

Marshall Cavendish Education (MCE) is a global education solutions provider dedicated to nurturing the joy of learning and preparing students for the future. We believe the best way to do so is by simplifying learning and listening to the needs of schools, teachers, students, and parents.

MCE makes world-class educational content more accessible through a seamless experience that integrates both print and digital resources. We provide holistic and end-to-end solutions customised to the school's requirements, with professional development to help educators implement the curriculum.

We've worked with ministries, policymakers, educators, and parents in over 90 countries, designing education solutions in 14 languages for Pre-K to 12. MCE is the only Asia-based publisher that is an endorsement partner of Cambridge Assessment International Education.

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Series Architecture

- Student's Book (Print and eBook)
- Workbook (Print and eBook)
- Teacher's Guide
- Additional Digital Resources* (Available on MCEduHub)
 - Editable Lesson Plans
 - Downloadable SOWs in Word
 - Question Bank for each chapter in Word
 - Student eBook
 - Personalised Digital Assessment
 - Virtual Manipulatives (VM)

**These resources will not go through the Cambridge International endorsement process.*



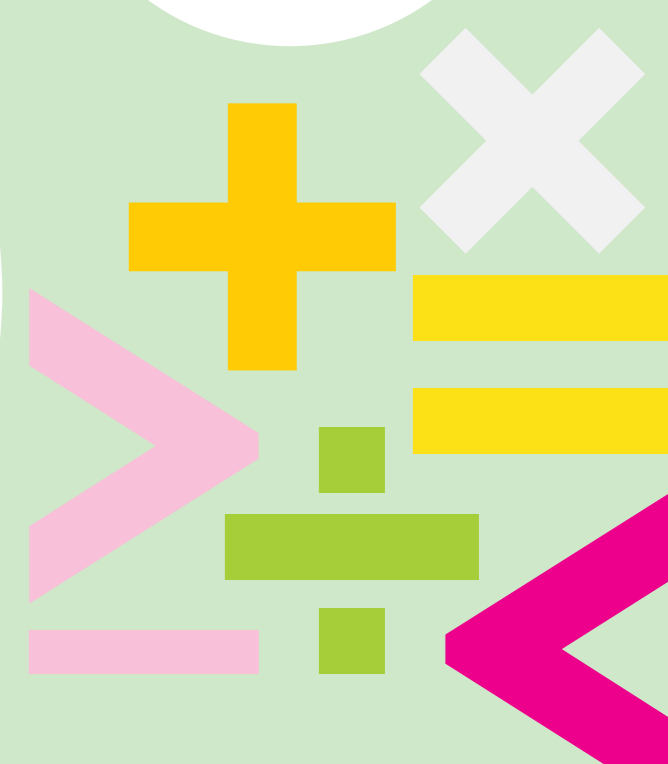
Scan here to access
the MCE Cambridge
Lower Secondary
Mathematics website

Cambridge Lower Secondary Mathematics

BROCHURE

**Beyond Basics,
Reimagine Education**

*We are working with Cambridge Assessment International
Education towards endorsement of this series.*



Overview

The **MCE Cambridge Lower Secondary Mathematics** package has been developed for schools that follow and deliver the Cambridge Lower Secondary Mathematics curriculum framework (0862). While the series is fully aligned to the Cambridge curriculum framework, the pedagogies and teaching practices follow those used in Singapore, one of the top performing countries in international assessments such as Trends in International Maths and Science Study (TIMSS) and Programme for International Student Assessment (PISA).

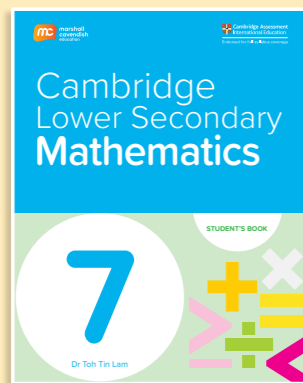
The series is written based on the belief that every student can succeed in Mathematics regardless of their English language proficiency and learning readiness. It emphasises on the development of students' conceptual understanding and procedural skills through analysis and reasoning, mathematical discussions and problem-solving, enabling them to achieve mathematical mastery.

This series comes complete with a comprehensive suite of print and digital resources that help 21st century learners and teachers succeed.

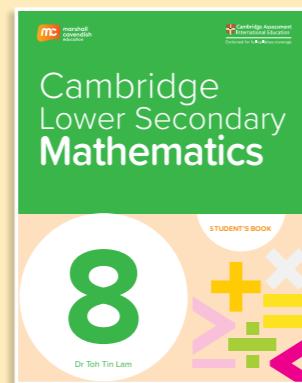
What's in Our Package?

Student Book

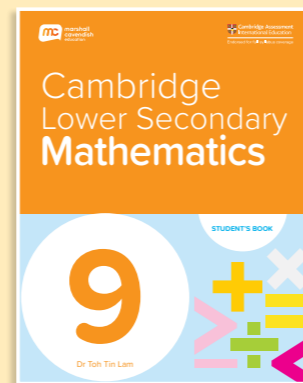
Print and eBook (with access to personalised digital assessment)



