	28	29	30	31	

- Do you understand the problem?
- What is your plan?
- Show how you solve the problem.
- Remember to check your solution.

Plan

Solve

Check

Math Journal

Write a word problem that involves the expression, $2x - 5$.

Example

(a) There were x chairs in a row. There were two rows of chairs.
5 chairs were removed. How many chairs were left?
Give the answer in terms of x.

(b) Janice bought 2 boxes of doughnuts. There were x doughnuts in each box.
She gave Amiya 5 doughnuts. How many doughnuts had Janice left?
Give the answer in terms of x.

2 Fractions

Recall (Multiplication of fractions, division of whole numbers as fractions)

1. Find the value of the following. Give the answer in the simplest form.

(a) $\dfrac{2}{5} \times 20 =$	(b) $\dfrac{4}{9} \times 12 =$
(c) $\dfrac{7}{3} \times 6 =$	(d) $\dfrac{15}{8} \times 48 =$
(e) $\dfrac{3}{10} \times \dfrac{2}{5} =$	(f) $\dfrac{3}{8} \times \dfrac{2}{9} =$
(g) $\dfrac{14}{5} \times \dfrac{5}{6} =$	(h) $\dfrac{9}{8} \times \dfrac{11}{6} =$
(i) $3 \times 5\dfrac{4}{7} =$	(j) $7 \div 9 =$

Solve the word problems.

2 Mei had \$490. She spent $\frac{3}{7}$ of it on a handphone. How much money had she left?

3 3 litres of milk are poured equally into 5 containers. What is the volume of milk in each container? Give the answer in millilitres.

4 In Class 6A, $\frac{2}{5}$ of the pupils are boys. $\frac{1}{3}$ of the boys are left-handed. What fraction of the boys in the class are **not** left-handed?

Dividing a Proper Fraction by a Whole Number

△L1 Worksheet 1

1   Divide. Express each answer as a fraction in its simplest form.

(a) $\dfrac{1}{6} \div 2 =$

(b) $\dfrac{1}{3} \div 3 =$

(c) $\dfrac{1}{5} \div 4 =$

2. Divide. Express each answer as a fraction in its simplest form.

(a) $\dfrac{2}{3} \div 5 =$

(b) $\dfrac{2}{7} \div 4 =$

(c) $\dfrac{3}{5} \div 3 =$

(d) $\dfrac{3}{4} \div 7 =$

(e) $\dfrac{4}{5} \div 8 =$

(f) $\dfrac{8}{11} \div 2 =$

(g) $\dfrac{8}{9} \div 12 =$

(h) $\dfrac{5}{6} \div 20 =$

(i) $\dfrac{7}{8} \div 14 =$

(j) $\dfrac{5}{12} \div 15 =$

△ Worksheet 2

Solve the word problems. Express each answer as a fraction in its simplest form.

1 A container had $\frac{9}{10}$ ℓ of tea. Mrs Li poured all the tea equally into 3 glasses. How much tea was in each glass?

2 $\frac{7}{8}$ kg of salt is packed equally into 7 packets. What is the mass of salt in each packet?

3 $\frac{4}{5}$ m of string is cut into 2 pieces of equal length. What is the length of each piece of string?

4. $\frac{4}{7}$ of a pizza is divided into 8 equal slices. What fraction of the whole pizza is each slice?

5. $\frac{2}{3}$ of a sum of money is shared equally among 6 people. What fraction of the money does each person get?

6. The perimeter of a square piece of paper is $\frac{7}{10}$ m. What is the length of the side of the square piece of paper?

L2 Worksheet 3

Solve the word problems. Express each answer as a fraction in its simplest form.

1 A piece of wire, $\frac{19}{20}$ m long, is bent to form a square. $\frac{3}{20}$ m of the wire is left unused.

   (a) Find the length of the wire used to form the square.
   (b) Find the length of each side of the square.

2 $\frac{3}{5}$ of a pie was shared equally among Siti, Janice and Huiling. Siti gave $\frac{1}{2}$ of her pie to Amiya.

   (a) What fraction of the pie did each girl receive?
   (b) What fraction of the pie was Siti left with?

3 In a basket, $\frac{7}{12}$ of the fruits were red apples and the rest were green apples. Ravi gave all the green apples equally to 5 friends. What fraction of the fruits in the basket did each friend receive?

4 Tom had $\frac{2}{5}$ kg of sunflower seeds. Jane had $\frac{1}{2}$ kg of sunflower seeds. They packed the sunflower seeds equally into 6 bags. They gave 3 bags to Jim.
(a) What was the mass of sunflower seeds in one bag?
(b) What was the total mass of sunflower seeds they gave Jim?

Dividing a Whole Number by a Proper Fraction

⚠️ Worksheet 4

1 Divide. Find the value of the following.

(a) $3 \div \dfrac{1}{2}$

$= 3 \times \dfrac{2}{1}$

$=$

(b) $4 \div \dfrac{1}{3}$

$=$

(c) $3 \div \dfrac{3}{5}$

$=$

(d) $6 \div \dfrac{2}{3}$

$=$

2 Divide. Find the value of the following.

(a) $7 \div \frac{1}{6} =$	(b) $9 \div \frac{1}{5} =$
(c) $14 \div \frac{7}{8} =$	(d) $20 \div \frac{2}{5} =$

3 Divide. Express each answer as a mixed number.

(a) $6 \div \frac{5}{8} =$	(b) $10 \div \frac{3}{4} =$
(c) $9 \div \frac{6}{7} =$	(d) $18 \div \frac{8}{9} =$

Name: **Class:**   **Date:**

LI Worksheet 5

Solve the word problems.

1. Mrs Raj bought 10 pizzas for a party. Each child at the party received $\frac{1}{5}$ of a pizza. How many children did Mrs Raj give the pizzas to?

2. A rope, 12 m long, is cut into equal pieces of $\frac{3}{4}$ m each. How many pieces of rope are there?

3. A school workshop started at 09 00 and ended at 13 00. Each session lasted $\frac{2}{3}$ h. How many sessions were there?

4. Mr Li bought some packets of sugar. The mass of each packet of sugar was $\frac{3}{10}$ kg. He bought 6 kg of sugar altogether. How many packets of sugar did he buy?

5. Joey spent 15 h watching a cartoon series. Each episode of the cartoon series lasted $\frac{5}{12}$ h. How many episodes of the cartoon series did she watch?

⚠️2 Worksheet 6

Solve the word problems.

1 A jug contains 4 ℓ of water. Mr Tay uses the water to fill some identical glasses to the brim. The capacity of each glass is $\frac{5}{8}$ ℓ.

(a) How many glasses can he fill with water to the brim?

(b) How much water is left?

② A sack of rice had a mass of 8 kg at first. From the sack of rice, Mrs Lee filled some containers with $\frac{3}{8}$ kg of rice each.

(a) What was the greatest number of containers she could fill with $\frac{3}{8}$ kg of rice each?

(b) What was the mass of rice left in the sack?

3 Siti was given 13 m of ribbon to make some bows. She used $\frac{2}{5}$ m of ribbon to make each bow.

(a) Find the greatest number of bows she could make.

(b) Find the length of ribbon left.

4 The distance between Lamp post A and Lamp post B is 9 km. More lamp posts are placed between Lamp post A and Lamp post B such that the distance between every lamp post is $\frac{3}{4}$ km.

How many lamp posts are placed between Lamp post A and Lamp post B?

A   9 km   B

Dividing a Proper Fraction by a Proper Fraction

LI Worksheet 7

1 Divide. Give the answer in the simplest form.

(a) $\frac{4}{5} \div \frac{1}{10}$

$= \frac{4}{5} \times \frac{10}{1}$

$=$

$\frac{4}{5}$

| $\frac{1}{10}$ | $\frac{1}{10}$ | $\frac{1}{10}$ | $\frac{1}{10}$ | $\frac{1}{10}$ | $\frac{1}{10}$ | $\frac{1}{10}$ | $\frac{1}{10}$ |

(b) $\frac{2}{3} \div \frac{1}{6}$

$\frac{2}{3}$

| $\frac{1}{6}$ | $\frac{1}{6}$ | $\frac{1}{6}$ | $\frac{1}{6}$ |

(c) $\frac{6}{10} \div \frac{1}{5}$

$\frac{6}{10}$

| $\frac{1}{5}$ | $\frac{1}{5}$ | $\frac{1}{5}$ |

2 Divide.

(a) $\dfrac{1}{4} \div \dfrac{1}{8}$	(b) $\dfrac{1}{2} \div \dfrac{1}{6}$
(c) $\dfrac{3}{4} \div \dfrac{1}{8}$	(d) $\dfrac{8}{9} \div \dfrac{4}{9}$

3 Divide. Give the answer in the simplest form.

(a) $\dfrac{7}{12} \div \dfrac{8}{9}$	(b) $\dfrac{8}{11} \div \dfrac{4}{5}$

4 Divide. Give the answer as a mixed number.

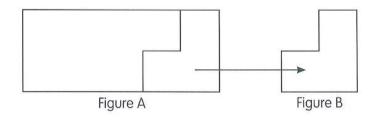|	
(a) $\dfrac{5}{12} \div \dfrac{1}{4}$	(b) $\dfrac{7}{10} \div \dfrac{2}{5}$

⚠ Worksheet 8

Solve the word problems.

1 Mrs Tan had $\frac{9}{10}$ of a pizza. She cut the pizza into smaller slices. Each slice was $\frac{3}{20}$ of the whole pizza. How many smaller slices of pizza did she get?

2 The area of a rectangular piece of cloth is $\frac{4}{5}$ m². Its width is $\frac{5}{8}$ m. What is its length? Give the answer as a mixed number in the simplest form.

3 Mr Li conducted a Science experiment in $\frac{5}{6}$ h. During the experiment, he had to check the temperature of the water every $\frac{1}{6}$ h . How many times did he have to check the temperature of the water?

4 Figure A is a rectangle with area $\frac{3}{4}$ m². Figure B has an area of $\frac{3}{16}$ m². Find the greatest number of such shapes as Figure B that can be cut from Figure A?

Figure A   Figure B

L2 Worksheet 9

Solve the word problems.

1   Joyce added $\frac{4}{5}$ ℓ of water to $\frac{1}{10}$ ℓ of orange syrup to prepare a drink. She then poured $\frac{1}{8}$ ℓ of the drink into each identical glass.

   (a)   What was the greatest number of glasses that contained $\frac{1}{8}$ ℓ of drink?
   (b)   How much drink did she have left?

2 A tap is turned on and water flows into an empty tank. It fills $\frac{1}{10}$ of the tank in 1 min.

(a) How long will it take to fill $\frac{1}{5}$ of the tank with water?

(b) How long will it take to fill $\frac{4}{5}$ of the tank when the water flows twice as fast into the tank?

Word Problems

△L2 Worksheet 10

Solve the word problems.

1   Mdm Rahimah had 128 buttons. $\frac{1}{3}$ of the buttons were red and $\frac{5}{12}$ of the buttons were blue. The rest were yellow buttons. $\frac{1}{8}$ of the yellow buttons were sewn on each blouse. How many yellow buttons were sewn on each blouse?

2 In a class, $\frac{3}{5}$ of the pupils are girls and the rest are boys. $\frac{1}{3}$ of the girls and $\frac{1}{4}$ of the boys wear glasses. What fraction of the pupils in the class wear glasses?

3 Mr Kumar had some money. He spent $\frac{1}{4}$ of his money on food and $\frac{1}{9}$ of the remainder on transport. He gave the rest of his money to his 4 children. Each child received $24. How much money did Mr Kumar have at first?

4. Mrs Tham baked some cookies and ate $\frac{1}{4}$ of them. She gave $\frac{3}{10}$ of the cookies to her neighbour. She was left with 27 cookies. How many cookies did she give her neighbour?

5 $\frac{3}{7}$ of the tarts that Mrs Lee baked were pineapple tarts, $\frac{2}{5}$ of the tarts were strawberry tarts and the rest were coconut tarts. There were 252 more pineapple tarts than coconut tarts. How many strawberry tarts did Mrs Lee bake?

6 18 pieces of rope measuring $\frac{2}{5}$ m each were cut from a 8 m long rope. The remaining length of rope was cut into shorter pieces of length $\frac{1}{5}$ m each. How many pieces of $\frac{1}{5}$ m long rope were obtained?

L3 Worksheet II

Solve the word problems.

1 $\frac{2}{5}$ of Mark's stamps were Singapore stamps and the rest were Malaysian stamps. He gave $\frac{1}{2}$ of the Singapore stamps and $\frac{1}{3}$ of the Malaysian stamps to a friend. He had 120 stamps left. How many stamps did Mark give his friend?

2. Mrs Loke had some red, green and yellow buttons. She had 80 more green buttons than yellow buttons and 15 more red buttons than green buttons. She used $\frac{3}{4}$ of her green buttons and $\frac{1}{2}$ of her yellow buttons to sew on some dresses. She had 290 buttons left. How many buttons did Mrs Loke have at first?

Performance Task

Activity: To find the fractions of folded parts of a rectangular strip of paper.

Cut out the rectangular strip on page 227.
Fold the strip of paper as follows:

Step 1

Fold the rectangular strip of paper in half.

fold

Step 2

Fold the folded strip of paper obtained in Step 1 in half again.

fold

Step 3

Fold the folded strip of paper obtained in Step 2 in half again.

fold

Write an equation to show how you get the fraction of each folded part in the given table.

What pattern do you observe from the fractions obtained?
Based on the pattern, complete the table.

	Fraction of each folded part
1st fold	$1 \div 2 = \dfrac{1}{2}$
2nd fold	$\dfrac{1}{2} \div 2 =$
3rd fold	
4th fold	
5th fold	

Problem Solving

Amy had a sum of money. She spent $\frac{1}{3}$ of her money on a blouse and $\frac{1}{4}$ of it on a skirt. She then spent $\frac{1}{2}$ of the remainder on some books and $24 on food. She had $\frac{1}{12}$ of her money left. How much did she spend on the books?

- Do you understand the problem?
- What is your plan?
- Show how you solve the problem.
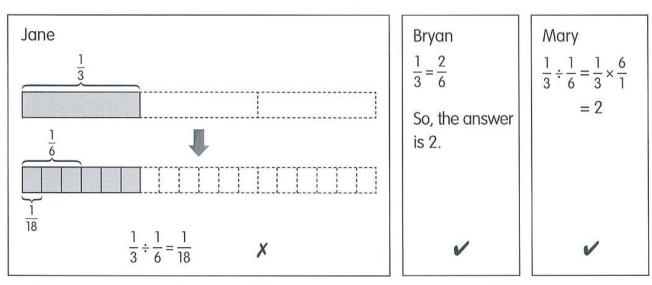- Remember to check your solution.

Plan

Solve

Check

65

 Math Journal

Jane, Bryan and Mary show their working for $\frac{1}{3} \div \frac{1}{6}$ as follows:

Jane

$$\frac{1}{3} \div \frac{1}{6} = \frac{1}{18} \quad ✗$$

Bryan

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

So, the answer is 2.

✔

Mary

$$\frac{1}{3} \div \frac{1}{6} = \frac{1}{3} \times \frac{6}{1}$$
$$= 2$$

✔

(a) Jane's working is incorrect. Show the correct working using a model.

