



MATHS Ahead

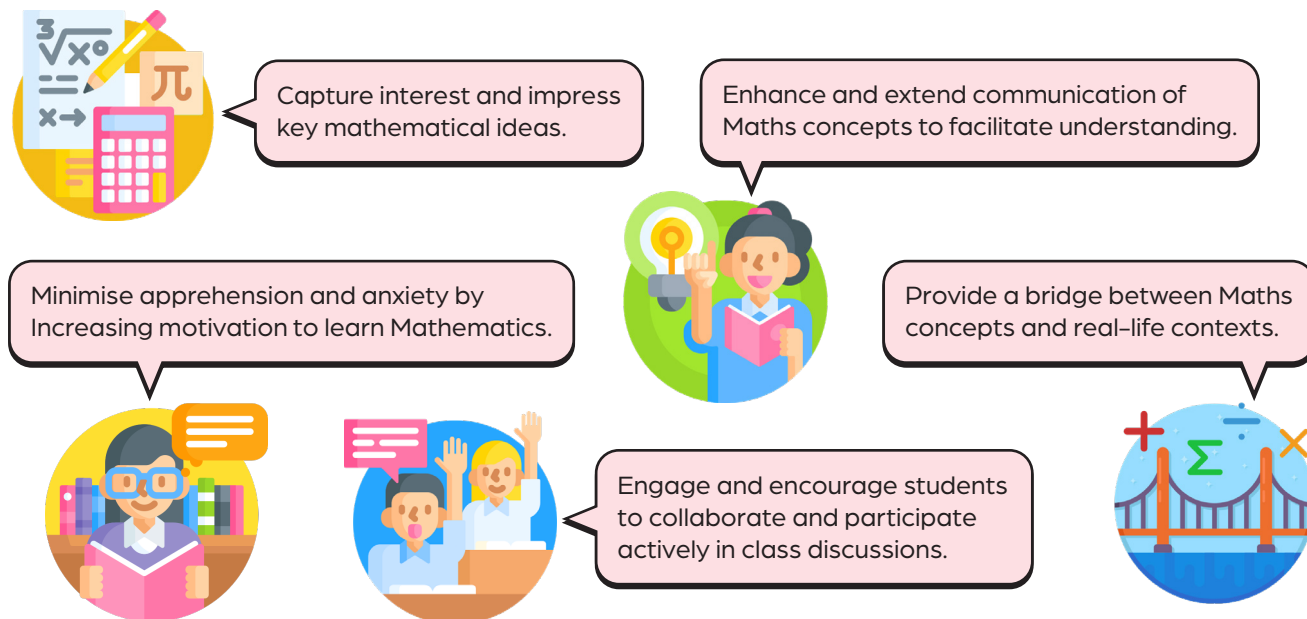
Brochure

Aligned to the latest Cambridge
Lower Secondary Maths syllabus



The new Maths Ahead series espouses the use of comics to enhance students' learning for the development of the 21st century competencies in mathematical classroom.

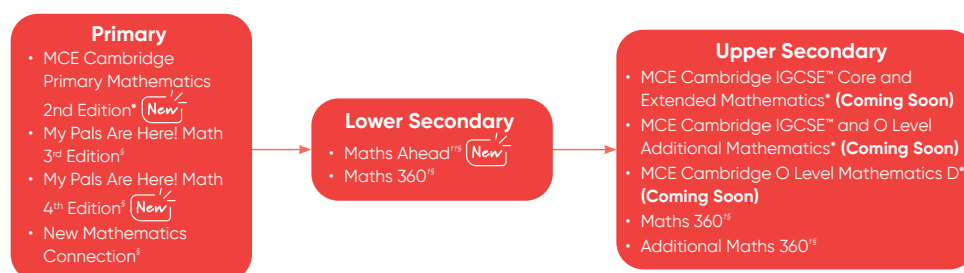
The use of comics in our student book aims to empower learners through the following:



Elements such as comics and illustrations are particularly helpful in aiding and guiding the learning process for learners who do not have English as their first language.

Cambridge Learning Pathways for Maths

Our materials are created to accompany students on their Cambridge learning journey, from Grade 1 to 11. Discover the flow of our curriculum and the suitable titles for each educational level.



^{*}We are working with Cambridge Assessment International Education towards the endorsement of these titles.