Stage 7
ISBN 9789815090390



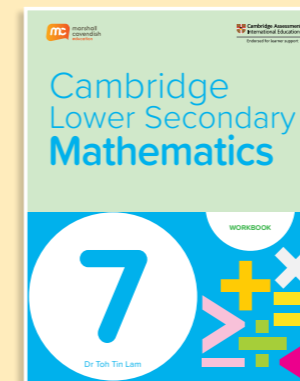
Stage 8
ISBN 9789815090406



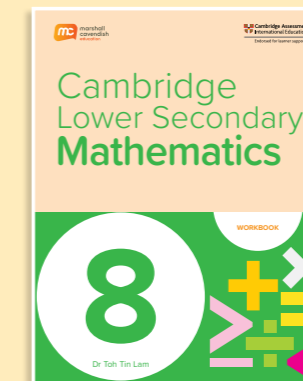
Stage 9
ISBN 9789815090413

Workbook

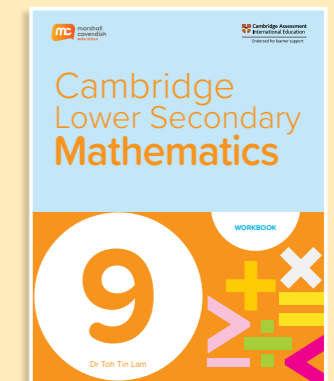
Print and eBook



Stage 7
ISBN 9789815090420

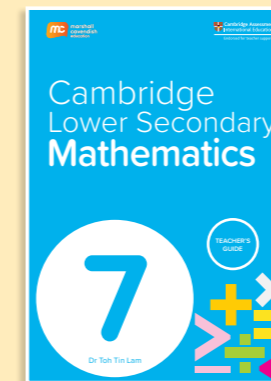


Stage 8
ISBN 9789815090437

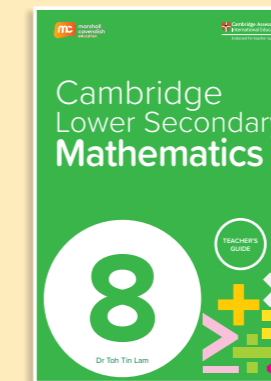


Stage 9
ISBN 9789815090444

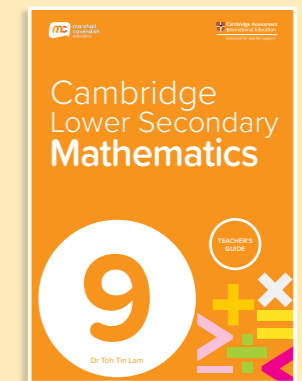
Teacher's Guide



Stage 7
ISBN 9789815090451



Stage 8
ISBN 9789815090468



Stage 9
ISBN 9789815090475

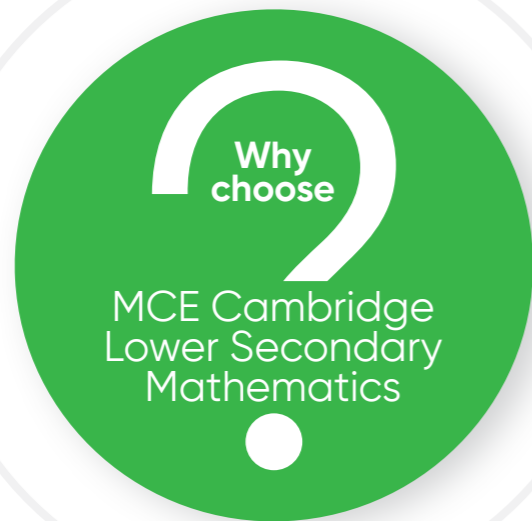
Additional Digital Resources*

Available on EduHub

- Editable Lesson Plans
- Downloadable SOWs in Word
- Question Bank for each chapter in Word
- Student eBook
- AI-Driven Personalised Digital Assessment
- Virtual Manipulatives (VM)

*These resources will not go through the Cambridge International endorsement process.

Engaging Students and Minimising Their Apprehension in Learning Mathematics Using Comics



Based on the research paper: 'Use of comics to enhance student's learning for the development of the twenty-first century competencies in the mathematics classroom', comics provide a motivating and engaging learning experience. The use of comics in the teaching packages was shown to be effective in capturing students' interest to learn by minimising their anxiety and increasing their motivation.

This series incorporates comics to bridge the gap between the abstract Maths concepts and real-world contexts so that students will be able to better appreciate and understand the application of Maths.

1. Engages students and minimises their apprehension in learning Mathematics using comics

2. Encourages guided inquiry, active learning, and the development of 21st century competencies through a student-centred approach that incorporates the Thinking and Working Mathematically strand throughout the entire series

3. Allows for Personalised Digital Assessment using AI* and self-directed learning



Comics capture interest and impress key mathematical ideas.

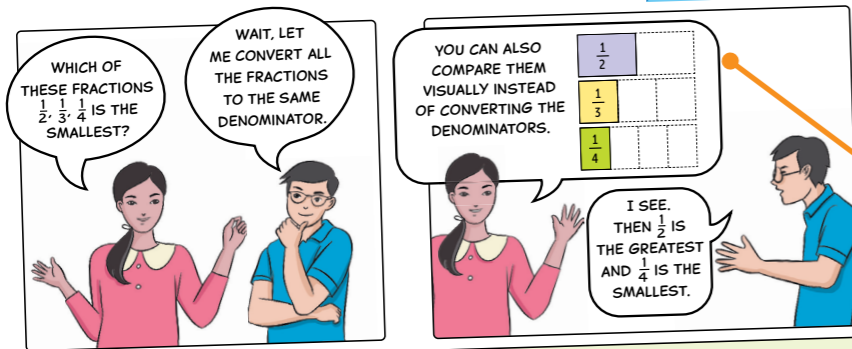
Thinking and Working Mathematically (TWM) skills are integrated throughout the learning and practice, and are marked with the TWM star.

Comics set the stage to engage and encourage students to participate and collaborate actively in class discussions through **Discuss**.

*These resources will not go through the Cambridge International endorsement process.