(b) Bryan's reasoning is correct. Explain how he gets his answer without showing the working as in Mary's answer.
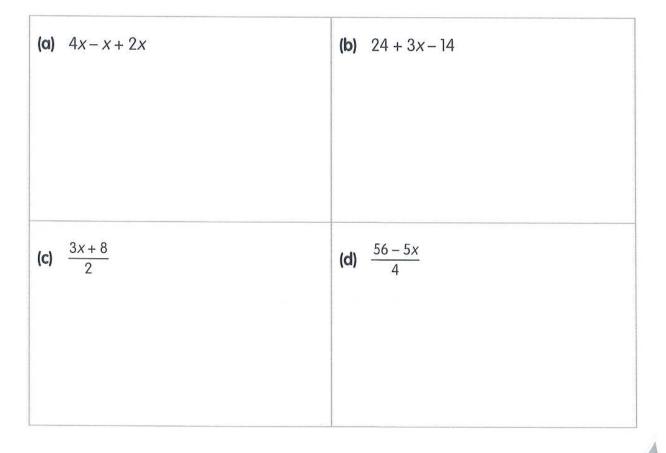
Review 1

Algebra

1 Simplify each expression.

(a) $5x + 4 - 2x$	(b) $9 + 3k + 4 + 9k$
(c) $10j - 2j - 8 - j$	(d) $15h + 4 - 4h - 4$

2 Find the value of each expression when $x = 8$.

(a) $4x - x + 2x$	(b) $24 + 3x - 14$
(c) $\dfrac{3x + 8}{2}$	(d) $\dfrac{56 - 5x}{4}$
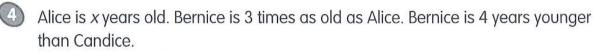
3. There were *p* cookies on a plate. Joyce and Kate shared the cookies equally. Joyce ate 5 of the cookies she had. How many cookies did Joyce have left in terms of *p*?

4. Alice is *x* years old. Bernice is 3 times as old as Alice. Bernice is 4 years younger than Candice.
   (a) What is Candice's age in terms of *x*?
   (b) If Alice is 10 years old, how many years older is Candice than Alice?

5 Sandy had $6x$ sweets. She gave 9 sweets to each of her friends and had $2x$ sweets left. How many friends received sweets from Sandy? Express the answer in terms of x.

6 Max and Jane had \$84 altogether. Max had \$6 less than Jane. Use algebra to find the amount of money Jane had.

Fractions

7 Divide.

(a) $\dfrac{2}{3} \div 6$	(b) $5 \div \dfrac{4}{5}$
(c) $\dfrac{1}{4} \div \dfrac{1}{12}$	(d) $\dfrac{7}{8} \div \dfrac{3}{4}$

8 $\dfrac{4}{5}$ kg of sugar is packed into smaller packets of $\dfrac{1}{10}$ kg each. How many smaller packets of sugar are there?
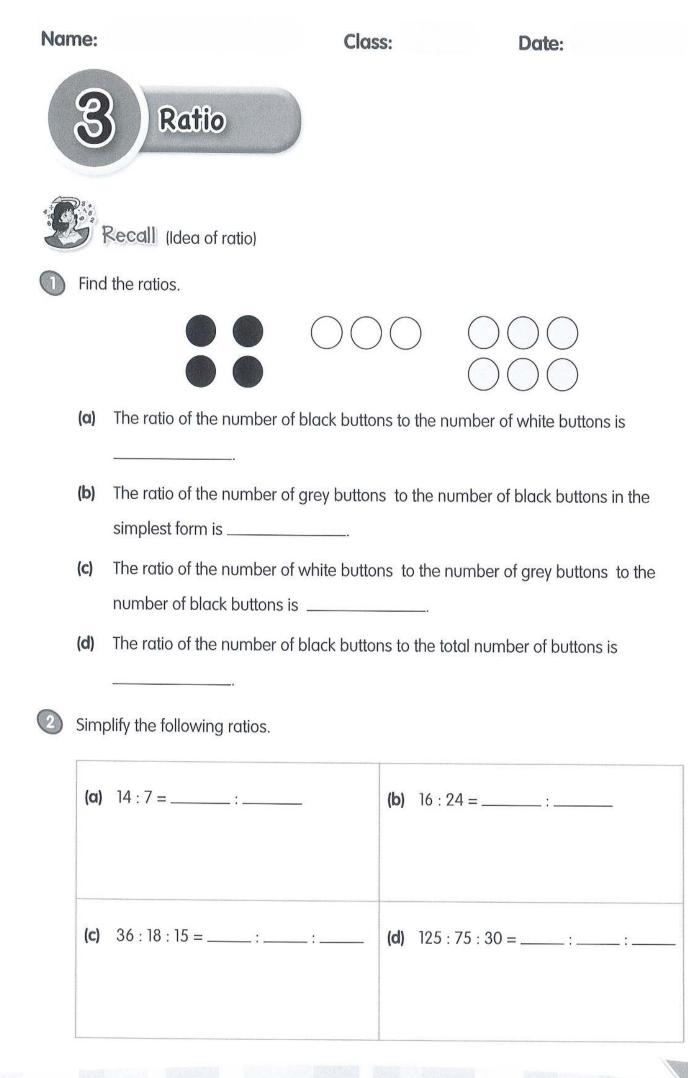
9 Container A is $\frac{1}{6}$ filled with rice. All the rice is then poured into Container B which is twice the size of Container A. What fraction of Container B is filled with rice?

10 A glass has a capacity of $\frac{2}{5}$ ℓ. A flask has a capacity of 3 ℓ. How many glasses of water are needed to fill the empty flask completely?

11. $\frac{4}{5}$ kg of flour is packed equally into 4 packets. What is the mass of flour in each packet in grams?

12. Mrs Loke had $\frac{9}{10}$ m of ribbon. She used $\frac{1}{4}$ m of ribbon to decorate a present. She cut the remaining ribbon into shorter pieces measuring $\frac{1}{10}$ m each.

    (a) What was the greatest number of pieces of ribbon measuring $\frac{1}{10}$ m each that she could obtain?

    (b) How many centimetres of ribbon would she have left?

3   Ratio

Recall (Idea of ratio)

1 Find the ratios.

(a) The ratio of the number of black buttons to the number of white buttons is

_____.

(b) The ratio of the number of grey buttons to the number of black buttons in the

simplest form is _____.

(c) The ratio of the number of white buttons to the number of grey buttons to the

number of black buttons is _____.

(d) The ratio of the number of black buttons to the total number of buttons is

_____.

2 Simplify the following ratios.

(a) $14 : 7 = $ _____ : _____	(b) $16 : 24 = $ _____ : _____
(c) $36 : 18 : 15 = $ ____ : ____ : ____	(d) $125 : 75 : 30 = $ ____ : ____ : ____

3 Fill in the missing numbers in the following ratios.

(a) $4 : 7 = 20 : $ _____	(b) $35 : 28 = $ _____ $: 4$
(c) $4 : 3 : 7 = 36 : $ _____ $: 63$	(d) _____ $: 7 : 6 = 80 : 56 : 48$
(e) $2 : 5 : 8 = 14 : $ _____ $: $ _____	(f) $42 : 72 : 24 = $ _____ $: $ _____ $: 4$

4 A customer gets 2 erasers free for every 5 pencils bought during a sale.

Complete the table.

Number of free erasers	2	4			
Number of pencils bought	5		15	30	50

Solve the word problems.

5 There are 80 red and blue paper clips in a box. The ratio of the number of red paper clips to the number of blue paper clips is 3 : 5. How many blue paper clips are there?

6 Mrs Tay uses 80 g of flour for every 10 g of butter to bake a cake.
  (a) How many grams of flour will she need if she uses 80 g of butter?
  (b) How many grams of butter will she need if she uses 480 g of flour?

7 The amount of money Jack spent to the amount he saved was in the ratio 9 : 5. He spent $44 more than what he saved. Find the amount of money Jack had at first.

8 A ribbon 60 cm long is cut into two pieces. One piece of ribbon is 24 cm longer than the other piece.
(a) What is the length of the shorter ribbon?
(b) What is the ratio of the length of the shorter ribbon to that of the longer ribbon? Give the answer in the simplest form.

Ratio and Fraction

L1 Worksheet 1

Write as fractions.

1 The ratio of the number of stickers Siti has to the number of stickers Janice has is 2 : 6.

Siti [|]

Janice [| | | | | |]

Siti has _____ as many stickers as Janice.

2 In a hall, the ratio of the number of girls to the number of boys is 6 : 5.

girls [| | | | |]

boys [| | | |]

(a) The number of girls is _____ of the number of boys.

(b) The number of boys is _____ of the number of girls.

(c) The number of girls is _____ of the total number of pupils.

(d) The total number of pupils is _____ of the number of boys.

3 Write the ratios based on the given statements.

(a) Jeremy's height is $\frac{7}{8}$ of Marcus' height.

Jeremy's height : Marcus' height

☐ : ☐

Marcus' height : Jeremy's height

☐ : ☐

(b) The number of swimmers is $\frac{3}{2}$ of the number of non-swimmers.

Swimmers : Non-swimmers

☐ : ☐

Non-swimmers : Swimmers

☐ : ☐

(c) There are $\frac{1}{3}$ as many boys as girls.

Boys : Girls

☐ : ☐

Boys : Total number of children

☐ : ☐

(d) There are 5 times as many dogs as cats.

Dogs : Cats

☐ : ☐

Cats : Total number of dogs and cats

☐ : ☐

4 Fill in the blanks.

At an outdoor activity, for every 3 children, there are 5 adults.

(a) The ratio of the number of adults to the number of children is _____ : _____.

(b) The number of adults is $\dfrac{\boxed{}}{\boxed{}}$ of the number of children.

(c) The ratio of the number of children to the total number of people is

_____ : _____.

(d) The number of children is $\dfrac{\boxed{}}{\boxed{}}$ of the total number of people.

5 Fill in the blanks. Give each answer in the simplest form.

In a carton, for every 6 apples, there are 9 oranges.

(a) The ratio of the number of apples to the number of oranges is _____ : _____.

(b) The number of apples is $\dfrac{\boxed{}}{\boxed{}}$ of the number of oranges.

(c) The number of oranges is $\dfrac{\boxed{}}{\boxed{}}$ of the total number of apples and oranges.

6 James has 4 times as much savings as Charles.
(a) What is the ratio of James' savings to Charles' savings?
(b) What fraction of James' savings is Charles' savings?

7 Mr Tan's mass is $\frac{15}{8}$ of his son's mass.

(a) Find the ratio of Mr Tan's mass to his son's mass.

(b) Find the ratio of the son's mass to Mr Tan's mass.

8 The number of adults is $\frac{7}{10}$ of the number of children in a park.

(a) What is the ratio of the number of children to the number of adults in the park?

(b) What is the ratio of the number of adults to the total number of people in the park?

(c) What is the ratio of the total number of people to the number of children in the park?

Word Problems

L2 Worksheet 2

Solve the word problems.

1 Ben has $\frac{2}{5}$ as many marbles as Danny. Ben has 36 fewer marbles than Danny. How many marbles do the two boys have altogether?

2 Richard's height is $\frac{12}{7}$ of Mary's height. Mary is 98 cm tall. How tall is Richard?

3 Rita's mass is $\frac{5}{3}$ of Jolene's mass. Rita's mass is 45 kg. What is the difference in mass between the two girls?

4 The perimeter of a rectangle is 108 cm. The length of the rectangle is $\frac{5}{4}$ of its breadth. What is the breadth of the rectangle?

5 $\frac{1}{3}$ of Cheryl's savings was the same as $\frac{3}{4}$ of Hilda's savings. Cheryl saved $36.
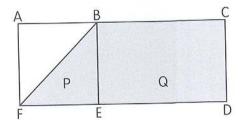
(a) Find the ratio of Cheryl's savings to Hilda's savings.

(b) How much did Hilda save?

6 In the figure, ABEF is a square and BCDF is a trapezium.
The two shapes overlap as shown. The ratio of Area P to Area Q is 4 : 13.
The area of the square is 100 cm².

(a) What is the ratio of the area of the square to the area of the trapezium?

(b) What is the area of the trapezium?

7 $\frac{3}{5}$ of Alice's stickers is twice as many as Bernice's stickers. Alice has 56 more stickers than Bernice.

(a) Find the ratio of Alice's number of stickers to Bernice's number of stickers.

(b) How many stickers does Bernice have?

Ratios of Three Quantities

◭LI Worksheet 3

Find the ratios of 3 quantities.

1 X : Y is 5 : 6 and Y : Z is 3 : 2. Find X : Y : Z in the simplest form.

2 A : B = 3 : 1 and A : C = 4 : 5. Find A : B : C.

3. There are some yellow, red and pink beads. The ratio of the number of yellow beads to the number of red beads is 2 : 5. The ratio of the number of pink beads to the number of red beads is 1 : 3. Find the ratio of the number of yellow beads to the number of red beads to the number of pink beads.

4. At a concert, the ratio of the number of adults to the number of girls is 3 : 4. The number of adults to the number of boys is 4 : 3. Find the ratio of the number of adults to the number of girls to the number of boys.

L2 Worksheet 4

Solve the word problems.

1. There are some red, blue and green buttons. The ratio of the number of red buttons to the number of blue buttons is 4 : 1. The ratio of the number of red buttons to the number of green buttons is 3 : 2. There are 120 more red buttons than green buttons.

    (a) What is the ratio of the number of blue buttons to the number of red buttons to the number of green buttons?

    (b) How many buttons are there altogether?

2 Danny has $\frac{5}{8}$ as many stamps as Eugene. Farhan has half as many stamps as Eugene.

Farhan has 40 stamps.
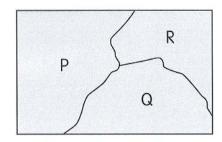
(a) What is the ratio of the number of stamps Danny has to the number of stamps Eugene has to the number of stamps Farhan has?
Give the answer in the simplest form.

(b) How many stamps do Danny and Eugene have in all?

3 Peter, Ravi and Samad share a sum of $3996. The ratio of Ravi's share to Peter's share is 5 : 6. The ratio of Ravi's share to Samad's share is 2 : 3.

(a) Who has the largest share?

(b) How much is the smallest share?

4 The figure shows a rectangle that is divided into 3 parts, P, Q and R. The ratio of Area Q to Area P is 3 : 4. The ratio of Area R to Area P is 1 : 2. Area Q is 34 cm² bigger than Area R. What is the area of the rectangle?

5 The ratio of the number of apples to the number of pears is 4 : 7. The ratio of the number of pears to the number of mangoes is 2 : 3.

(a) What is the ratio of the total number of apples and pears to the number of mangoes?

(b) There are 24 fewer apples than pears. How many more mangoes than pears are there?

6 Mrs Lee bought three types of doughnuts for a party. The ratio of the number of vanilla doughnuts to the number of chocolate doughnuts to the number of strawberry doughnuts was 7 : 10 : 5. She bought 110 doughnuts altogether.

(a) What fraction of the total number of doughnuts were chocolate doughnuts? Give the answer in the simplest form.

(b) How many chocolate doughnuts did she buy?

Changing Ratios

L2 Worksheet 5

Solve the word problems.

1. The number of marbles Peter had to the number of marbles Ravi had was in the ratio 8 : 5. After giving 18 marbles to his friends, Peter had the same number of marbles as Ravi. How many marbles did Ravi have?

2 Jason had some apples and oranges in the ratio 5 : 4. He sold 42 apples and the ratio of the number of apples to the number of oranges became 1 : 2. How many apples did Jason have at first?

3 The ratio of the number of boys to the number of girls in a hall was 3 : 5. After 84 girls had left the hall, the ratio of the number of boys to the number of girls became 2 : 1. How many girls were in the hall at first?

4 Alice and Bernice had some money in the ratio 7 : 3. After Alice had given Bernice some money, the ratio of the amount of money Alice had to the amount of money Bernice had became 7 : 13. Bernice had $204 more than Alice in the end. How much money did Alice give Bernice?

5 Box A and Box B had some paper clips in the ratio 5 : 9. Mary took 32 paper clips from Box B and put them into Box A. Both boxes then had the same number of paper clips. How many paper clips were in Box A at first?

6. Karen and Amiya had 120 beads each. After giving Amiya some beads, Karen then had $\frac{3}{7}$ as many beads as Amiya. How many beads did Karen give Amiya?

7 Ms Sanjay had some red buttons and pink buttons in the ratio 1 : 3. She then bought 15 red and pink buttons each and the ratio became 2 : 5. How many pink buttons did she have at first?

8 Bob had some blue balloons and green balloons in the ratio 4 : 5. He gave away
   12 blue balloons and 12 green balloons. Then the ratio of the number of blue balloons
   to the number of green balloons he had left became 5 : 7. How many blue balloons
   did Bob have at first?