[†]Singapore-Cambridge GCE O level and N level.

[‡]Aligned to the latest Cambridge Lower Secondary Mathematics curriculum framework 0862.

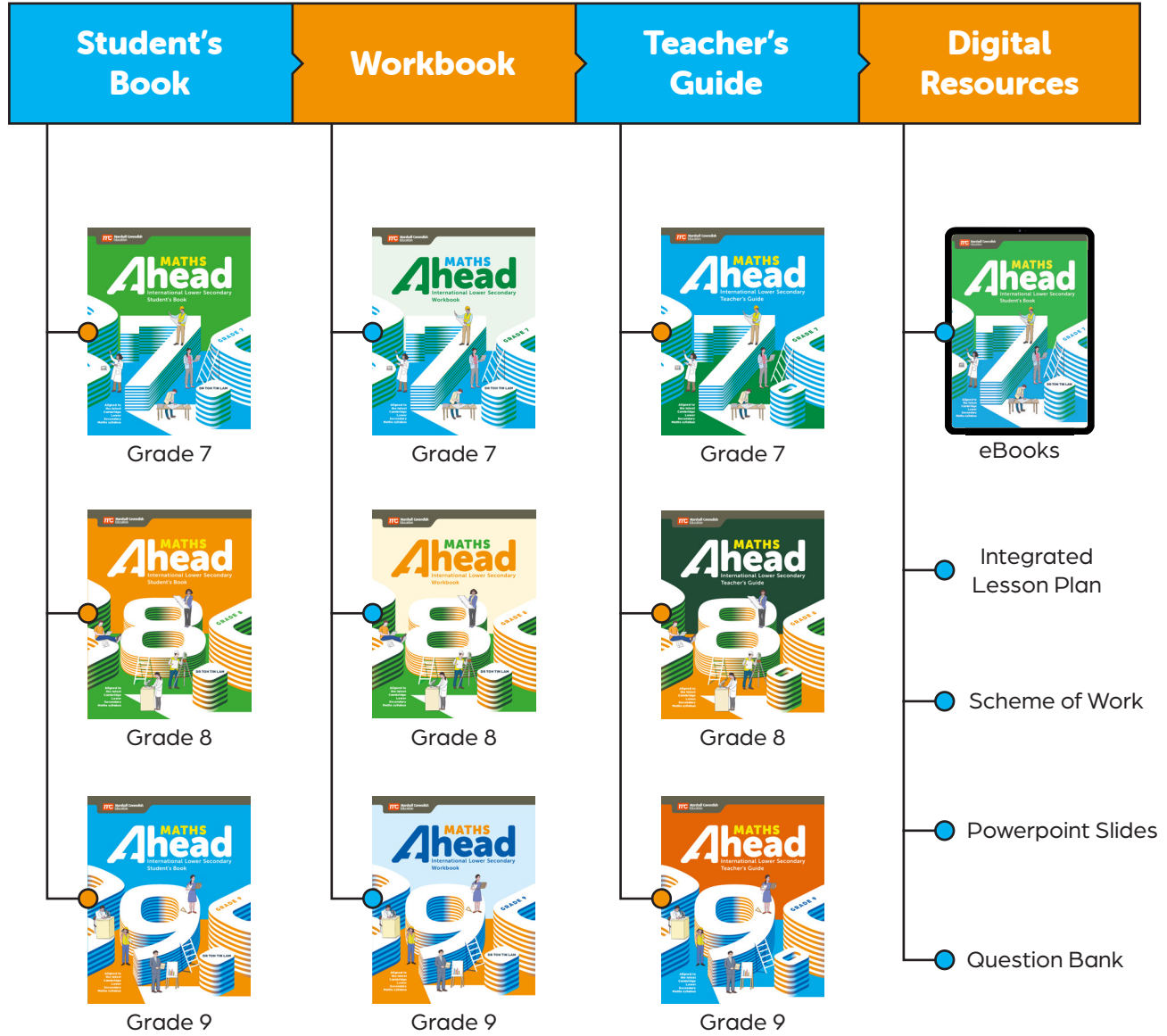
[§]These titles will not undergo the Cambridge International endorsement process.