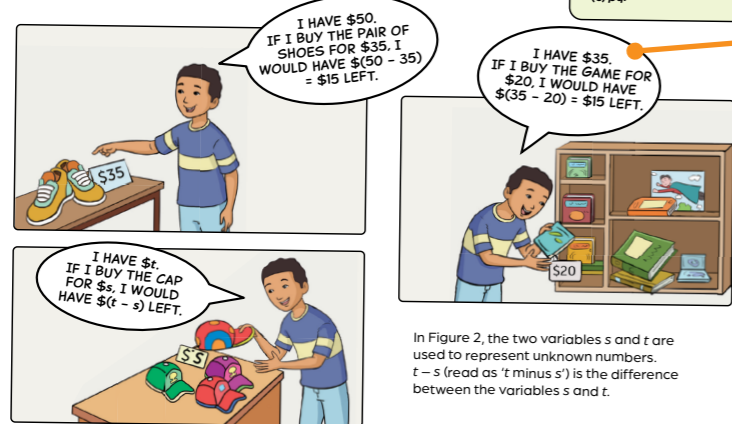
Grade 7 Student Book p.47

Comparing Fractions with the Same Numerator



Think! Without converting all the fractions to the same denominator, can you tell which are the greatest and smallest fractions? $\frac{2}{5}, \frac{2}{7}, \frac{2}{10}, \frac{2}{19}$

Comics facilitate conceptual understanding by unpacking Maths concepts.



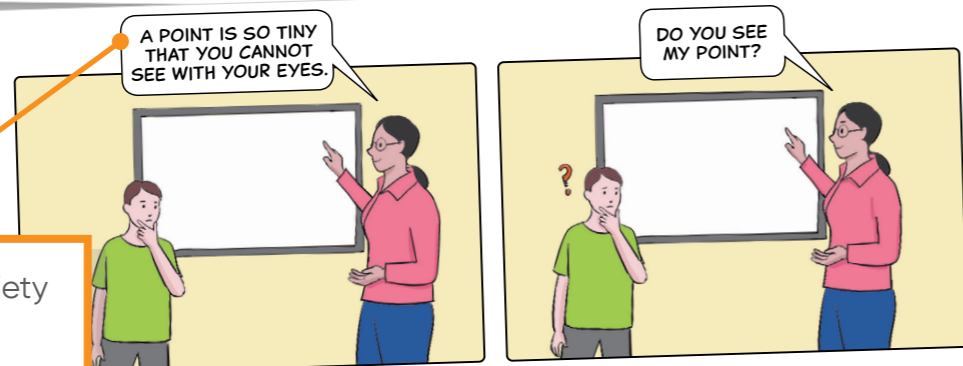
In Figure 2, the two variables s and t are used to represent unknown numbers. $t - s$ (read as 't minus s') is the difference between the variables s and t .

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ALGEBRA 137

Grade 7 Student Book p.284

Grade 7 Student Book p.137



Parallel Lines

Comics minimise anxiety by showing students how mathematical terms are used in real-world contexts, giving them the confidence to communicate using mathematical language.



Can you identify the pair of lines parallel to each other?

Grade 7 Student Book p.293

Grade 7 Student Book p.1

CHAPTER 01 Numbers

LET'S EXPLORE!

- 1.1 Integers and Place Value
- 1.2 The Four Operations
- 1.3 Whole Numbers
- 1.4 Divisibility Tests
- 1.5 Squares and Square Roots
- 1.6 Cubes and Cube Roots

IN A COOL TEMPERATE COUNTRY, THE TEMPERATURE IN SPRING CAN BE AT A COMFORTABLE 10°C TO 20°C.

I NEED TO BE WHERE SHE'S AT...

BRRRR!!!

Sam

Sarah

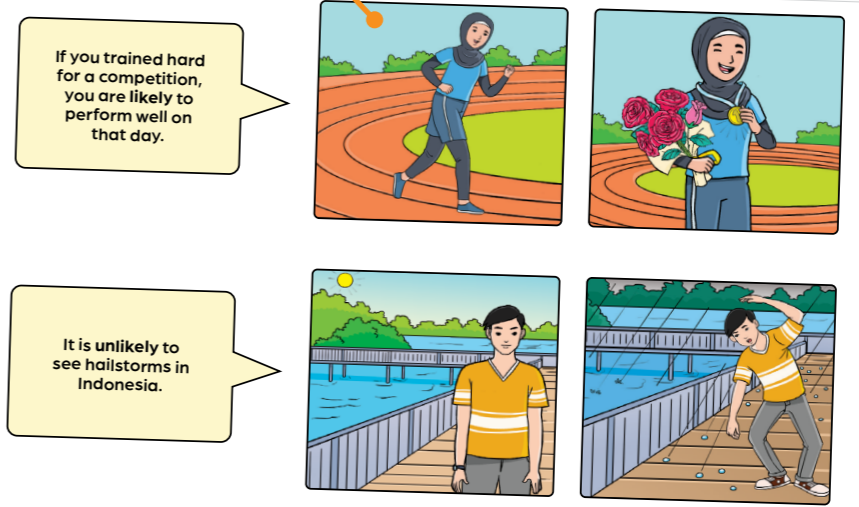
DISCUSS

Even though both temperatures shows 12°C, why do you think Sam seems to be feeling comfortable while Sarah is freezing?

NUMBERS 1

Comics provide a bridge between Maths concepts and real-world contexts to raise students' global awareness.

Grade 7 Student Book p.265



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PROBABILITY 265

Encouraging Guided Inquiry, Active Learning, and the Development of 21st Century Competencies through Student-Centred Learning Activities

For effective learning to take place, learners need to be provided with meaningful, engaging, and stimulating learning activities for them to explore concepts and construct understanding. These learning activities in the series provide students with opportunities to apply concepts and skills such as Thinking and Working Mathematically (TWM), communication, collaboration, creative and critical thinking. It is designed to grow self-directed learners and develop their 21st century competencies.

Engage in Discussions Using Real-World Contexts

CHAPTER 02 Fractions

- 2.1 Fractions
- 2.2 Comparing Fractions
- 2.3 Conversion between Improper Fractions and Mixed Numbers
- 2.4 Addition and Subtraction of Fractions
- 2.5 Multiplication of Fractions
- 2.6 Division of Fractions

LET'S EXPLORE!