9 Janice and Siti had some money in the ratio 2 : 3. After each of them spent $32 on a school bag, Janice had $\frac{3}{5}$ as much money as Siti. How much money did Siti have in the end?

10 10 years ago, the ratio of Marcy's age to Brenda's age was 2 : 5. The difference in their ages was 9 years. What is the ratio of Marcy's age to Brenda's age now?

L3 Worksheet 6

Solve the word problems.

1 John had only 10-dollar notes and David had only 5-dollar notes. The number of notes John had was $\frac{2}{3}$ of the number of notes David had. After John had given David $450 in $10 notes, the number of notes John had was $\frac{1}{6}$ of the number of notes David had. How much money did David have in the end?

2 Peter and Ravi saved $1000 altogether. $\frac{1}{4}$ of Peter's savings was $106 more than $\frac{1}{5}$ of Ravi's savings. How much more money did Peter save than Ravi?

Name: **Class:**   **Date:**

Performance Task

Activity: Find the approximate height of a flagpole.

Work in groups.
Use a measuring tape to measure the length of the shadow of a flagpole in your school. Then measure the height of one member in your group and the length of his or her shadow.

1. Round all the measurements to the nearest whole number and fill in the blanks.
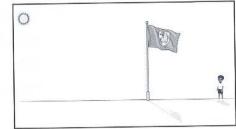
   (a)   Height of pupil = _____ cm

         Length of his or her shadow = _____ cm

   (b)   Length of shadow of flagpole = _____ cm

2. Discuss how you would find the approximate height of the flagpole. Show your method.

The approximate height of the flagpole is _____ cm.

Problem Solving

There were 300 children in a park. There were $\frac{7}{8}$ as many boys as girls. After 36 boys left and some girls arrived at the park, the ratio of the number of boys to the number of girls became 2 : 5. How many girls arrived at the park?

- Do you understand the problem?
- What is your plan?
- Show how you solve the problem.
- Remember to check your solution.

Plan

Solve

Check

Math Journal
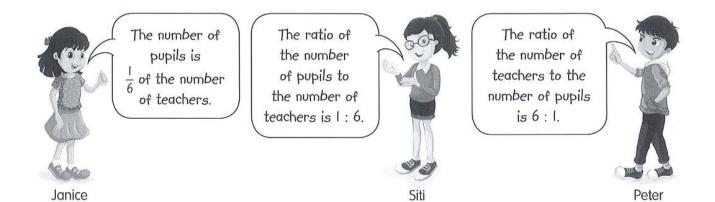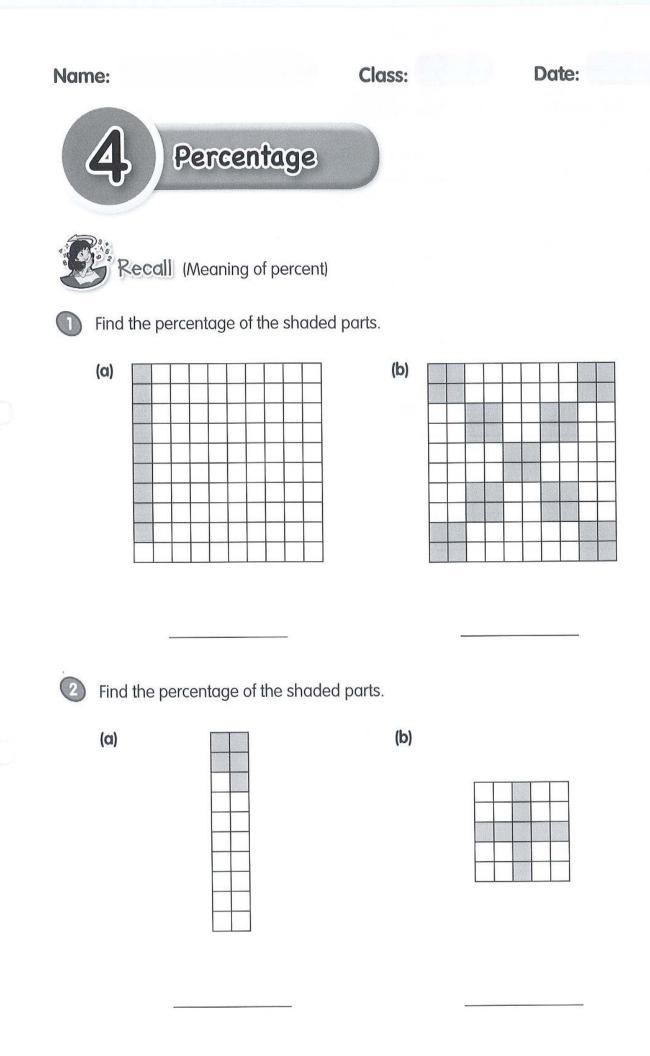
Mrs Tan asked Janice, Siti and Peter to explain the following sentence using fraction statement or ratio statement.
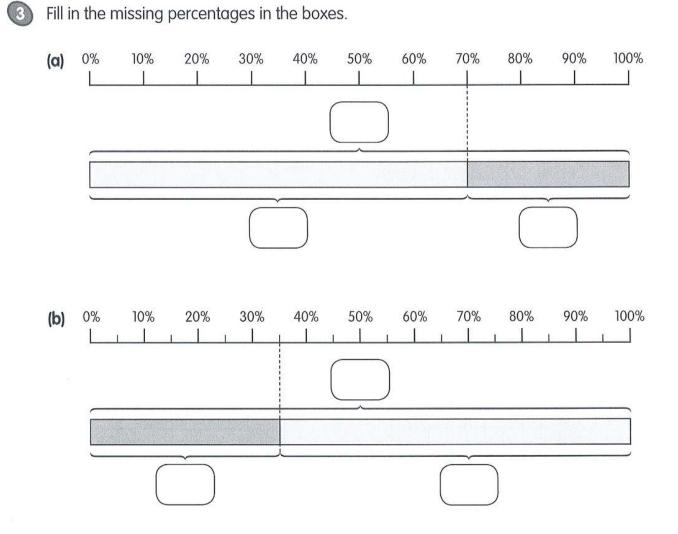
There are 6 times as many pupils as teachers in a certain school.

Janice: The number of pupils is $\frac{1}{6}$ of the number of teachers.

Siti: The ratio of the number of pupils to the number of teachers is 1 : 6.

Peter: The ratio of the number of teachers to the number of pupils is 6 : 1.

Their statements are not correct. Write two correct statements to show your understanding of the sentence.

4 Percentage

Recall (Meaning of percent)

1 Find the percentage of the shaded parts.

(a)

(b)

_____   _____

2 Find the percentage of the shaded parts.

(a)

(b)

_____   _____

Fill in the missing percentages in the boxes.

(a)

(b)

4 Express each percentage as a fraction and a decimal.

	Percentage	Fraction	Decimal
(a)	5%		
(b)	24%		
(c)	99%		

Solve the word problems.

5 12 out of 25 children are boys.

    (a) What percentage of the children are boys?

    (b) What percentage of the children are girls?

6 Mrs Tay had $360. She spent 30% of the money on food. How much money had she left?

7 Last year, Mr Salim bought a car for $120 000. This year, he sold it at a discount of 10%. How much did Mr Salim sell his car for?

8 A camera cost $276 before GST. Ravi bought the camera and paid an additional 7% GST of the price. How much did Ravi pay for the camera?

9 Mrs Suresh deposited $50 000 in a fixed deposit account at XZ Bank which offered an interest rate of 2.2% per year. How much would Mrs Suresh have in her fixed deposit account at the end of 1 year?

10 Mr Teo wants to buy an oven. Which shop sells the oven at a lower price?

Shop A
Usual Price: $190
Discount: 15%

Shop B
Usual Price: $200
Discount: 20%

Finding the Whole Given a Part and the Percentage

LI Worksheet I

Solve the word problems.

1. 40% of the doughnuts sold by a bakery were chocolate doughnuts. It sold 120 chocolate doughnuts. How many doughnuts did the bakery sell in all?

2. Joseph paid $84 for a jacket after getting a 20% discount for it. What was the usual price of the jacket?

3. Mrs Loke bought a washing machine and had to pay $28 for the 7% GST. What was the price of the washing machine before GST?

4. Ravi had a collection of picture cards. He gave 8% of his cards to his brother and had 184 cards left. How many picture cards did Ravi have at first?

5 Mrs Lim bought a refrigerator. She paid a deposit of 12% of the price first. The remaining amount to be paid was $1144. What was the price of the refrigerator?

6 42% of a number is 672.
   (a) What is the number?
   (b) What is 60% of the number?

7 Mrs Lee had a box of buttons. 65% of the buttons were yellow, 20% of the buttons were blue and the remaining 75 buttons were green. How many buttons did she have altogether?

8 In a supermarket, 25% of the tubs of ice cream are strawberry flavoured, 33% of them are chocolate flavoured and the rest are vanilla flavoured. There are 126 tubs of vanilla-flavoured ice cream. How many tubs of ice cream are there in the supermarket?

L2 Worksheet 2

Solve the word problems.

1 36% of the tarts that a baker baked were strawberry tarts. He baked 98 more chocolate tarts than strawberry tarts. How many tarts did the baker bake in all?
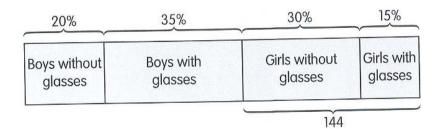
2 At a carnival, $\frac{1}{10}$ of the balloons burst and 35% of the balloons were given to some children. There were 220 balloons left. How many balloons were there at first?

3 The bar model shows the percentage of Primary 6 pupils who wear glasses and those who do **not** wear glasses in a school. There are 144 Primary 6 girls.

(a) How many pupils are there in Primary 6?

(b) How many pupils wear glasses in all?

20%	35%	30%	15%
Boys without glasses	Boys with glasses	Girls without glasses	Girls with glasses

144

4 Ravi, Peter and Meng Huat shared some marbles. Ravi received 50% of the marbles. Meng Huat received 4 times as many marbles as Peter. Meng Huat received 28 marbles. How many marbles did they have altogether?

Finding Percentage Increase or Decrease

△LI Worksheet 3

1. Complete the table. Show your working in the space provided.

	Original number of marbles	New number of marbles	Increase in number of marbles	Percentage increase
(a)	80	120		
(b)		400	80	

2. Complete the table. Show your working in the space provided.

	Original price	New price	Decrease in price	Percentage decrease
(a)	$960	$840		
(b)		$81	$189	

3 Mr Seah's mass was 80 kg last year. He lost 15 kg this year. Find the percentage decrease in Mr Seah's mass this year.

4 A club had 5400 members. 600 members left the club a year later. Find the percentage decrease in the number of members. Give the answer correct to 1 decimal place.

5 Siti saved $750 in May. In June, she saved $870. Find the percentage increase in her savings.

6 Last year, 400 people participated in a charity run. This year, there are 500 participants. What is the percentage increase in the number of participants this year?

7 Marvin was 1.55 m tall a year ago. Now, he is 1.62 m tall. Find the percentage increase in Marvin's height correct to 2 decimal places.

8 Josie scored 1276 points in Round 1 of a quiz. In Round 2, she scored 1234 points. Find the percentage decrease in Josie's score correct to 2 decimal places.

Word Problems

⚠ Worksheet 4

Solve the following word problems.

1. There were 60 members in a Chess Club last year. The number of members increases by 15% this year. How many members are there in the Chess Club this year?

2 A container had 80 ℓ of tea at first. Some people drank the tea from the container and the volume of tea decreased by 12%. How many litres of tea were left in the container?

3 In February, the price of a fan was $121. This was 10% more than the price in January. What was the price of the fan in January?

4 This year, Janice collected 90 more stamps than she did last year. This was an 18% increase from the number of stamps she had last year. How many stamps does she have this year?

L2 Worksheet 5

Solve the word problems.

1. There are some beads in a box. 25% of the beads are green, 40% of them are blue and the rest are red. There are 30 more blue beads than red beads. How many green beads are there in the box?

2 At a fruit stall, 60% of the fruits are durians. 60% of the remaining fruits are mangoes and the rest are watermelons. There are 112 watermelons. How many durians are there?

3 In May, Mr Tan paid $475 for a camera at a discount of 5%. If he had bought it in June, he would have paid $420. What was the percentage discount offered in June?

4 John had some money. He spent 25% of it on books and $\frac{1}{5}$ of the remaining amount on a bag. He had $240 left. How much money did he have at first?

5 Rashid had two mobile phones, A and B. He sold the two phones at a discount of 25%. Phone A was sold for $78 and Phone B was sold for $120. What was the total price of the two mobile phones before the discount?

6 A customer gets a 10% discount for the 5th box of cereal and a 25% discount for the 10th box of cereal bought. Each box of cereal costs $6. How much does Mr Suresh have to pay for 10 boxes of cereal?

Buy 5th box at 10% discount!

Buy 10th box at 25% discount!

L3 Worksheet 6

Solve the word problems.

1. Mei Ling has 200 coins. 25% of these coins are $1 coins. She wants to increase the number of $1 coins to 40%. How many more $1 coins must she collect?
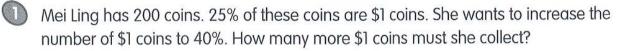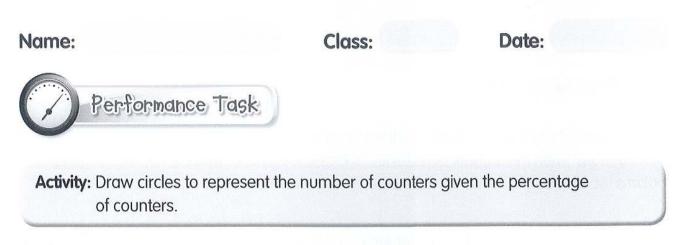
At a bakery, a display case had 2 racks. The first rack had 80 buns. The second rack had 15% fewer buns than the first rack. Mrs Lee added more buns to the second rack and the number of buns on this rack increased by 25%. Some buns on the first rack were sold and the number of buns on this rack decreased by 10%. What was the overall percentage increase or decrease in the total number of buns displayed? Give the answer correct to the nearest whole number.

Performance Task

Activity: Draw circles to represent the number of counters given the percentage of counters.

Work in pairs.

The 4 counters represent 25% of the total number of counters.

○ ○ ○ ○

(a)   Draw circles in the space provided to represent 75% of the total number of counters. How many counters should there be in all?

(b)   Draw circles in the space provided to represent an increase of 50% of the total number of counters. How many counters should there be in all?

Problem Solving

Mrs Tan had 24 red buttons, 36 blue buttons and 60 green buttons at first. She bought 39 more buttons. Then the number of red buttons increased by 25% and the number of green buttons increased by 40%. What was the percentage increase in the number of blue buttons?

- Do you understand the problem?
- What is your plan?
- Show how you solve the problem.
- Remember to check your solution.

Plan

Solve

Check

Math Journal
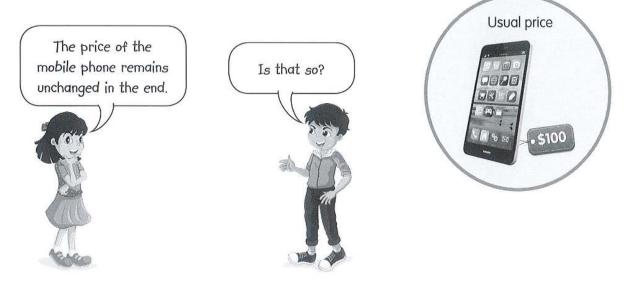
The price of a mobile phone was increased by 10% before a sale. During a sale, a 10% discount was given for the same type of phone.

The price of the mobile phone remains unchanged in the end.

Is that so?

Usual price

$100

Do you agree with Janice's reasoning that the price of the mobile phone remains unchanged in the end? Explain.

Review 2

Ratio

1 Ravi had $\frac{3}{5}$ as many marbles as Peter. Peter had 20 more marbles than Ravi.

    (a) How many marbles did the two boys have in all?

    (b) What was the ratio of the number of marbles Peter had to the total number of marbles both boys had?