MCEduHub Digital Resources and Materials

Supplementary Materials

Continuous Professional Development for Educators and School Leaders

Product Architecture

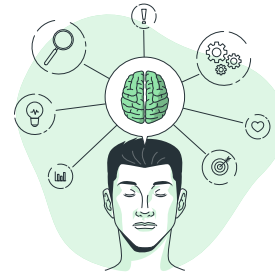


Why Choose Maths Ahead?

Maths Ahead is designed to inspire the joy of learning by minimising students' apprehension towards learning Maths through:



The use of comics and colourful illustrations to promote learning of Maths concepts.



Encouraging active and inquiry-based learning to develop 21st century competencies.



Simplifying mathematical concepts with straightforward language and additional resources to support teachers and students for whom English is not their first language.



Building mathematical mastery and confidence in students to prepare them for Cambridge international's checkpoint or local examinations.



The new Maths Ahead series is aligned to the latest Cambridge Lower Secondary Mathematics curriculum 0862. The series is also aligned to national curricula across Indonesia, Thailand, Malaysia, and the UAE.

Adopts a pedagogy that minimises students' apprehension about learning Maths

Each chapter comes with a comic or an illustration, relatable to real-life scenarios, with prompts for discussion. This comic or illustration helps to engage students from the onset and serves to stimulate curiosity, test their prior knowledge, and keep them motivated in learning, alleviating their fear and apprehension of learning the topic.

Visual learning with simple English to support students with varying language abilities.

Engaging comics & illustrations to minimize apprehension of learning Maths.



Let's Explore to provide students with an overview on what they will be learning.

Discussion question for students to relate to Maths concepts and connect to real-life.

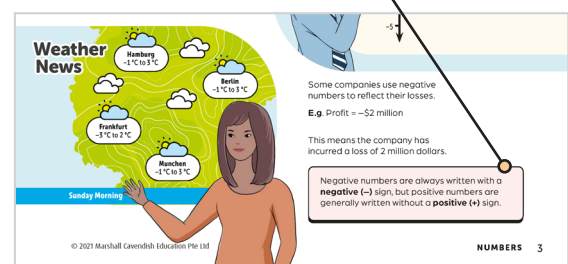
Simplifies mathematical concepts with straightforward language

The learning material is simple to understand as the language used is pitched appropriately for English as a Second Language (ESL) learners in our target markets. Language is kept concise, in short paragraphs. Emphasis is placed on building an understanding of and the assimilation of mathematical concepts.



Mascots with speech bubbles prompt students to question concepts and promote self-directed learning.

Helping words to assist students to learn key mathematical concepts.



Additional resources for effective teaching and learning

To support the teachers, a range of resources, including schemes of work and PowerPoint files, are provided to enhance teaching and learning. These resources effectively facilitate delivery of lessons for teachers to students, both in a school and a remote setting.

Scheme of Work

Total duration: 12 periods (1 period is approximately 40 minutes.)

Sections	No. of Periods	Learning Outcomes	Resources	Thinking and Working Mathematically
Chapter Opener	3		<ul style="list-style-type: none"> Student Book 7, Chapter 1, p. 1 	
1.1 Integers and Place Value		<ul style="list-style-type: none"> use negative numbers represent real-world numbers on the number line 	<ul style="list-style-type: none"> Student Book 7, Chapter 1, pp. 2-7 Workbook 7, Chapter 1, Exercise 1.1 	<ul style="list-style-type: none"> Characterising Classifying Comparing
1.5 Squares and Square Roots	1	<ul style="list-style-type: none"> find the square and square roots of numbers (TN.6a) 	<ul style="list-style-type: none"> Student Book 7, Chapter 1, pp. 8-17 Workbook 7, Chapter 1, Exercise 1.2 	
1.6 Cubes and Cube Roots		<ul style="list-style-type: none"> find the cube and cube roots of numbers (TN.6b) 	<ul style="list-style-type: none"> Student Book 7, Chapter 1, pp. 18-20 Workbook 7, Chapter 1, Exercise 1.3 	
Key Ideas	1		<ul style="list-style-type: none"> Student Book 7, Chapter 1, pp. 21-23 Workbook 7, Chapter 1, Exercise 1.4 	

Scheme of Work for every chapter to help in delivery of the lesson.