2.1	Fractions
2.2	Comparing Fractions
2.3	Conversion between Improper Fractions and Mixed Numbers
2.4	Addition and Subtraction of Fractions
2.5	Multiplication of Fractions
2.6	Division of Fractions

DISCUSS

How can Grandpa make sure that each person gets an equal share of the pie?

DISCUSS

Is it possible to give away a fraction of the box? What does that mean?

Based on a comic strip that depicts a familiar real-world context, discussion questions in **Discuss** prompt students to start thinking and get them engaged to learn. Students will be given opportunities to interpret, discuss, and explain their rationale to their peers and teacher.

Explore, Discover and Construct New Knowledge and Gain New Skills

Knowledge-Building Task

Look at the two patterns. What do you observe?

$7 + 3 = 10$	$7 - 3 = 4$
$7 + 2 = 9$	$7 - 2 = 5$
$7 + 1 = 8$	$7 - 1 = 6$
$7 + 0 = 7$	$7 - 0 = 7$
Line 1 $7 + (-1) = \square$	Line 3 $7 - (-1) = \square$
Line 2 $7 + (-2) = \square$	Line 4 $7 - (-2) = \square$

Performance Task **Let's Bake!**

The following shows the ingredients required for making a chocolate cake for 4 persons.

- 3 cups of flour
- 2 cups of sugar
- $\frac{2}{3}$ cup of cocoa powder, sifted
- 2 teaspoons of baking soda
- 1 teaspoon of salt
- 1 cup of brewed coffee
- 1 cup of oil
- 4 large egg whites
- 1 teaspoon of vanilla essence

Performance Task allows students to collaborate in pairs or groups, apply their previously acquired knowledge and make decisions based on what they have learnt. It fosters creative thinking by engaging students to solve non-routine problems. Teachers will be able to do a quick check on students' thinking and conceptual understanding.

Reinforce Their Conceptual Understanding and Hone Their Skills

2.4 Addition and Subtraction of Fractions

YOU WILL LEARN TO

- add and subtract two simple fractions, e.g. $\frac{1}{8} + \frac{9}{8} - \frac{11}{12} - \frac{5}{6}$

Adding and Subtracting Fractions with the Same Denominator

For fractions with the same denominator, we can simply add or subtract numerators. Always reduce the final answer to the simplest form when possible. We can also use a calculator and a number line to help us add or subtract the fractions.

Example 13

Evaluate the following.

- a $\frac{1}{6} + \frac{2}{6}$ b $\frac{7}{11} + \frac{8}{11}$

a Solution: $\frac{1}{6} + \frac{2}{6} = \frac{1+2}{6} = \frac{3}{6}$

The fractions have the same denominator. Add the numerators.

There is a common factor, 3, in the numerator and the denominator. Reduce to the simplest form.

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

b Solution: $\frac{7}{11} + \frac{8}{11} = \frac{7+8}{11} = \frac{15}{11}$

Convert to a mixed number.

$\frac{15}{11} = 1\frac{4}{11}$

Note! Do not add the denominators.

Try! Evaluate the following.

- a $\frac{2}{17} + \frac{4}{17}$ b $\frac{8}{11} + \frac{5}{11}$

Students are also given **Try!** practice questions that are similar to these examples, helping them develop procedural fluency and confidence in applying the concepts learnt in a similar context.

Scaffolded worked **examples** with detailed explanations guide students on the correct approaches and methods used in solving the problems. Students will learn and model their own working based on the steps shown in the example.

Practice 3C

Concept-Building Questions

- Round each of the following to 1 decimal place.
 - a 81.45 b 0.812 c 0.3784
- Round each of the following to 2 decimal places.
 - a 38.441 b 2.985 c 0.1003
- Round each of the following to the nearest whole number.
 - a 0.51 b 7.95 c 0.333
- Express each of the following fractions to the number of decimal places given in the brackets.
 - a $\frac{1}{33}$ (2 d.p.) b $\frac{14}{23}$ (1 d.p.) c $\frac{17}{53}$ (2 d.p.)
- Use a calculator to find the values of the following numbers rounded to the required number of decimal places.
 - a $\sqrt{20}$ (3 d.p.) b $\sqrt[3]{21}$ (5 d.p.) c π^2 (6 d.p.)

Context-Based Questions

- In one week (7 days), Albert spends 52 hours in front of the computer. What is the average number of hours he spends in front of the computer each day? Round your answer to the nearest whole number.
- The thickness of one sheet of paper is 0.0385167 mm. Round this measurement to 5 decimal places.
- Mazen said that $\sqrt{4\Box}$ is a whole number. What could the missing number be?



Concept-Building Questions help to build a sound understanding of foundational maths concepts. Questions are varied and progressively increase in difficulty and help students gain procedural fluency and mastery.

Context-Based Questions are provided for students to apply their knowledge and hone their problem-solving skills in different contexts.

Besides corresponding workbook exercise questions, additional questions are available through accessing the **AI-Driven Personalised Digital Assessment*** via the Student's eBook*. This provides students with an avenue to strengthen their conceptual understanding. More challenging questions are also available to stretch students' capabilities.

*These resources will not go through the Cambridge International endorsement process.

Reinforce Their Conceptual Understanding and Hone Their Skills

CHAPTER 10 Maps, Scales and Transformations

Grade 7 Workbook p.178-179

Exercise 10.1

1 For each of the following, express the scale in the form 1 : n.

- a 1 cm represents 3 m.
- b 1 cm represents 60 m.
- c 1 cm represents 400 m.
- d 1 cm represents 2 km.
- e 2 cm represents 500 m.
- f 2 cm represents 3 km.

2 The scale of a map is 1 : 12 500. The distance between two apartment blocks on the map is 1.2 cm. Find the actual distance between the two apartment blocks, giving your answer in metres.

3 On a map, 1 cm represents 0.2 km. The actual distance between two towns is 12 km. Find the distance between the two towns on the map.