2. The ratio of the mass of Box A to the mass of Box B is 2 : 3. The ratio of the mass of Box A to the mass of Box C is 3 : 4. What is the ratio of the mass of Box A to the mass of Box B to the mass of Box C?

3. At first, Ravi and Peter had 84 marbles each. After giving some marbles to Peter, Ravi had $\frac{3}{4}$ as many marbles as Peter. How many marbles did Peter have in the end?

4. Janice and Siti had the same number of stamps at first. After giving 45 stamps to Siti, the ratio of the number of stamps Janice had to the number of stamps Siti had became 2 : 3. How many stamps did Janice have at first?

5. Mrs Ho had some blue and red buttons in the ratio 4 : 7 at first. After buying 29 blue buttons and 8 red buttons, she had as many blue buttons as red buttons. How many buttons did Mrs Ho have at first?

6 The ratio of Alice's savings to Bernice's savings was 5 : 4 at first. After Alice had spent $20 and Bernice had received $10, both of them had the same amount of money. How much money did Bernice have at first?

Percentage

7 Fill in the missing numbers.

Fraction	Percentage	Decimal
$\frac{2}{5}$		
		0.65
	9%	
$1\frac{1}{2}$		

8 Mrs Tan baked a cake for a party. She mixed 80 g of sugar with 420 g of butter. What percentage of the mixture was made up of butter?

9 The usual price of a handbag was $320. The price of the handbag increases to $400 this month. What is the percentage increase in the price of the handbag?
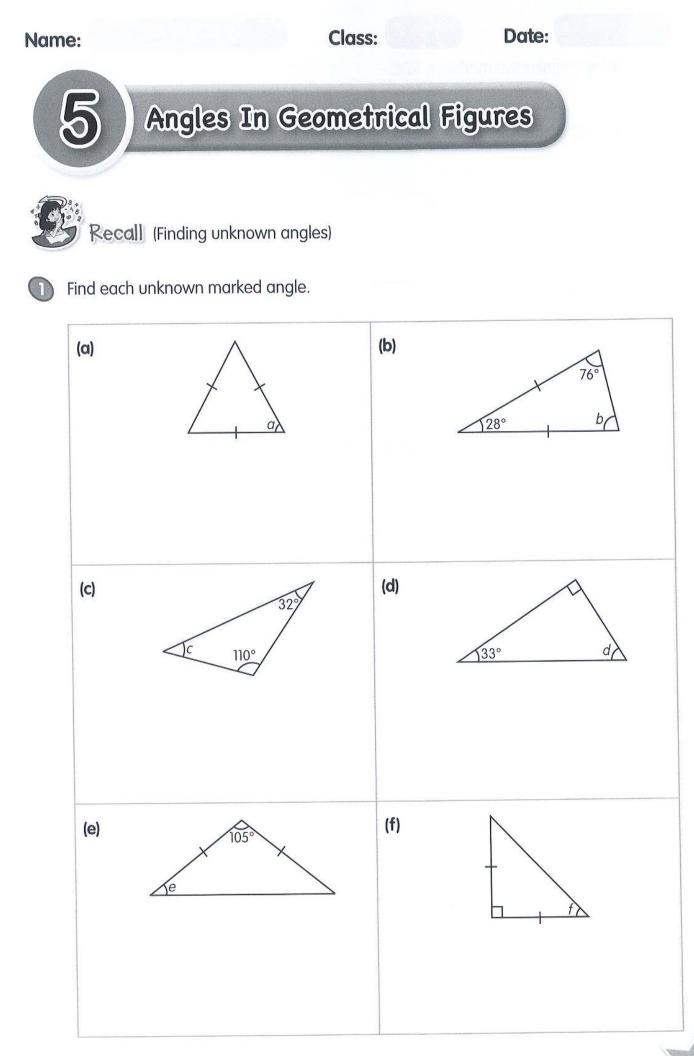
10 Lucas spent 30% of his money on a bag and $\frac{3}{7}$ of the remainder on a pair of shoes. He had $72 left. How much money did he have at first?

11 Mei had some blue and red beads in her box. 25% of those beads were blue. Mei then bought an equal number of blue beads and put them in the box.
   (a) Did the percentage of red beads increase, decrease or remain the same?
   (b) What was the percentage of the red beads in the end?
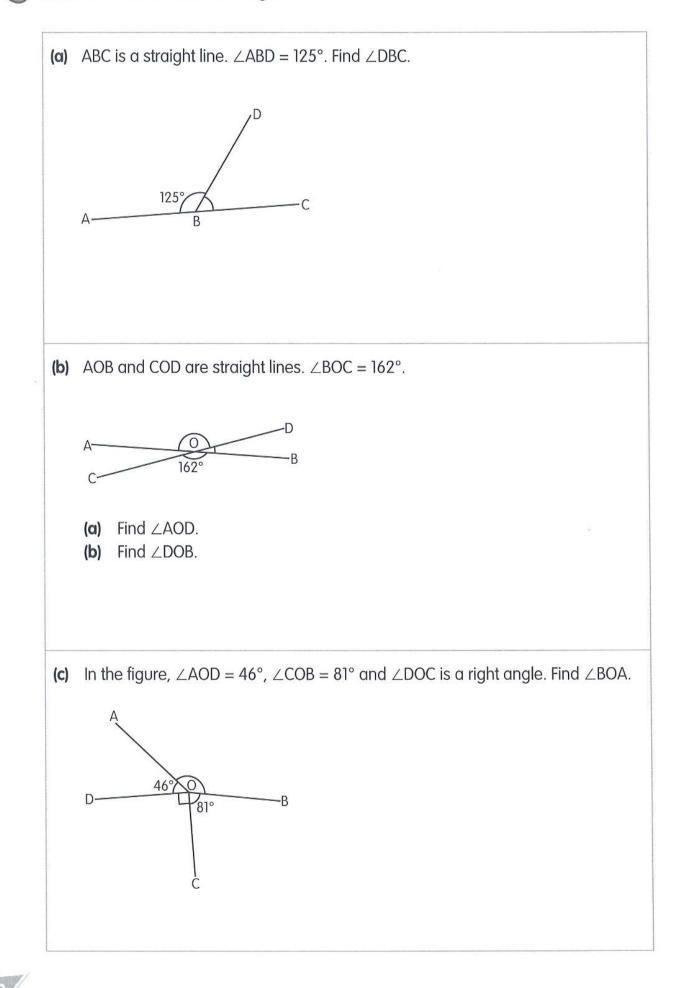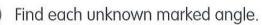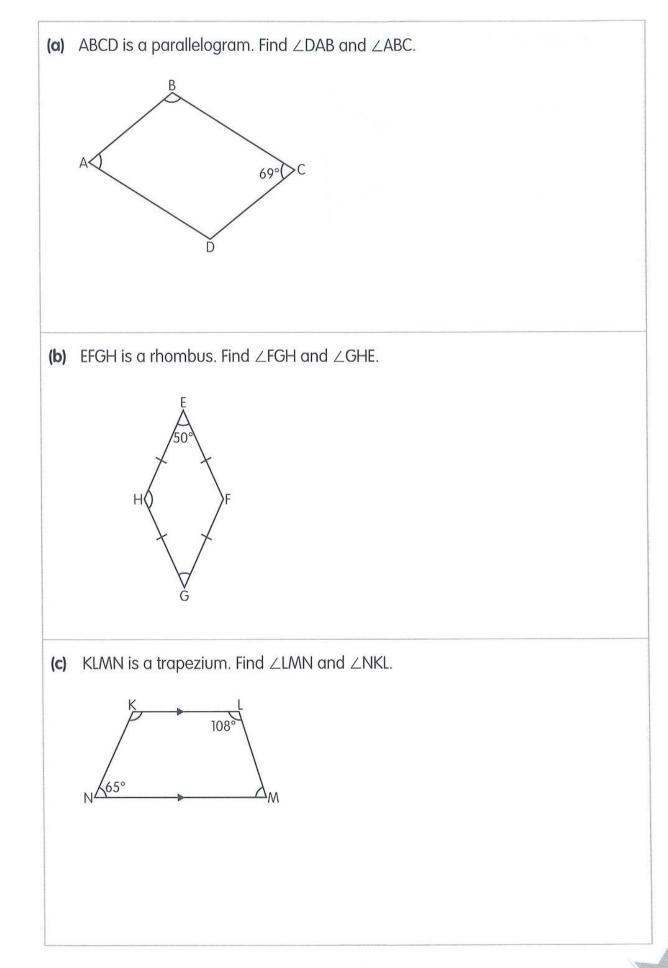
12 In a concert hall, there were $\frac{3}{5}$ as many men as women. There were 56 more children than women. The number of women was 25% of the total number of people in the concert hall. How many people were there in the concert hall?

5 Angles In Geometrical Figures

Recall (Finding unknown angles)

1. Find each unknown marked angle.

(a)

(b)

(c)

(d)

(e)

(f)

Find each unknown marked angle.

(a) ABC is a straight line. ∠ABD = 125°. Find ∠DBC.

(b) AOB and COD are straight lines. ∠BOC = 162°.

(a) Find ∠AOD.
(b) Find ∠DOB.

(c) In the figure, ∠AOD = 46°, ∠COB = 81° and ∠DOC is a right angle. Find ∠BOA.

③ Find each unknown marked angle.

(a) ABCD is a parallelogram. Find ∠DAB and ∠ABC.

(b) EFGH is a rhombus. Find ∠FGH and ∠GHE.

(c) KLMN is a trapezium. Find ∠LMN and ∠NKL.

4 Find each unknown marked angle.

(a) ABD and CBE are straight lines. Find ∠CDB.

(b) WXZ and XYZ are identical triangles. ∠ZWX = 84°. Find ∠WXY.

Finding Unknown Angles in Geometrical Figures

⚠️ Worksheet 1

1 Find each unknown marked angle.

(a) ABCD is a parallelogram. Find ∠DAC and ∠ACD.

(b) EFGH is a rhombus. Find ∠EFH and ∠GHF.

(c) KLMN is a trapezium. Find ∠LNK and ∠LMN.

② Find each unknown marked angle.

(a) ABCF and CDEF are trapeziums. Find ∠DCB.

(b) UXY is an isosceles triangle and UY = UX. UVWY is a trapezium.
Find ∠YUX and ∠XUV.

⚠️ Worksheet 2
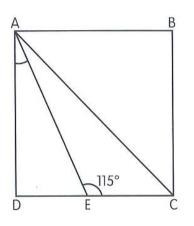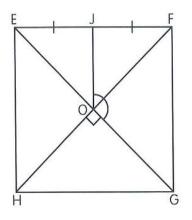
1 ABCD is a square. ∠CEA = 115°. Find ∠DAE.
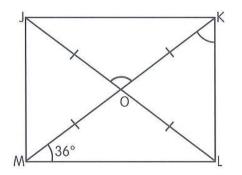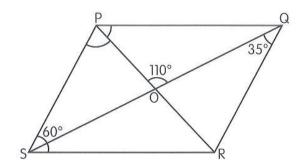
2 EFGH is a square. EJ = FJ and ∠HOG = 90°. Find ∠GOJ.

3 JKLM is a rectangle. OJ = OK = OM = OL and ∠LMK = 36°. Find ∠MKL and ∠KOJ.

4 PQRS is a parallelogram. ∠RSP = 60°, ∠QOP = 110° and ∠SQR = 35°. Find ∠OPQ and ∠SPO.

L2 Worksheet 3
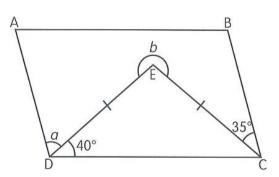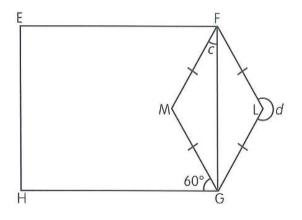
1 ABCD is a parallelogram and ECD is an isosceles triangle with EC = ED. ∠CDE = 40° and ∠BCE = 35°. Find ∠a and ∠b.
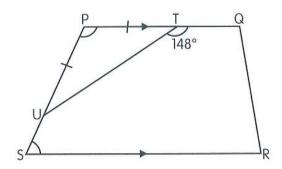
2 EFGH is a rectangle and FLGM is a rhombus. ∠MGH = 60°. Find ∠c and ∠d.
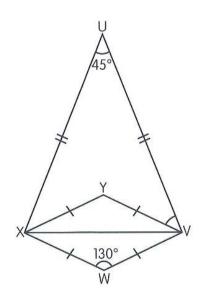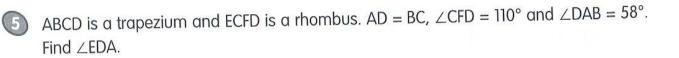
3 PQRS is a trapezium. PT = PU and ∠UTQ = 148°. Find ∠SPT and ∠RSP.
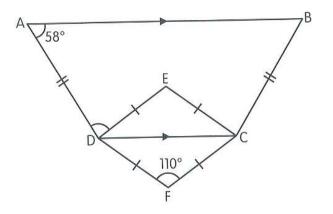
4 UVX is an isosceles triangle with UX = UV and XYVW is a rhombus. ∠XUV = 45° and ∠VWX = 130°. Find ∠UVY.

5 ABCD is a trapezium and ECFD is a rhombus. AD = BC, ∠CFD = 110° and ∠DAB = 58°.
Find ∠EDA.
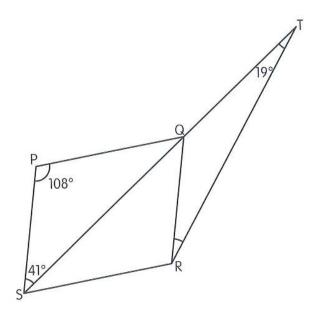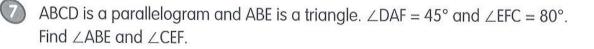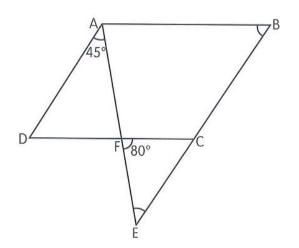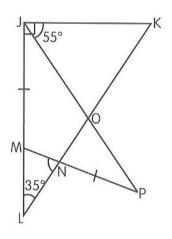
6 PQRS is a parallelogram. SQT is a straight line. ∠QSP = 41°, SPQ = 108° and ∠QTR = 19°.
Find ∠TRQ.

7 ABCD is a parallelogram and ABE is a triangle. ∠DAF = 45° and ∠EFC = 80°.
Find ∠ABE and ∠CEF.
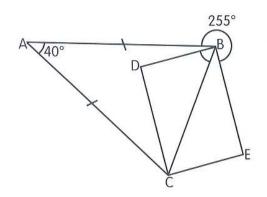
8 JKL is a right-angled triangle. JPM is an isosceles triangle with JM = PM. ∠OJK = 55°
and ∠NLM = 35°. Find ∠MNL.
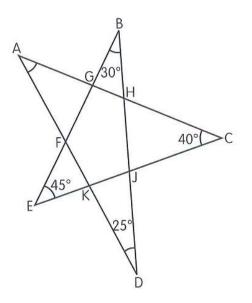
9 In the figure, DBEC is a rectangle and ABC is an isosceles triangle with AB = AC. ∠CAB = 40° and ∠ABE = 255°. Find ∠DBC.

255°

A 40°

D

B

E

C
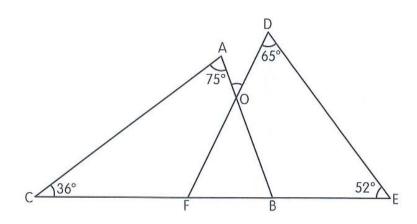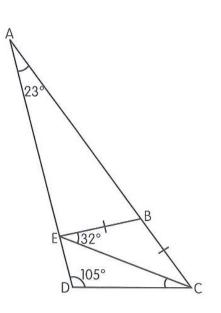
10 In the figure, ∠EBD = 30°, ∠ACE = 40°, ∠BDA = 25° and ∠CEB = 45°. Find ∠DAC.