Support students who have examples, starting with the (ANORAK) = (WET) AND (C) A similar example could be is warm and dry. Another c bed early if they are feeling tired or if they have something important to do early in the morning.

Support and Challenge sections in the Teacher's Guide to aid the different learning needs of students.

Challenge more able students to come up with some fun examples.

Assist in lesson planning and delivery.

Answers All answers to questions in the Workbook are available at resource.manhallaivendish.com/teacher. Students can check the answers to Let's Practice at resource.manhallaivendish.com/student.

Aid teachers in scaffolding reinforcement and extending concepts.

Wrap Up!

Ask students to think back to the opening unit question (once one has been selected – can be found on the first comment on the pdf) and ask them to explain their answer and provide examples of what they have covered in this unit and how it

Activity

Explain that the inputs of A and B to the first NAND gate are both 1 and therefore the input to the second NAND gate is one 0 input split into two 0 inputs. The NAND gate reverses these, so the output at X is 1. In this way, the combination of NAND

Worked example

Go through the worked example about a security light.

Summary discussion to help teachers to emphasise on main points and lead into next chapter.

Activity to encourage collaboration, discussion in class to encourage development of 21st century competencies.

Encourages active and inquiry-based learning to develop 21st century competencies

Each chapter provides ample opportunities for students to explore, collaborate, and engage in mathematical discussions. Such tasks provide avenues for a hands-on application of learnt concepts that promote active learning.

It stimulates critical thinking, promote self-directed learning, and help build up important 21st century competencies.

YOU WILL LEARN TO

- use negative numbers
- represent real-world numbers on the number line
- compare numbers

Recall

The position of the digit gives the value of the digit.

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Recall and relate to mathematical concepts learnt previously and enhance understanding.

Learning objectives to provide clarity.

Stimulate and encourage students' lateral thinking & metacognition.

Think! Is it true that $-2 > -3$?

Knowledge-Building Task

The lowest recorded temperature for six cities are as shown.

City	A	B	C	D	E	F
Lowest Temperature	-28 °C	27 °C	15 °C	-5 °C	19 °C	-10 °C

Arrange the cities from the coldest to the hottest.

Investigative questions to engage students in active learning of new concepts.

Builds mathematical mastery and confidence to prepare students for Cambridge International or local examinations

Comes with Cambridge International's checkpoint and national exam style questions as part of the assessment to prepare them for examinations.

Example 14

Evaluate each of the following.

a $-45 \div 9$ b $-56 \div (-7)$

Solution: $-45 \div 9$
 $= -(45 \div 9)$
 $= -5$

$-45 \div 9$ -5

Solution: $56 \div (-7)$
 $= -(56 \div 7)$
 $= -8$

$56 \div (-7)$ -8

Try! Evaluate each of the following.

a $63 \div (-9)$ b $-75 \div 15$

Carefully scaffolded worked examples based on concepts learnt.

Concept-building questions provide students opportunities to apply what they have learnt.

Practice 1B

Concept-Building Questions

1 Evaluate each of the following.

a $7 + (-3)$ b $-2 + (-3)$ c $17 - (-2)$
d $-2 - (-3)$ e $-5 - (-7)$ f $0 - (-9)$

2 Evaluate each of the following.

a $4 + 9 - 6$ b $17 - 7 - 8$
c $4 - 5 + 6 - 7$ d $6 - 8 - 9 + 2$

3 Evaluate each of the following.

a $4 + (-7) - (-3)$ b $5 - (-8) + (-7)$
c $-3 - (-1) - (-5)$ d $-5 + (-15) - (-12)$

4 Evaluate each of the following.

a $12 \div (-5)$ b $-7 \times (-17)$
c $-180 \div 15$ d $-125 \div (-5)$

5 Evaluate each of the following.

a $128 \div 8 \times 7$ b $20 \times 15 \div 3$
c $150 \div 10 \times 6$ d $3 \times 9 \times 3$

6 Evaluate each of the following.

a $18 \times (3 + 2) - 32$ b $(84 - 7) \div (2 + 5)$
c $40 \div (5 - 7)$ d $[(15 \times 3) \times 2] \div (10 - 7)$
e $2340 \div (130 - 312 \div 3) + 4$
f $689 - (15 \times 12) \div 3 + 147$

Context-Based Questions

7 Sarah has 7 apples. She gives 4 apples away and buys another 3 more. How many apples does she have?

8 Sean has \$10. He has to pay \$8 for a meal and another \$3 for a drink. How much more money does he need?

Workbook Exercise 1.2

Context-based questions to provide practice for students.