Exercise questions in the Workbook provides further practice questions for students to reinforce their conceptual understanding and master the concepts. These questions correspond to the practice questions in the Student's Book.

Non-routine questions appear as **Activities** in the Workbook and provide an extension for students to explore mathematical concepts further and deeper. Thinking and Working Mathematically (TWM) skills are integrated in some of these activities to reinforce the eight characteristics and are marked with a TWM star.

Activity 1A

Evaluate the following and find out the rabbit's favourite food.

Your calculator gives ...

E	$20 + (34 - 30) \times (56 + 8)$	
O	$22 + [(18 \times 2) - (56 + 6)]$	
V	$[(21 + 7 + 12) \times 8] - (45 + 9)$	
L	$(15 \times 8) + 4 + 11 - (36 + 9)$	
R	$[(45 + 15) - 3] + 28 + 2$	
C	$3 \times 2 + 4 \times 6 - 20 + 5$	
A	$[8 - (4 + 2)] + 27 + 3 + 3$	
S	$(64 + 4) \times 2 - 49 + 7 \times 3$	

26 55 52 0 35 14 11

Activity 5E

In this activity, you will learn to interpret notations of algebraic terms.

1 Using a calculator, find the value of the following.

- a $2 \times 3 =$
- b $3 \times 2 =$
- c $12 \times 5 =$
- d $5 \times 12 =$
- e $17 \times 32 =$
- f $32 \times 17 =$
- g $134 \times 54 =$
- h $54 \times 134 =$

2 Observe the answers above, what can you say?

For any two numbers x and y , we say that $x \times y = y \times x$. In short, $xy = yx$.

3 Using a calculator, find the value of the following.

- a $3 \times 3 =$
- b $3^2 =$
- c $5 \times 5 =$
- d $5^2 =$
- e $7.5 \times 7.5 =$
- f $7.5^2 =$
- g $\frac{1}{2} \times \frac{1}{2} =$
- h $(\frac{1}{2})^2 =$

4 Observe the answers above, what can you say?

For any number x , we say that $x^2 = x \times x$.

Grade 7 Workbook p.8, p.74

Chapter 1 Revision

1 Evaluate the following.

- a $7 + (-3)$
- b $-6 + (-5)$
- c $17 - (-2)$
- d $-6 - (-3)$

2 Fill in the boxes with ' $<$ ' or ' $>$ ' to make the following statements true.

- a $4 \square 5$
- b $10 \square 7$
- c $-3 \square 1$
- d $-2 \square -6$

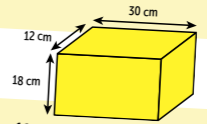
3 Evaluate the following.

- a $-11 + 5 - 8$
- b $120 - 80 - 50$
- c -15×8
- d $-64 \div (-16)$
- e $(82 + 18) \div 4 - 12$
- f $[32 - (49 \div 7) \times 4] + 80$

4 Three fire alarms go off at regular interval of 3 minutes, 5 minutes and 8 minutes. They first go off at 10 a.m. At what time will the three alarms be heard together?

5 Small cubes all of equal sides are to be cut from the cuboid.

- a What is the largest size of cubes that can be cut?
- b How many of the cubes?



6 Check whether the numbers can be divisible by 2, 3, 4, 5, 6, 7, 8, 9 or 10.

- a 504
- b 12 345 678

7 Write down the smallest number that is divisible by 2, 3, 4, 5, 6, 7, 8, 9 and 10.

8 Evaluate the following.

- a $\sqrt{81} + 23$
- b $55 \div \sqrt{121}$
- c $42 \times \sqrt[3]{125} - 3^3$
- d $72 \times \sqrt{1000} - \sqrt{100}$

Revision questions provide an opportunity for students to assess their understanding of all the concepts learnt in that chapter.

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Grade 7 Student Book p.35-36

Objectives

Objectives	Questions	Score
1 Use negative numbers.	1a, b, c, d	4
Understand place values to compare and order numbers using $<$, $>$, $=$.	2a, b, c, d; 9a, b, c	13
Add, subtract, multiply and divide numbers including combined operations.	3a, b, c, d, e, f	6
Apply concepts of HCF and LCM.	4, 5	6
Apply divisibility tests	6, 7	6
Find squares, square roots, cubes and cube roots.	8a, b, c, d	4
Total		28

Based on the Revision questions, students can use the **self-assessment checklist** to evaluate and monitor their mastery of the Maths concepts and skills. This will inform students on their areas of weaknesses and for teachers to check on students' progress to prescribe any follow-up actions.

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Practising on an AI-driven Personalised Digital Assessment to become Self-Directed Learners*