B

A

G 30°

H

F

40° C

45°

K

J

E

25°

D

11 In the figure, ABC and DEF are triangles. Find ∠DOA.

12 ABC and AED are straight lines. BE = BC. ∠EAB = 23°, ∠CEB = 32° and ∠CDE = 105°. Find ∠ECD.

L3 Worksheet 4
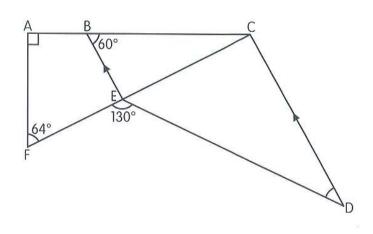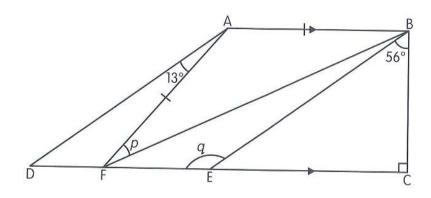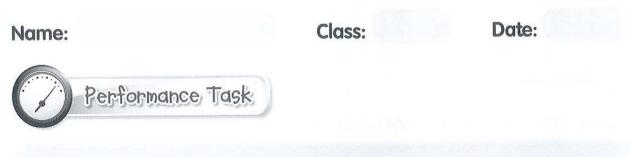
1 In the figure, ACF is a right-angled triangle and BCDE is a trapezium. ∠CFA = 64°, ∠EBC = 60° and ∠FED = 130°. Find ∠CDE.

2 ABCD is a trapezium and ABED is a parallelogram. BC is perpendicular to DC and AB = AF. Find $\angle p$ and $\angle q$.

Performance Task
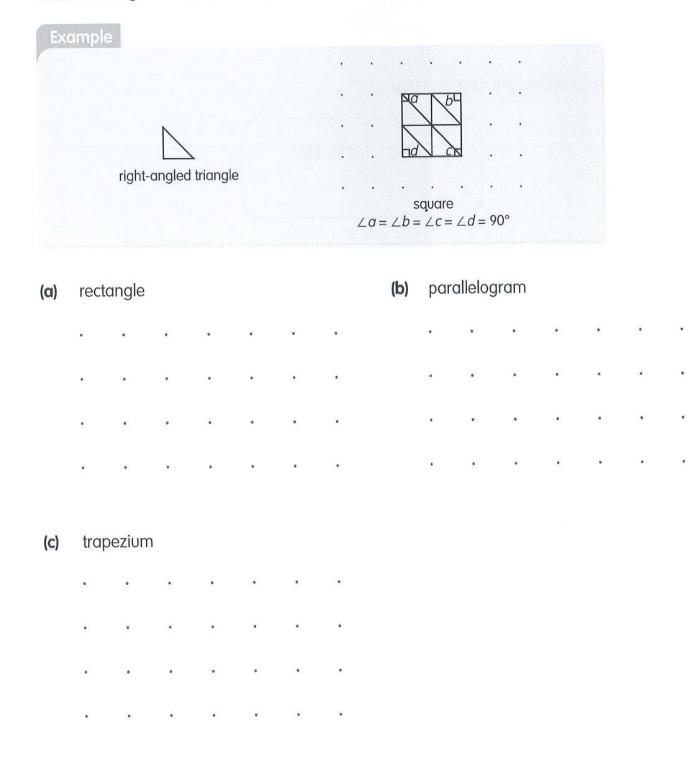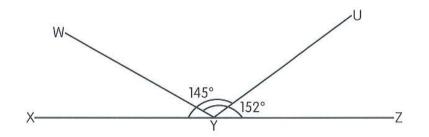
Activity: Draw 4-sided figures using right-angled triangles and find their angles.

Draw the following shapes in the dot grid provided using 8 right-angled triangles. Name the angles as *a*, *b*, *c* and *d*. Then find $\angle a$, $\angle b$, $\angle c$ and $\angle d$.

Example

right-angled triangle

square

$\angle a = \angle b = \angle c = \angle d = 90°$

(a)   rectangle

(b)   parallelogram

(c)   trapezium

Math Journal
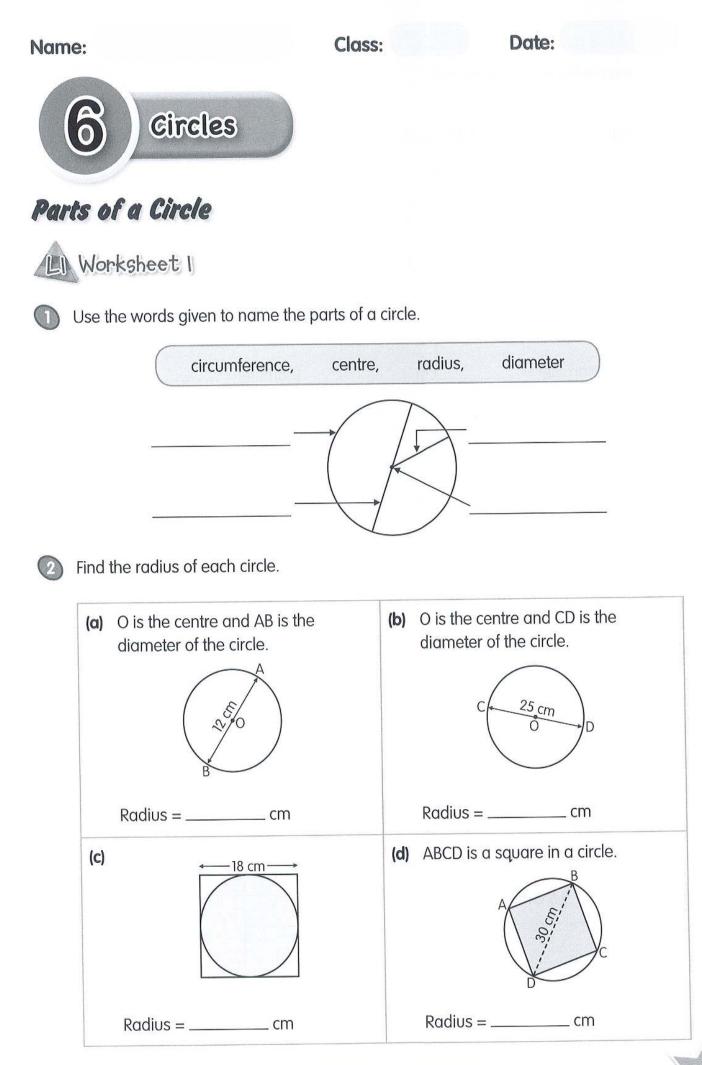
In the figure, XYZ is a straight line. $\angle XYU = 145°$ and $\angle WYZ = 152°$.
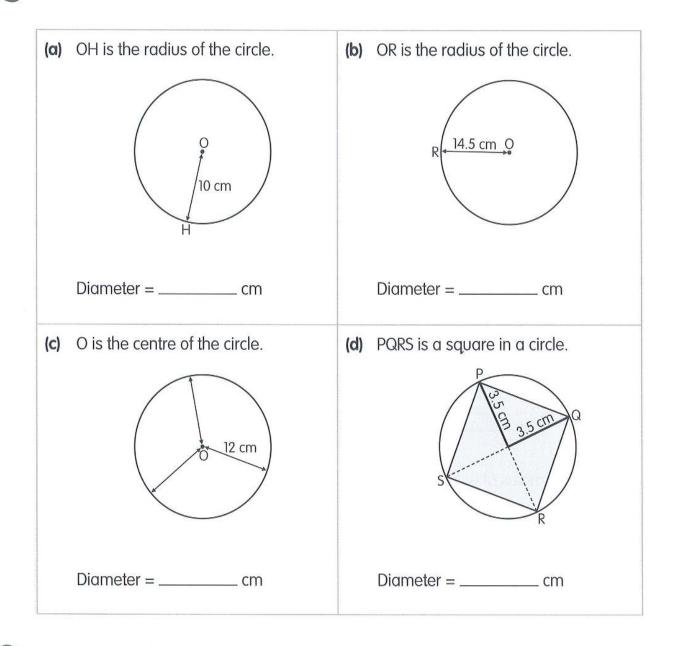
To find $\angle WYU$, Janice subtracted 145° from 152°.

$$\angle WYU = 152° - 145°$$
$$= 7°$$

Suggest to Janice why 7° cannot be the answer by stating the type of angle WYU is.

Show and explain how you would find $\angle WYU$.

6 Circles

Parts of a Circle

△ **LI** Worksheet I

1 Use the words given to name the parts of a circle.

> circumference,   centre,   radius,   diameter

_____   _____

_____   _____

2 Find the radius of each circle.

(a) O is the centre and AB is the diameter of the circle.

12 cm, O, A, B

Radius = _____ cm

(b) O is the centre and CD is the diameter of the circle.

C ← 25 cm → O → D

Radius = _____ cm

(c)

← 18 cm →

Radius = _____ cm

(d) ABCD is a square in a circle.

A, B, 30 cm, C, D

Radius = _____ cm

3 Find the diameter of each circle.

(a) OH is the radius of the circle.

O

/10 cm

H

Diameter = _____ cm

(b) OR is the radius of the circle.

R ←— 14.5 cm —→ O

Diameter = _____ cm

(c) O is the centre of the circle.

O ← 12 cm →

Diameter = _____ cm

(d) PQRS is a square in a circle.

P

3.5 cm

3.5 cm

Q

S

R

Diameter = _____ cm

4 Complete the table.

Radius	Diameter
4 cm	
9.5 cm	
	40 cm
	28.6 cm
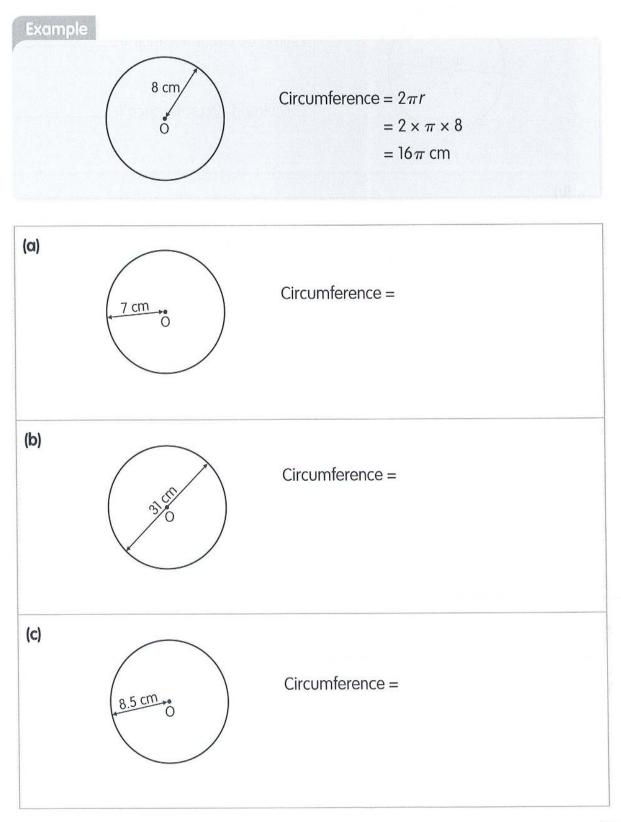
Name: Class: Date:

Circumference of a Circle

🔺LI Worksheet 2

1   For each circle, O is the centre.
Find the circumference of each circle. Leave the answer in terms of π.

Example

8 cm

Circumference $= 2\pi r$

$= 2 \times \pi \times 8$

$= 16\pi$ cm

(a)

7 cm
O

Circumference =

(b)

31 cm
O

Circumference =

(c)

8.5 cm
O

Circumference =
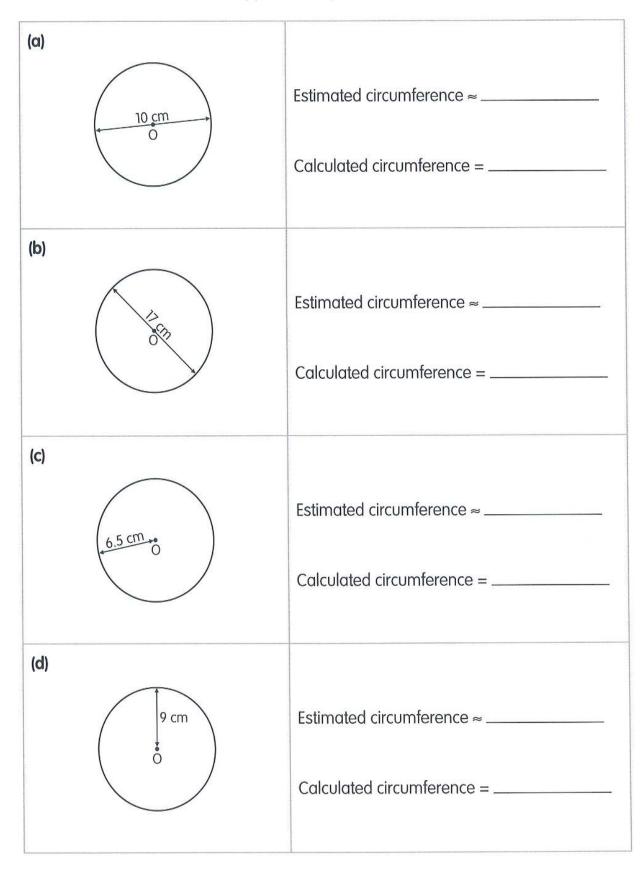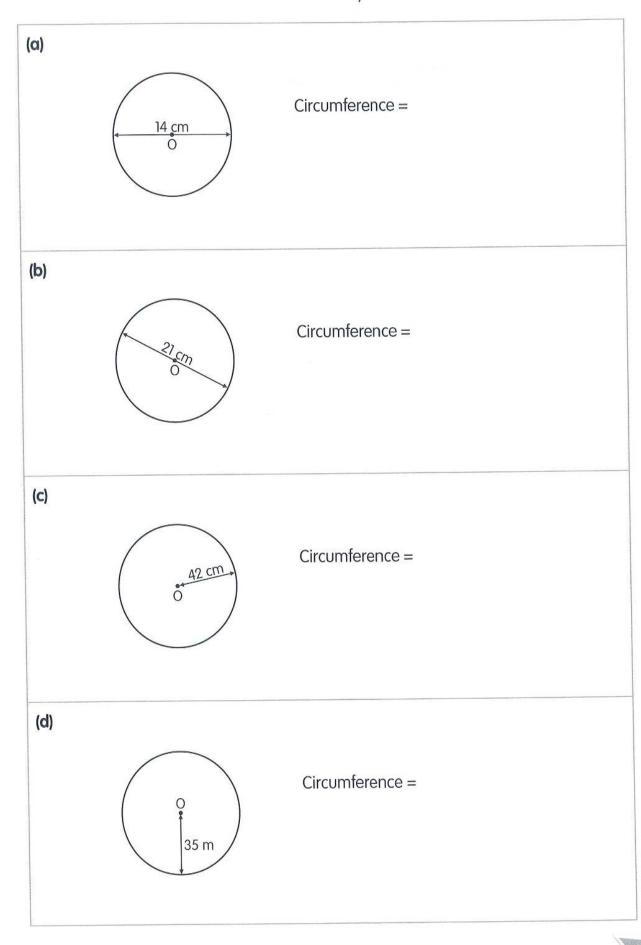
For each circle, O is the centre.
Estimate the circumference of each circle. Then use a calculator to find the
circumference. Give each answer correct to 2 decimal places.