Provides students opportunities to practice immediately to reinforce understanding.

1 Fill in the blanks with 'r' or 's' to make the following statements true.

a 1 hot wallet contains not more than \$40.
The wallet has \$40.

b Class 5A has at least 25 students.
The number of students in class 5A is 25.

c You have not more than 2 hours to do your homework.
You have 2 hours to do your homework.

Use the following self-assessment checklist to see if you have understood the concepts.

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

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Self-assessment checklist to assess their understanding of concepts.

Chapter 1 Key Ideas

Numbers

Integers: $..., -3, -2, -1, 0, 1, 2, 3, ...$
 Negative Integers: $..., -3, -2, -1, ...$
 Positive Integers: $1, 2, 3, ...$

Order of Operations: $3 - 8 \div 4 + (7 - 8) - 9 \div 2$
 $= 3 - 8 \div 4 + (-1) - 9 \div 2$
 $= 3 + (-2) - 15 - 10$
 $= 2$

Symbols: 5 is greater than 3 : $5 > 3$
 -3 is less than 5 : $-3 < 5$
 4 is greater than or equal to 4 : $4 \geq 4$
 9 is less than or equal to 9 : $9 \leq 9$

Squares and Square Roots: $4 + 4 = 8$
 $\sqrt{4+4} = \sqrt{8} = 2\sqrt{2} = 2 \times 1.41 = 2.82$

Cubes and Cube Roots: $8^3 = 8 \times 8 \times 8 = 512$
 $\sqrt[3]{512} = \sqrt[3]{8 \times 8 \times 8} = 8$

Highest Common Factor: The factors of 6 are 1, 2, 3 and 6. The factors of 8 are 1, 2, 4 and 8. The common factors of 6 and 8 are 1 and 2. The HCF of 6 and 8 is 2.

Lowest Common Multiple: The multiples of 6 are 6, 12, 18, 24, 30, 36, 42, 48, ... The multiples of 8 are 8, 16, 24, 32, 40, 48, ... The common multiples of 6 and 8 are 24 and 48. The LCM of 6 and 8 is 24.

Overseas: Disability Tests for 2, 3, 4, 5, 6, 7

Note!

Division is the inverse of multiplication.
 $100 \div 25 = 4$ is equivalent to $100 = 4 \times 25$.
 $36 \div 4 = 9$ is equivalent to $36 = 4 \times 9$.
 Similarly,
 $-45 \div 9 = -5$ is equivalent to $-45 = 9 \times (-5)$.

Notes provides guidance for key concepts and clarifies any misconceptions.

Key Ideas summarises key learning objectives, important concepts, formulae & ideas for revision.

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.

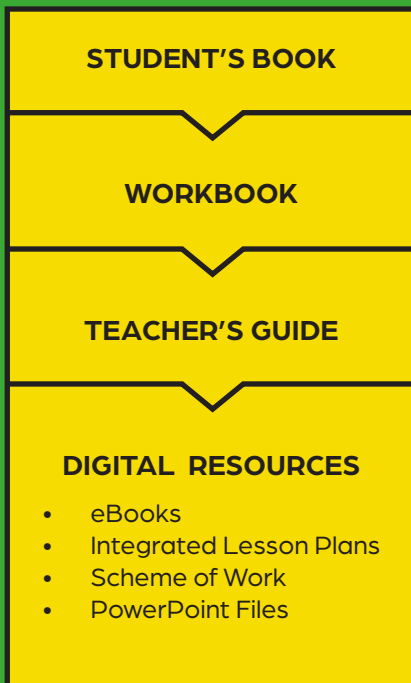
We make our world-class educational content more accessible through a seamless experience that integrates both print and digital resources. We provide holistic and end-to-end solutions customised to the school's requirements, with professional development to help educators implement the curriculum.

MCE has worked with ministries, policymakers, educators, and parents in over 85 countries, designing education solutions in 14 languages for Pre-K to 12. We are the only Asian publisher that has been an endorsement partner of Cambridge Assessment International Education since 2019.

www.mceducation.com



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