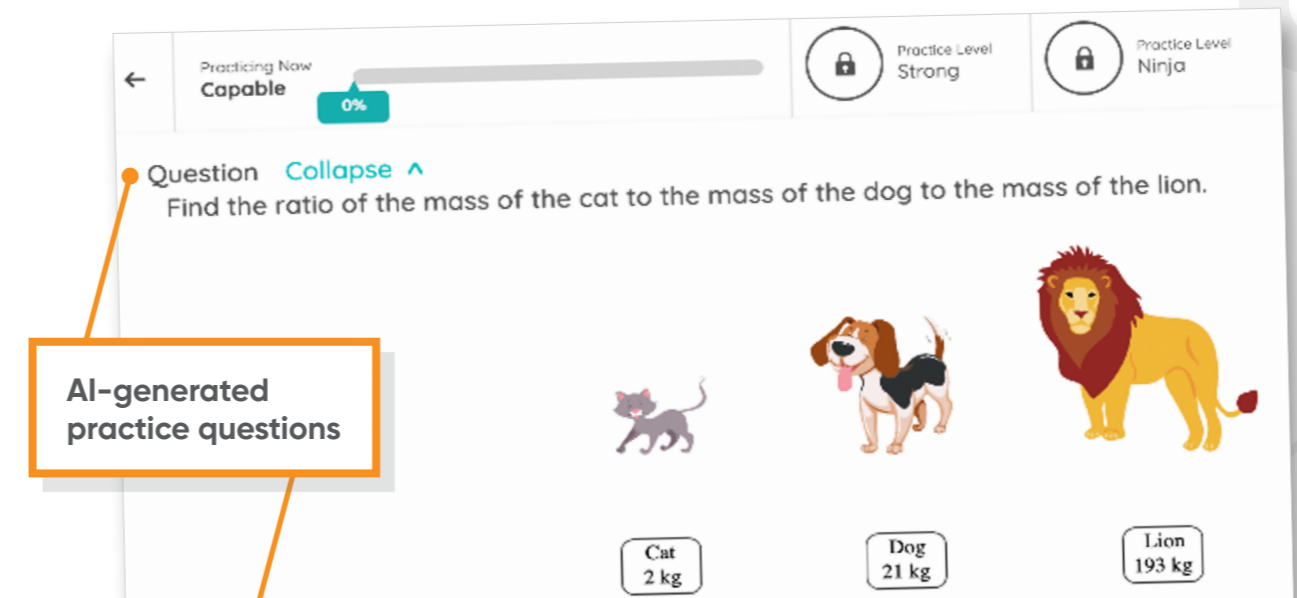
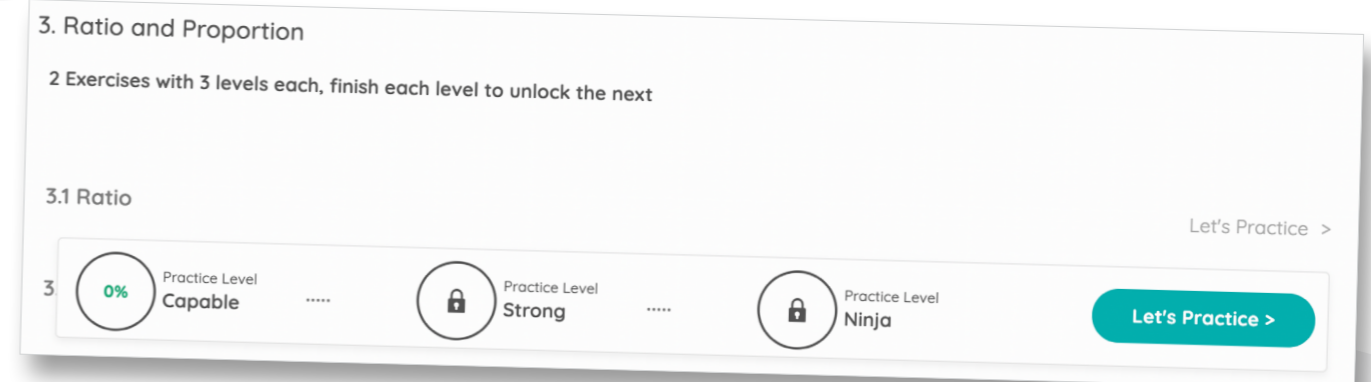
Using an AI-driven software, our series has incorporated a Personalised Digital Assessment to help every student attain Mathematical mastery.

As a student attempts the practice questions, the AI engine monitors the student's progress, providing immediate feedback and generates questions based on the student's current readiness level, depending on whether the student answers correctly or incorrectly.

When a student answers a question correctly, the software will generate questions of greater difficulty level or move on to the next learning objective. When a student answers the question incorrectly, the software will generate questions of similar difficulty.

This personalised assessment allows every student to progress independently at their own pace and eventually become self-directed learners.

The AI-Driven Personalised Digital Assessment* Generates Questions of Different Difficulty Levels



AI-generated practice questions



Practice 11E

Concept-Building Questions

1 Find the total surface area of the following cubes.

a b

2 Find the total surface area of the following cuboids.

a b

c

Context-Based Questions

3 Ramli paid a painter to paint a sculpture in the shape of a cuboid of dimensions 2 m by 3 m by 5 m. He was charged a fee of \$5 to paint 1 m². How much does he need to pay for painting the cuboid?

4 The surface area of a cube is 24 cm². Find the length of the cube.

Workbook Exercise 11.5
Personalised AI-DRIVEN Assessment

Access AI-Driven Personalised Digital Assessment* through the Student's eBook on MCEduHub.

Grade 7 Student Book p.391

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A Comprehensive Suite of Digital Resources to Facilitate Effective Learning and Teaching*

Hint

To compare two quantities using ratio, both quantities must be measured in the same unit.

$$1 \text{ kg} = 1000 \text{ g}$$

Hint

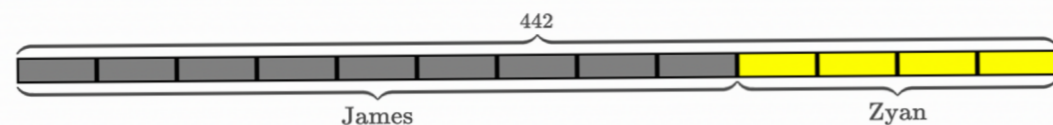
- (1) Convert the mixed fraction to the improper fraction.
- (2) Divide the improper fraction with 21 and multiply by 100% to get the percentage.

Hints and Worked solutions with explanations are provided and are similar to the worked examples found in the Student's Books for students to reinforce conceptual understanding and build problem-solving skills on their own.

Correct Answer

$$\begin{aligned}
 &1.2 \text{ kg} : 1400 \text{ g} \\
 &= 1.2 \times 1000 \text{ g} : 1400 \text{ g} \quad \text{(Change the greater unit to the smaller unit.)} \\
 &= 1200 : 1400 \quad \text{(Remove the same unit.)} \\
 &= \frac{1200}{1400} \\
 &= \frac{6}{7}
 \end{aligned}$$

Correct Answer



$$13 \text{ units} \rightarrow 442 \text{ toffees}$$

$$1 \text{ unit} \rightarrow \frac{442}{13} \text{ toffees}$$

$$1 \text{ unit} \rightarrow 34 \text{ toffees}$$

$$9 \text{ units} \rightarrow 9 \times 34 = 306 \text{ (Larger share)}$$

$$4 \text{ units} \rightarrow 4 \times 34 = 136 \text{ (Smaller share)}$$

a) James got the larger share.

b) The larger share is 306 toffees.