The circumference of a circle is approximately _____ times its diameter.
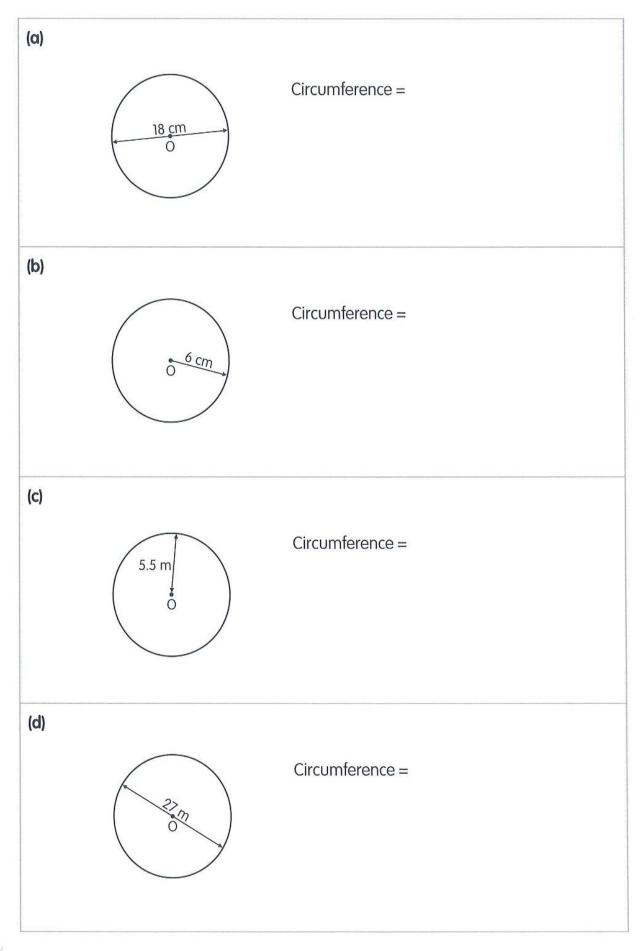
(a)	
10 cm O	Estimated circumference ≈ _____ Calculated circumference = _____
(b)	
17 cm O	Estimated circumference ≈ _____ Calculated circumference = _____
(c)	
6.5 cm O	Estimated circumference ≈ _____ Calculated circumference = _____
(d)	
9 cm O	Estimated circumference ≈ _____ Calculated circumference = _____

3 For each circle, O is the centre.

Find the circumference of each circle. (Take $\pi = \dfrac{22}{7}$.)

(a)

14 cm
O

Circumference =

(b)

21 cm
O

Circumference =

(c)

42 cm
O

Circumference =

(d)

O

35 m

Circumference =

4 For each circle, O is the centre.

Find the circumference of each circle. (Take π = 3.14.)

(a)

Circumference =

(b)

Circumference =

(c)

Circumference =

(d)

Circumference =

L2 Worksheet 3
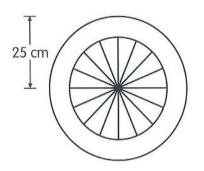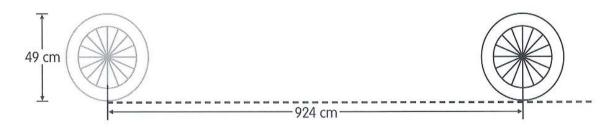
1. A wheel of radius 25 cm made 50 complete turns. Find the distance covered. Give the answer in metres. (Take $\pi = 3.14$.)

25 cm

2 A wheel of diameter 49 cm made some complete turns and covered a distance of 924 cm. How many complete turns did it make? (Take $\pi = \dfrac{22}{7}$.)

49 cm

924 cm
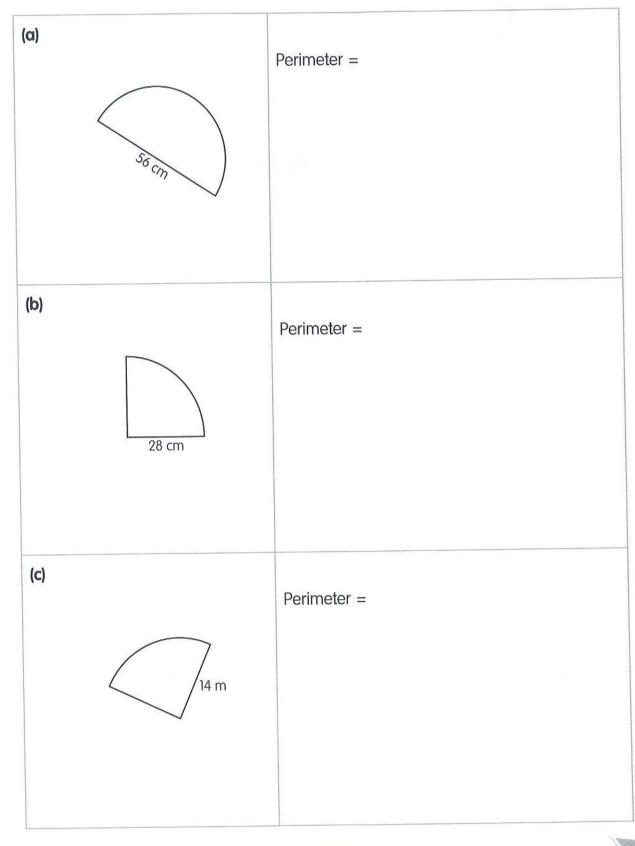
Perimeter of a Semicircle and a Quarter Circle
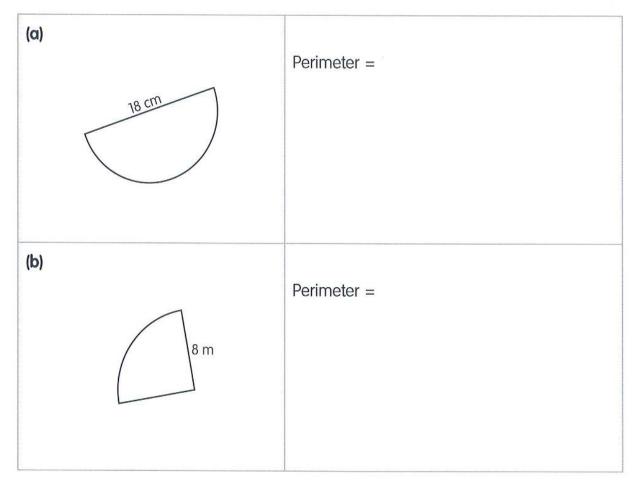
⚠️ Worksheet 4

**1** Find the perimeter of the semicircle and quarter circle. (Take $\pi = \dfrac{22}{7}$.)

(a) 56 cm	Perimeter =
(b) 28 cm	Perimeter =
(c) 14 m	Perimeter =

2 Find the perimeter of the semicircle and quarter circle. (Take $\pi = 3.14$.)

(a)	Perimeter =

(b)	Perimeter =

3 Find the perimeter of the semicircle and quarter circle.
Give the answer correct to 2 decimal places.

(a) O is the centre of a circle.	Perimeter =

(b)	Perimeter =

④ Find the perimeter of the following figures. (Take $\pi = \dfrac{22}{7}$.)

(a) The figure is made up of 3 quarter circles. O is the centre of a circle.

21 cm

(b) The figure is made up of a semicircle and a quarter circle. O is the centre of a circle.

14 cm

14 cm

(c) The figure is made up of 2 semicircles. O is the centre of a circle.

7 cm

O

7 cm

(d) The figure is made up of 2 quarter circles.

7 m

L2 Worksheet 5
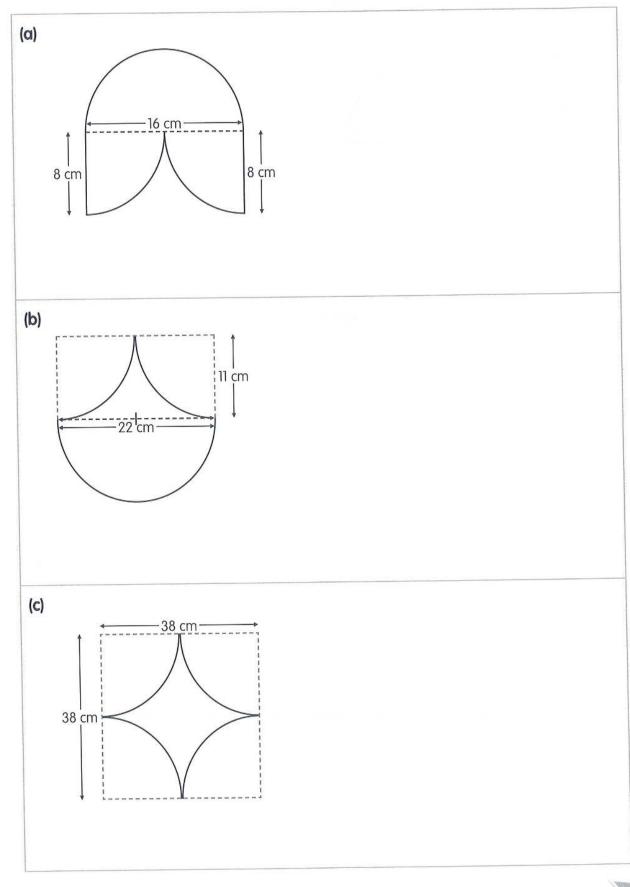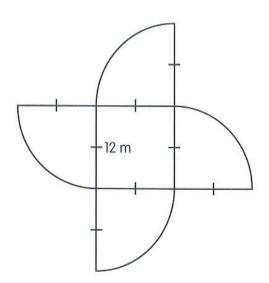
1 Find the perimeter of each figure. (Take π = 3.14.)

(a)

16 cm

8 cm   8 cm

(b)

11 cm

22 cm

(c)

38 cm

38 cm
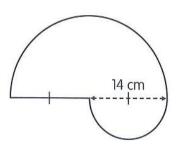
2 The figure is made up of 4 identical quarter circles and a square. Find the perimeter of the figure. (Take π = 3.14.)

12 m

3 The figure is made up of 2 semicircles. Find the perimeter of the figure. (Take $\pi = \frac{22}{7}$.)
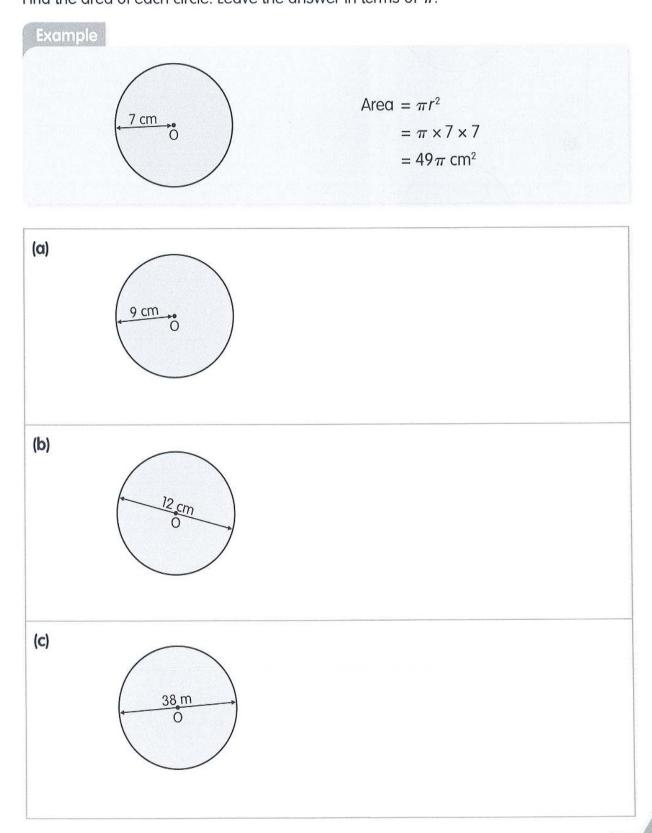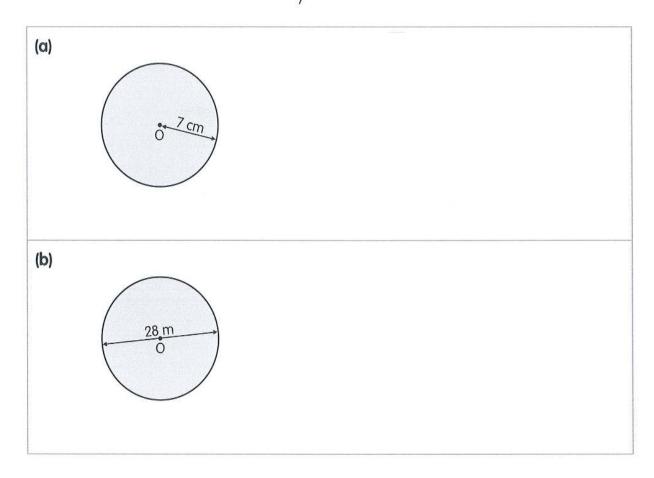
14 cm

Area of a Circle

⚠ Worksheet 6

1 For each circle, O is the centre.
Find the area of each circle. Leave the answer in terms of π.

Example

$$Area = \pi r^2$$
$$= \pi \times 7 \times 7$$
$$= 49\pi \text{ cm}^2$$

(a)

9 cm

(b)

12 cm

(c)

38 m
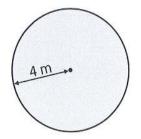
(2) For each circle, O is the centre.
Find the area of each circle. (Take $\pi = \dfrac{22}{7}$.)

(a)

7 cm

(b)

28 m
O
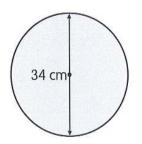
(3) Find the area of the circle of radius 4 m. (Take $\pi = 3.14$.)

4 m

(4) Find the area of the circle of diameter 34 cm. Give the answer correct to 2 decimal places.

34 cm
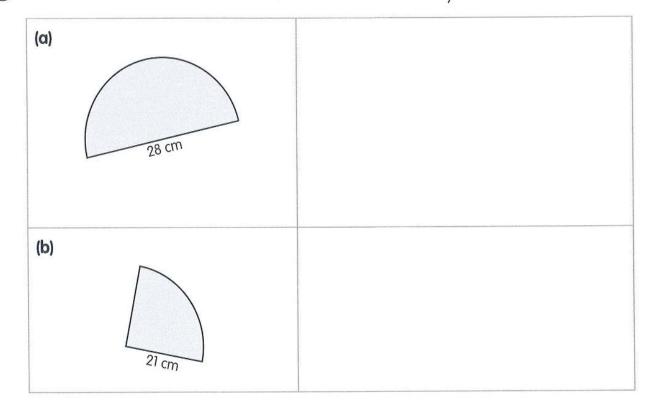
Name: **Class:**   **Date:**

Area of a Semicircle and a Quarter Circle
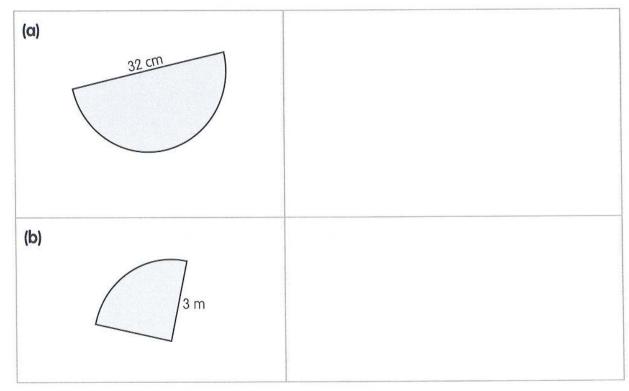
LI Worksheet 7

1. Find the area of the semicircle and quarter circle. (Take $\pi = \dfrac{22}{7}$.)

(a) 28 cm	
(b) 21 cm	

2. Find the area of the semicircle and quarter circle. (Take $\pi = 3.14$.)

(a) 32 cm	
(b) 3 m	
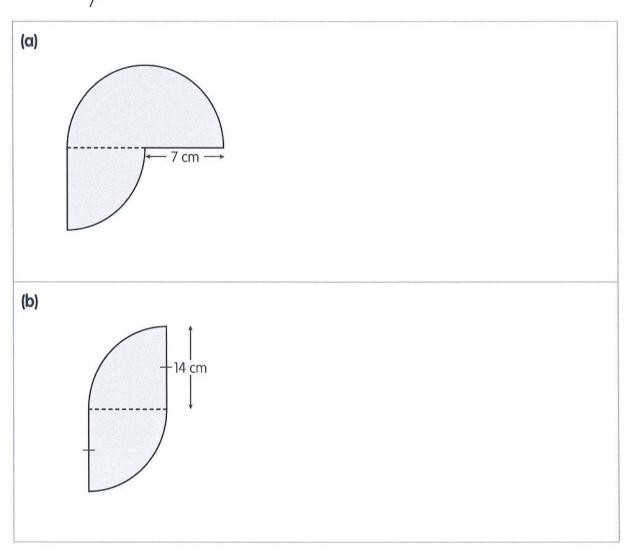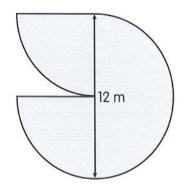
③ The figures are made up of semicircles and quarter circles. Find the area of each figure. (Take $\pi = \dfrac{22}{7}$.)