Besides the Student's Book and eWorkbook, the suite of digital teaching resources also includes the editable Schemes of Work (SOWs), Lesson Plans, Worked Solutions for the Student Book and Workbook, as well as Question Banks. This suite of teaching resources allows for flexibility and customisation depending on the needs of the students.

Additionally, teachers have a teacher's account to access the AI-Driven Personalised Digital Assessment where they can track and monitor students' progress. All these teaching resources are aimed to help teachers reduce their workload and time spent on lesson preparation and are easily accessible via the portal, anytime and anywhere.

Digital Teaching Resources*

The **Teacher's Guide** consists of the following:

Editable SOWs*

Helps teachers in lesson preparation by outlining all the learning requirements and the suggested teaching periods/lessons. An outline of the strand of Thinking and Working Mathematically (TWM) is provided to facilitate lesson planning.

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Scheme of Work

Total duration: 10 periods (1 period is approximately 40 minutes.)

Sections	No. of Periods	Learning Outcomes	Resources	Thinking and Working Mathematically
Chapter Opener	1		<ul style="list-style-type: none"> Student's Book 7, Chapter 11, p. 364 	<ul style="list-style-type: none"> Convincing Critiquing Improving
11.1 Measurement of Area		<ul style="list-style-type: none"> 7Gg.04 Understand the relationships and convert between metric units of area, including hectares (ha), square metres (m²), square centimetres (cm²) and square millimetres (mm²). 	<ul style="list-style-type: none"> Student's Book 7, Chapter 11, pp. 365-367 Workbook 7, Chapter 11, Exercise 11.1 Personalised Digital Assessment* 11.1 	<ul style="list-style-type: none"> Convincing Critiquing Improving
11.2 Area of Triangles and Compound Shapes	2	<ul style="list-style-type: none"> 7Gg.05 Derive and know the formula for the area of a triangle. Use the formula to calculate the area of triangles and compound shapes made from rectangles and triangles. 	<ul style="list-style-type: none"> Student's Book 7, Chapter 11, pp. 368-374 Workbook 7, Chapter 11, Exercise 11.2 Personalised Digital Assessment* 11.2 	<ul style="list-style-type: none"> Generalising Specialising Conjecturing Critiquing Convincing Improving
11.3 3D-Shapes and Measurement of Volume	2	<ul style="list-style-type: none"> 7Gg.06 Identify and describe the combination of properties that determine a specific 3D shape. 	<ul style="list-style-type: none"> Student's Book 7, Chapter 11, pp. 375-382 Workbook 7, Chapter 11, Exercise 11.3 Personalised Digital Assessment* 11.3 	<ul style="list-style-type: none"> Characterising Classifying Generalising Convincing Critiquing Improving

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Editable Lesson Plans*

Introduce key mathematical concepts with lesson suggestions, ideas on support and challenge for differentiated instructions to help teachers deliver lessons effectively and efficiently.

Notes on TWM help teachers facilitate discussions and ensure students are practising the eight TWM characteristics. Common misconceptions are highlighted for teachers to advise students on possible pitfalls.

Marshall Cavendish Education Cambridge Lower Secondary Mathematics – Gr
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1.1 Integers and Place Value

Suggested Duration: 120 minutes

Learning Outcomes:

At the end of the lesson, students should be able to:

- Use negative numbers.
- Represent and arrange numbers on the number line.
- Compare numbers.

Estimated Time	Resources Required	Instructional Strategies
5 min	• Student's Book, p. 1,	Chapter Opener <ul style="list-style-type: none"> • Using the comic strip, guide your students to predict what they will be learning in the chapter. • Facilitate the discussion to find out the pre-requisite knowledge and skills of your students. • Encourage your students to recall situations where they have encountered negative numbers in daily life. <ul style="list-style-type: none"> ➤ What do you think a negative number is? What is the freezing point of water? How cold do you think -89°C will be? • Students practise critiquing (TWM.07) when they can explain how the temperatures are different and why Sam and Sarah are feeling differently even why the temperature both shows 12°C. Invite students to discuss the significant of '-' sign.
5 min	• Student's Book, p. 2, Recall	Recall <ul style="list-style-type: none"> • Help your students recall the difference between place and value of a number. Then encourage them to identify the place value of each digit in the number 3 864 975. • Write numbers with the digit 0 on the board to help students recall the use of '0' as place holders, e.g., 2003. • Challenge your students to form the largest three-digit number without repeating any digits.

Maths Ahead Grade 9 Question Bank

Chapter 4 Algebra

Concept-Building Questions

- Evaluate the following when $x = 3$.
 (a) $-11x + 2$ (b) $(2x - 3)^2 - 3x$ (c) $(x - 5)^2 + (3x + 1)^2$
- Evaluate the following when $x = -5$ and $y = 6$.
 (a) $\frac{x}{5y} + \frac{y}{5x}$ (b) $(x + 2y)^2 + 3x$ (c) $(x - 1)^2 + (y - 2)^2$
- Expand the following.
 (a) $5x(6y)$ (b) $(-2u)(8v)$ (c) $(3p)(-2q)(5r)$
- Expand and simplify the following.
 (a) $(x - 3)(x + 5)$ (b) $(x - 3)^2$ (c) $(x + 7)(x - 7)$
- Evaluate the following without using a calculator.
 (a) $3^2 + 2 \times 3 \times 7 + 7^2$ (b) $81^2 - 19^2$
- Simplify the following.
 (a) $8x^5 \times 4x^3$ (b) $\frac{1}{2}y^8 \div \frac{1}{6}y^2$ (c) $(11z^5)^2$
- Simplify the following.
 (a) $(3x - 4)^2$ (b) $(2x + 1)^2$ (c) $(x - 3y)^2$

Question Bank*

Consists of questions of graded difficulty levels that follows the format of the questions in the Student's Book for teachers to adapt and customise for formative or summative assessment purposes.

Worked Solutions for Textbook Exercise Questions

Chapter 4

Ratio and Proportion

Worked Solutions for Textbook Exercise Questions

Practice 4A

- Sam's savings : Mali's savings
 = \$53 : \$65
 = 53 : 65
- Hari's height : Han's height
 = 161 cm : 158 cm
 = 161 : 158
- (a) $0.85 \text{ m} : 73 \text{ cm}$
 = 85 cm : 73 cm
 = 85 : 73
 (b) $\frac{1}{9} : \frac{7}{9}$
 = 1 : 7
 (c) $\frac{1}{4} \text{ h} : 17 \text{ min}$
 = 15 min : 17 min
 = 15 : 17

- $8 : 4 = 32 : 16$
 Since the ratios are the same, they are equivalent.
- $5 : 4 = 60 : 48$
 Eva's score for paper 2 is 48.
- (a) Sam's working hours : Jamie's working hours
 = 20 hours : 12 hours
 = 20 : 12
 = 5 : 3
 (b) Sam's salary : Jamie's salary
 = \$100 : \$60
 = 100 : 60
 = 5 : 3
 (c) For Sam:
 20 hours \rightarrow \$100
 1 hour $\rightarrow \frac{100}{20} = \5
 For Jamie:
 12 hours \rightarrow \$60
 1 hour $\rightarrow \frac{60}{12} = \5
 The salaries were fair since they are paid the same amount of money per hour worked.

Worked Solutions*

Provide the answers and full worked solutions to the questions found in the Student's Book and the Workbook to assist teachers in the marking and grading of students' assignments and homework.

Teacher's Dashboard for Monitoring and Tracking Student's Progress

The dashboard shows a 'Class : Grade 9 Demo' with '10 students in this class'. It is divided into three sections based on difficulty levels:

- 9 Students at easy:** Lists students like Carina Chuoh, Chan Mei Shan, and Engstudent Zeroone, all with 0% progress.
- 0 Students at medium:** No students are currently in this category.
- 1 Students at hard:** Lists student Gary Liew with 0% progress.

Each section includes a 'Who are they' dropdown menu and a 'Question list' with a 'Progress' indicator.

*These resources will not go through the Cambridge International endorsement process.

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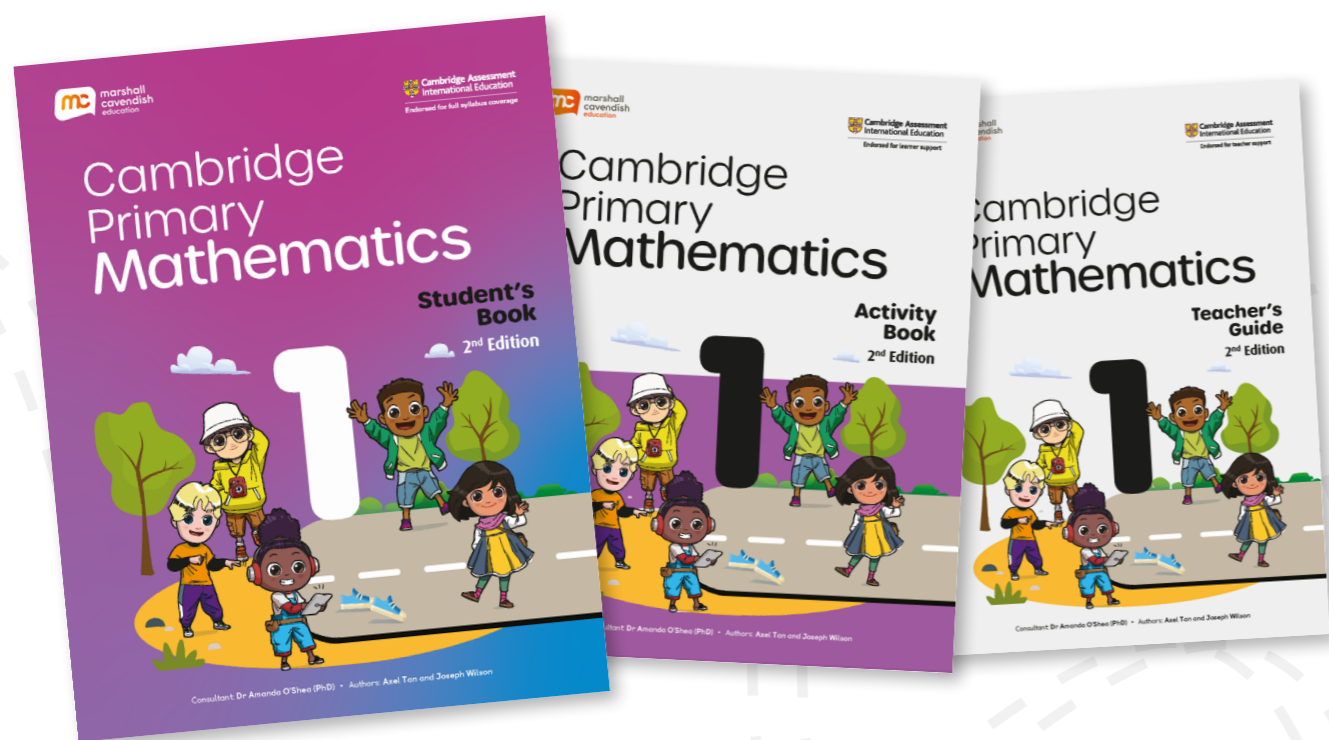
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