(a)

← 7 cm →

(b)

14 cm

④ The figure is made up of a semicircle and 2 identical quarter circles. Find the area of the figure. (Take $\pi = 3.14$.)

12 m
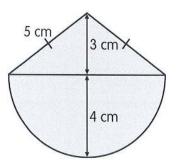
Area and Perimeter of Composite Figures

LI Worksheet 8

1   The figure is made up of an isosceles triangle and a semicircle.
   (a)   Find the perimeter of the figure.
   (b)   Find the area of the figure.
   Leave each answer in terms of π.

5 cm
3 cm
4 cm
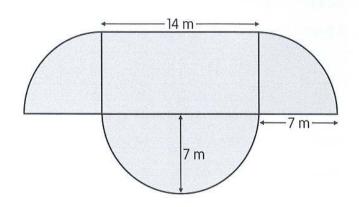
2 The figure is made up of a rectangle, 2 identical quarter circles and a semicircle.

(a) Find the perimeter of the figure.

(b) Find the area of the figure.

(Take $\pi = \frac{22}{7}$.)
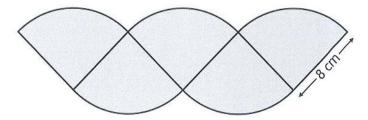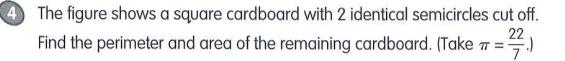
3 The figure is made up of 5 identical quarter circles.

    (a) Find the perimeter of the figure.

    (b) Find the area of the figure.

(Take $\pi = 3.14$.)

The figure shows a square cardboard with 2 identical semicircles cut off. Find the perimeter and area of the remaining cardboard. (Take $\pi = \frac{22}{7}$.)

L2 Worksheet 9
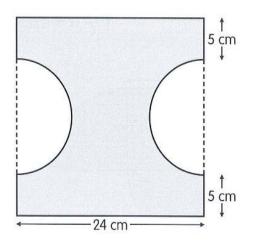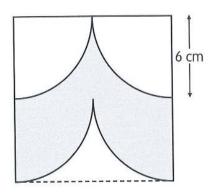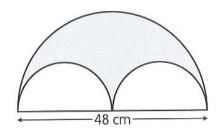
1. The figure is made up of identical quarter circles. Find the area of the shaded part. (Take $\pi = 3.14$.)

6 cm

2. The figure is made up of 3 semicircles. Find the area of the shaded part. (Take $\pi = 3.14$.)

48 cm
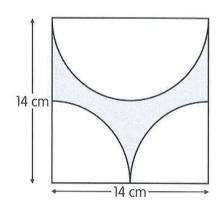
3 The figure shows a semicircle and two quarter circles drawn inside a square.

    (a) Find the perimeter of the shaded part.

    (b) Find the area of the shaded part.

(Take $\pi = \dfrac{22}{7}$.)

L3 Worksheet 10
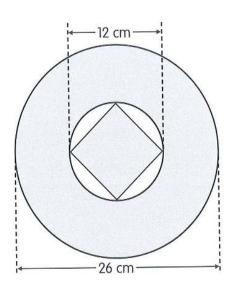
1. The figure shows two circles and a square inside the smaller circle. The diameter of the bigger circle is 26 cm. The diameter of the smaller circle is 12 cm. Find the total area of the shaded parts. (Take $\pi = 3.14$.)
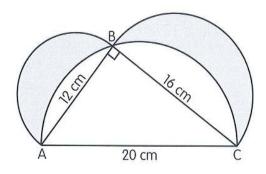
2 The figure shows 3 semicircles and a right-angled triangle. Find the total area of the shaded parts. (Take $\pi = 3.14$.)

Performance Task

Activity: Compare the sizes of pizzas of different diameters.

Work in groups.

Cut out the pictures of the pizzas on page 227 and page 229.

The diameter of the large pizza is twice the diameter of each smaller pizza.

(a) Is the area of the large pizza equal to the total area of the two smaller pizzas?

(b) If the price of the big pizza is 3 times the price of each smaller pizza, would you buy the big pizza or three smaller pizzas? Explain your choice.

(Take $\pi = 3.14$.)

Problem Solving

Two identical wheels that are 7.18 m apart have radius 7 cm each as shown. They move towards each other. Each wheel takes 2 seconds to make one full turn. How long will it take for the two wheels to meet if they rotate at the same rate? (Take $\pi = \dfrac{22}{7}$.)

7 cm

7 cm

7.18 m

- Do you understand the problem?
- What is your plan?
- Show how you solve the problem.
- Remember to check your solution.

Plan

Solve

Check

Math Journal
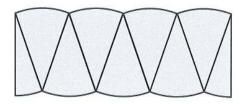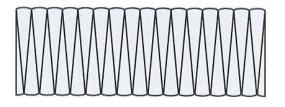
How is the area of a circle related to the area of a rectangle?
Janice and Peter do an activity to find out. Both of them use an identical circle with radius *r* cm.

Janice cuts her circle into parts and arranges them as shown.

Peter cuts his circle into parts and arranges them as shown.

Whose arrangement will show an area that is closer to the area of the rectangle?
Explain.
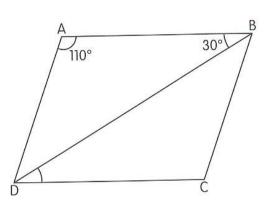
Review 3

Angles in Geometrical Figures
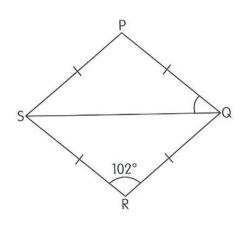
1. ABCD is a parallelogram. ∠DAB = 110° and ∠ABD = 30°.
   Find ∠CDB.
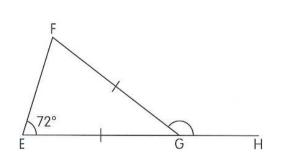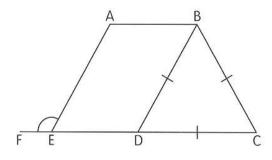
2. PQRS is a rhombus and ∠QRS = 102°. Find ∠PQS.

3 EFG is an isosceles triangle with EG = FG and ∠GEF = 72°. Find ∠HGF.
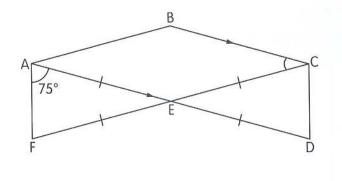
4 ABDE is a parallelogram and BCD is an equilateral triangle. FEDC is a straight line. Find ∠AEF.

5. BCDA is a trapezium and BC // AD. AEF and DEC are isosceles triangles. AE = FE = CE = DE. AED and FEC are straight lines. ∠FAE = 75°. Find ∠BCE.
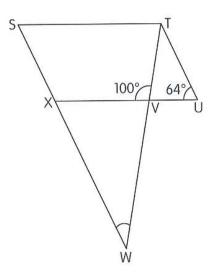

6. STUX is a parallelogram. ∠TVX = 100° and ∠TUV = 64°. Find ∠TWS.
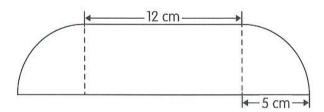
Circles

7 Complete the table. (Take $\pi = \dfrac{22}{7}$.)

Circle	Radius	Diameter	Circumference
A	7 cm		
B		7 cm	
C	21 m		

8 The figure is made up of 2 identical quarter circles and a rectangle. Find the perimeter of the figure. (Take $\pi = 3.14$.)
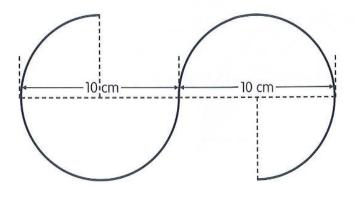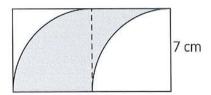
9 A wire is bent to form 2 semicircles and 2 quarter circles as shown below. What is the length of the wire? (Take π = 3.14.)
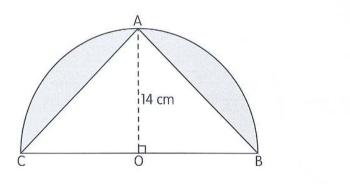

10 The figure shows 2 identical quarter circles in a rectangle. Find the perimeter of the shaded part. (Take $\pi = \frac{22}{7}$.)
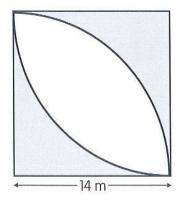

7 cm

11. The figure shows a triangle ABC drawn inside a semicircle. The height of the triangle is 14 cm. O is the centre of a circle. Find the total area of the shaded parts. (Take $\pi = \frac{22}{7}$.)

12. The figure shows 2 quarter circles overlapping each other. Find the total area of the shaded parts. (Take $\pi = \frac{22}{7}$.)

14 m

Mid-Year Revision

Paper 1

Section A: Multiple-Choice Questions

Choose the correct answer and write its number (1, 2, 3 or 4) in the brackets provided.

1 Find the value of $\dfrac{18j - 6}{2}$ when $j = 2$.

    (1)   15
    (2)   7
    (3)   6
    (4)   5   (   )

2 Arrange the following fractions in **increasing** order.

$$\frac{5}{7}, \quad \frac{5}{9}, \quad \frac{1}{5}$$

    (1) $\dfrac{5}{7}, \dfrac{1}{5}, \dfrac{5}{9}$

    (2) $\dfrac{1}{5}, \dfrac{5}{7}, \dfrac{5}{9}$

    (3) $\dfrac{5}{9}, \dfrac{1}{5}, \dfrac{5}{7}$

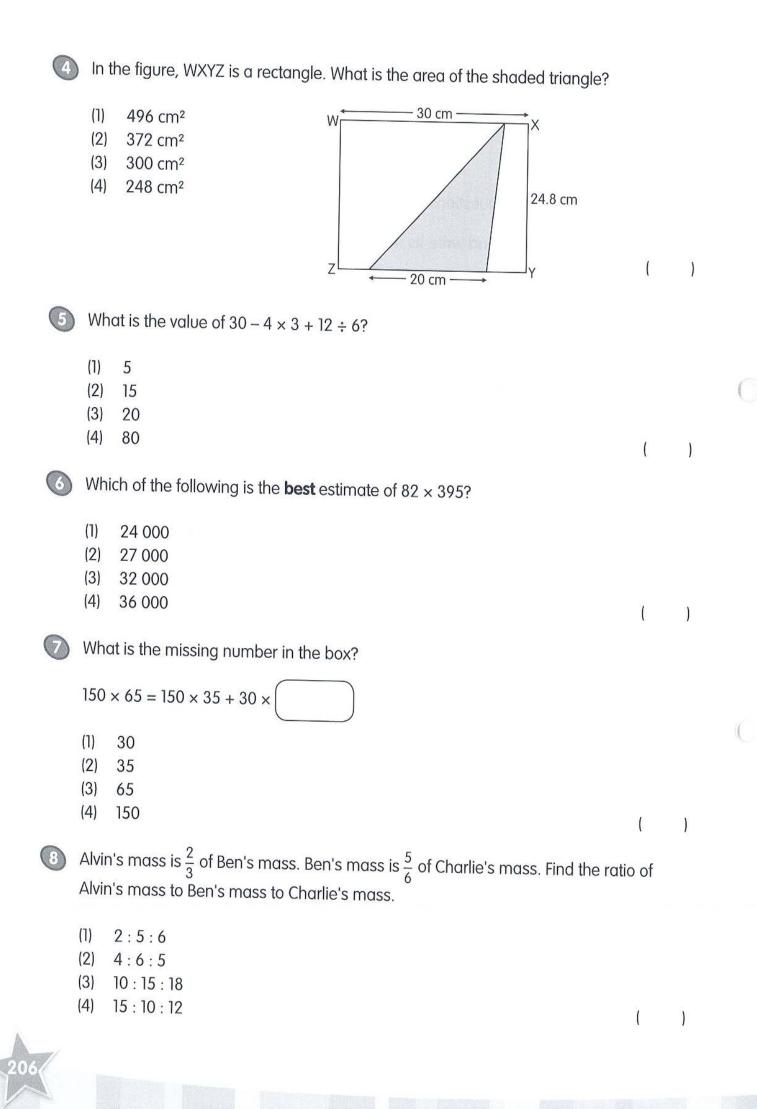   (4) $\dfrac{1}{5}, \dfrac{5}{9}, \dfrac{5}{7}$ (   )

3 In January, Mr Goh's salary was $2500. In February, his salary was $2000. What was the percentage decrease in his salary?

    (1)   10%
    (2)   20%
    (3)   25%
    (4)   50%   (   )

4. In the figure, WXYZ is a rectangle. What is the area of the shaded triangle?

   (1) 496 cm²
   (2) 372 cm²
   (3) 300 cm²
   (4) 248 cm²

W ⟵ 30 cm ⟶ X
24.8 cm
Z ⟵ 20 cm ⟶ Y

(　　)

5. What is the value of $30 - 4 \times 3 + 12 \div 6$?

   (1) 5
   (2) 15
   (3) 20
   (4) 80

(　　)

6. Which of the following is the **best** estimate of 82×395?

   (1) 24 000
   (2) 27 000
   (3) 32 000
   (4) 36 000

(　　)

7. What is the missing number in the box?

   $150 \times 65 = 150 \times 35 + 30 \times \boxed{}$

   (1) 30
   (2) 35
   (3) 65
   (4) 150

(　　)

8. Alvin's mass is $\frac{2}{3}$ of Ben's mass. Ben's mass is $\frac{5}{6}$ of Charlie's mass. Find the ratio of Alvin's mass to Ben's mass to Charlie's mass.

   (1) $2 : 5 : 6$
   (2) $4 : 6 : 5$
   (3) $10 : 15 : 18$
   (4) $15 : 10 : 12$

(　　)

9 A bag of 6 oranges costs $3.50. How much do 30 oranges cost?

    (1) $10.50
    (2) $17.50
    (3) $21.00
    (4) $105.00   (   )
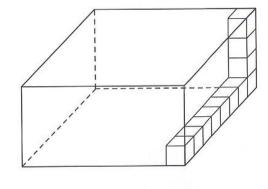
10 A rectangular box with a square base as shown below is filled with 11 unit cubes. How many more unit cubes are needed to fill the box completely?

    (1)   165
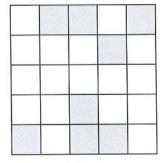   (2)   176
    (3)   245
    (4)   473   (   )

11 Which one of the 4 figures below is a symmetric figure?

    (1)   (2)

    (3)   (4)

(   )
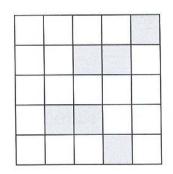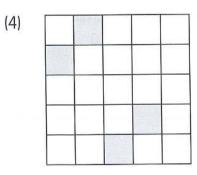
12 Janice spends 30% of her money on a blouse and 60% of the remainder on a pair of shoes. What percentage of her money is left?

(1) 10%
(2) 28%
(3) 42%
(4) 58%   (   )
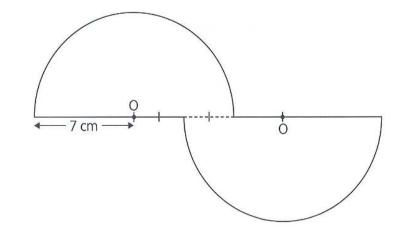
13 12 identical lamp posts are placed in a row with equal distance between every lamp post. The distance between the first and the fourth lamp post is 42 m. What is the distance between the first and the last lamp post?

(1) 132 m
(2) 144 m
(3) 154 m
(4) 168 m   (   )

14 The figure is made up of two identical semicircles. O is the centre of each circle. Find the perimeter of the figure given that the radius is 7 cm. (Take $\pi = \dfrac{22}{7}$.)
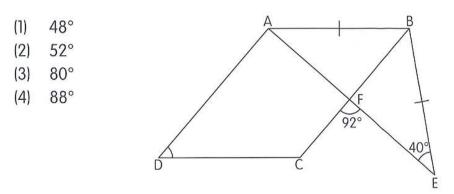
(1) 44 cm
(2) 51 cm
(3) 58 cm
(4) 65 cm   (   )

15 In the figure, ABCD is a parallelogram and ABE is an isosceles triangle with BA = BE. ∠CFE = 92° and ∠BEF = 40°. Find ∠CDA.

(1) 48°
(2) 52°
(3) 80°
(4) 88°   (   )

208

Section B: Short-Answer Questions

Write your answers in the spaces provided.

16 List all the common factors of 45 and 60.

Ans: _____

17 Find the value of $\frac{4}{7} \div 12$.

Ans: _____

18 Find the value of $29.04 \div 30$.

Ans: _____
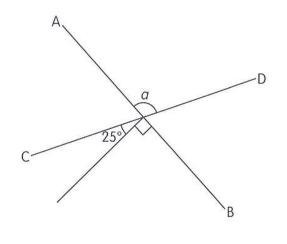
19 The table shows the charges for bicycle rental.

Bicycle Rental Rates	
For the first hour	$2.50
For every additional $\frac{1}{2}$ hour	$0.80

Ravi rented a bicycle from 10.30 a.m. to 1 p.m.
How much did he pay?

Ans: $ _____

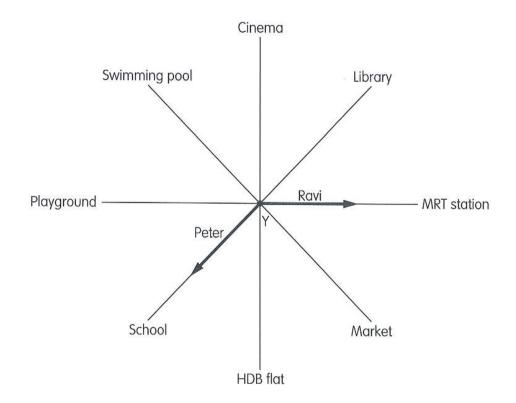20 In the figure, AB and CD are straight lines. Find ∠a.

Ans: _____ °

21 Peter and Ravi are standing at a point marked Y as shown below. Peter is facing the school while Ravi is facing the MRT station.

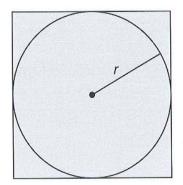Find the smallest turn in degrees that each boy must make so that both will face the swimming pool.

Ans: Peter: _____ °

Ravi: _____ °

22 The radius of a circle is *r* cm. Find the area of the square in terms of *r*.

Ans: _____ cm²

23 Max is 20 years old. Nancy is $\frac{3}{5}$ of Max's age. Find their total age in *x* years' time. Give your answer in terms of *x*.

Ans: _____

24 $\frac{5}{8}$ of the people in a library were children. The rest were adults. $\frac{3}{10}$ of the children were girls. There were 28 boys in the library. How many people were in the library altogether?

Ans: _____

25) A shopkeeper had 40 kg of green peas. He sold $\frac{3}{8}$ of it and packed the remaining green peas into smaller packets of $\frac{4}{5}$ kg each. What was the greatest number of packets of green peas that he could get?
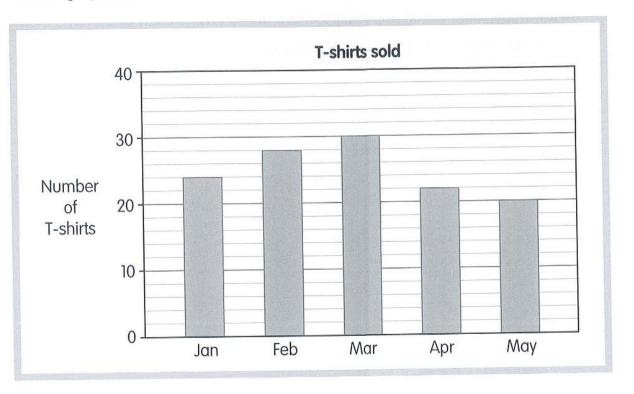
Ans: _____

26) The rectangle measures 20 cm by 10 cm. The length of the rectangle is increased by 20%. Find the ratio of the original area to the new area of the rectangle.
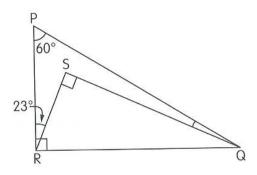
20 cm

10 cm

Ans: _____

27 The bar graph shows the number of T-shirts sold from January to May.

T-shirts sold

In which months were the number of T-shirts sold greater than the average number of T-shirts sold in the 5 months?

Ans: _____

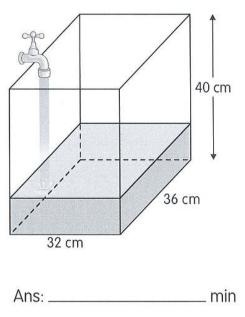**28** PQR and SQR are right-angled triangles. ∠RPQ = 60° and ∠SRP = 23°. Find ∠PQS.

Ans: _____ °

29. The number of red and green paper clips are in the ratio 12 : 7. There are $\frac{1}{3}$ as many yellow paper clips as red paper clips. There are 15 fewer yellow paper clips than green paper clips. Find the total number of paper clips.

Ans: _____

30. A rectangular tank is $\frac{1}{4}$ filled with water at first. A tap is turned on and water flows into the tank at a rate of 0.8 ℓ per minute. How long will it take to fill the tank with water completely?

40 cm

36 cm

32 cm

Ans: _____ min

Paper 2

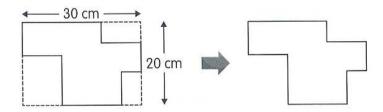For each of the following questions, show your working and answer clearly in the spaces provided.

1 A bakery gave 2 free buns for every $15 spent on their buns. Mr Hong received 26 free buns. What was the least amount he had spent?

Ans: $ _____

2 The length of a rectangle is 14 cm. The perimeter of the rectangle is $3y$ cm. Find the breadth of the rectangle in terms of y.

Ans: _____ cm

3 A rectangular cardboard measures 30 cm by 20 cm. 3 rectangular pieces are cut out from the cardboard. Find the perimeter of the remaining piece of cardboard.

Ans: _____ cm

215

4 A shop offered a storewide discount of 15% during a sale. Mabel bought a bag for $255 after the discount. What was the usual price of the bag?

Ans: $ _____

5 Lucy has red, blue and green buttons. $\frac{2}{5}$ of the buttons are red. The ratio of the number of blue buttons to the number of green buttons is 1 : 5. What percentage of the buttons are green?

Ans: _____ %

6 A baker had $4\frac{1}{4}$ kg of flour. He used $2\frac{5}{8}$ kg of the flour to bake some cakes. He then bought another $3\frac{2}{5}$ kg of flour. How much flour did he have in the end?
Give the answer as a mixed number.

Ans: _____ kg

7 At first, Janice and Amiya had some stickers in the ratio 9 : 4. Janice gave 20 stickers to Amiya and they then had the same number of stickers. How many stickers did Janice have at first?

Ans: _____

8 The table shows the number of books read by each pupil in a class of 40 pupils. On the average, each pupil reads 7 books. One of the numbers in the table is accidentally torn off. What number is it?

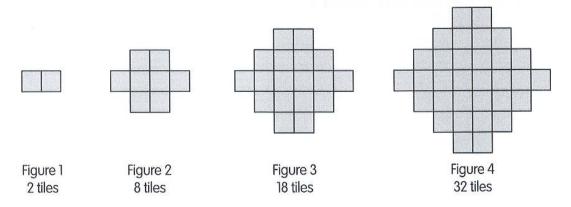| Number of books read by each pupil	0	6	
Number of pupils	15	12	13

Ans: _____

9 A container had a mass of 1.26 kg when it was completely filled with sand. It had a mass of 1.05 kg when it was $\frac{5}{8}$ filled with sand. Find the mass of the container.
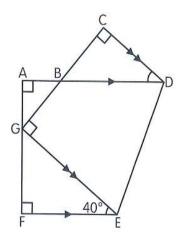
Ans: _____ kg

10 Identical square tiles are used to make the following pattern.

Figure 1   Figure 2   Figure 3   Figure 4
2 tiles   8 tiles   18 tiles   32 tiles

If the pattern continues, which figure will have 98 tiles?

Ans: _____
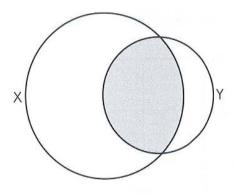
11. In the figure, ADEF and CDEG are trapeziums. AD // FE and CD // GE. ∠GEF = 40°, ∠GAB, ∠BCD, ∠EGB and ∠EFG are right angles. Find ∠CDB.
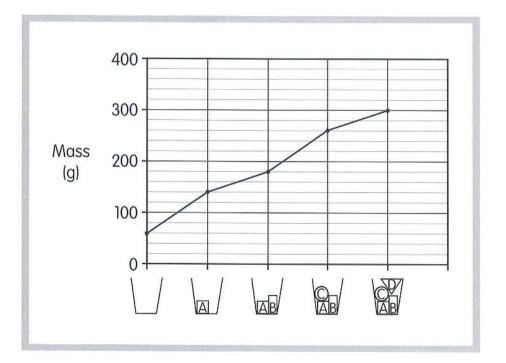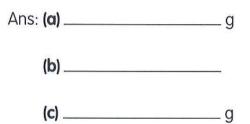

Ans: _____ °

The figure shows two overlapping circles. $\frac{2}{5}$ of Circle X and $\frac{4}{7}$ of Circle Y are shaded. Find the ratio of the area of the shaded part to the total area of the figure.

X

Y

Ans: _____

13 The line graph shows the mass of a plastic cup when empty and when 4 objects, A, B, C and D, are placed inside the plastic cup, one after another.

(a) What is the mass of the empty plastic cup?

(b) Which objects are heavier than the plastic cup?

(c) Find the average mass of objects A, B, C and D.

Ans: (a) _____ g

(b) _____

(c) _____ g

14 The figure shows a solid made up of 5 identical cubes. The edge of each cube is 5 cm.
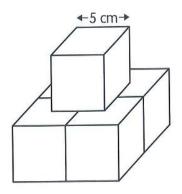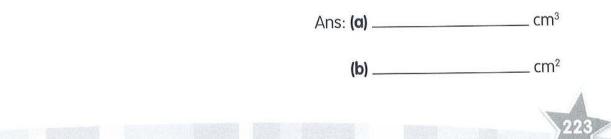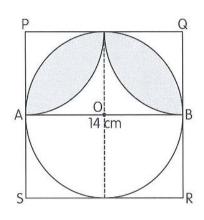   (a) Find the volume of the solid.
   (b) The whole solid is completely dipped into a pail of blue paint.
        Find the total area of the solid that has blue paint.

←5 cm→

Ans: (a) _____ cm³

(b) _____ cm²

15 In the figure, O is the centre of the circle. The diameter of the circle, AB, is 14 cm, and is the same as the length of each side of the square PQRS. Find the total area of the shaded parts. (Take $\pi = \dfrac{22}{7}$.)

P   Q

A   O
    14 cm   B

S   R

Ans: _____ cm^2

16 Jamie used 40% of her savings to buy a bag and 80% of the remainder to buy a blouse. She then spent $12 on food and had $6 left.

(a) How much did she pay for the blouse?

(b) How much did she have at first?

Ans: (a) $ _____

(b) $ _____

There are some pupils in Hall A and Hall B. If 14 pupils go from Hall A to Hall B, both halls will have an equal number of pupils. If 4 pupils go from Hall B to Hall A, the ratio of the number of pupils in Hall A to the number of pupils in Hall B will be 8 : 5.
How many pupils does Hall B have?
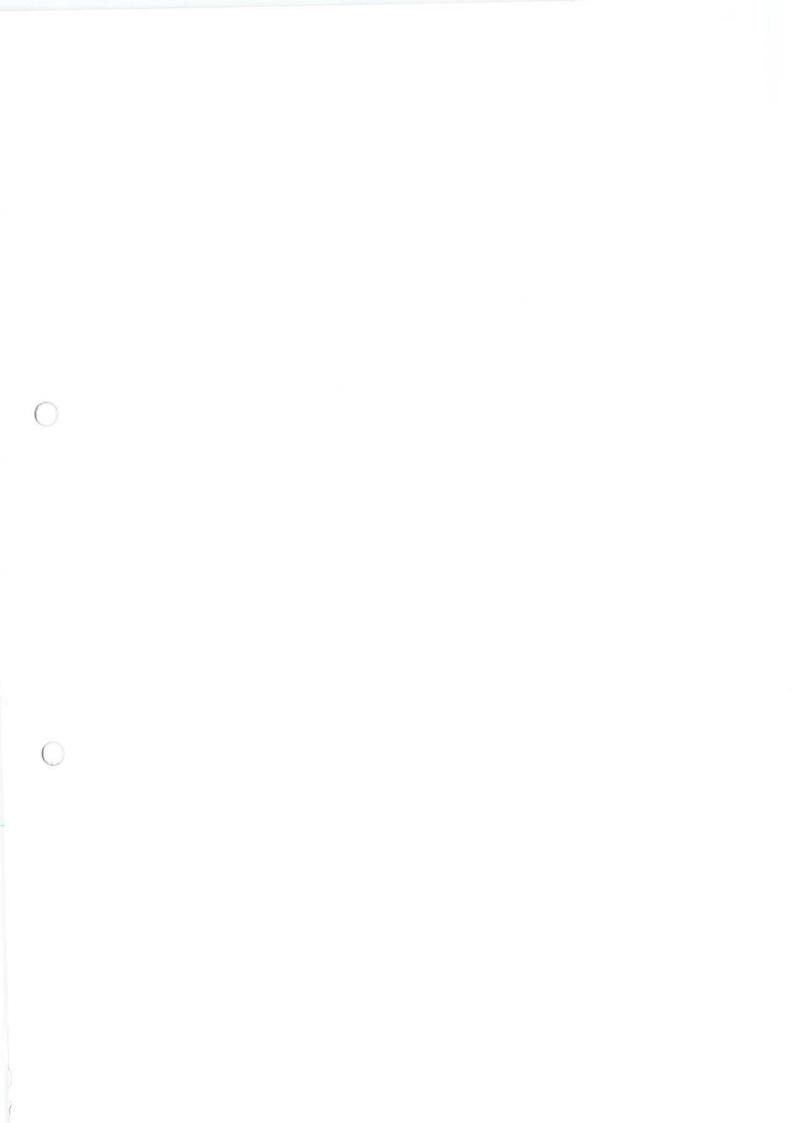
Ans: _____

Cut-Outs

Refer to page 63.

Refer to page 195.

Cut-Outs

Refer to page 195.

Targeting Mathematics

The Targeting Mathematics workbooks are part of a comprehensive learning package that meets the new syllabus requirements of the Ministry of Education, Singapore.

The exercises in the workbooks are scaffolded to support learning in a progressive manner.

Features

- **L1 Worksheets**
  Aim to assess pupils' understanding of basic concepts and help them acquire the necessary process skills

- **L2 Worksheets**
  Aim to assess pupils' understanding of moderately difficult concepts and help them acquire higher-order thinking skills

- **L3 Worksheets**
  Aim to assess pupils' understanding of concepts at a deeper level and encourage creative and critical thinking to solve non-routine, challenging mathematics problems

- **Problem Solving**
  Designed to foster creativity in problem solving within mathematics as well as the real world

- **Math Journal**
  Allow pupils to reflect on their learning

- **Review/Mid-Year Revision**
  Allow pupils to revise and consolidate mathematical concepts learnt