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For Chapters 6–9, see Teacher Companion Part Two.

PEARSON
mathematics

Student Book

Homework Program

Teacher Companion 1

Teacher Companion 2

LS **Lightbook**Starter
Lightbook Starter
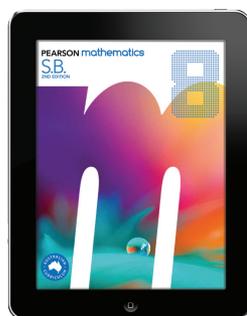
eBook

Student Book

The Second Edition Student Book includes updated questions, activities and design, with full coverage of the Australian Curriculum: Mathematics as well as the Victorian Curriculum: Mathematics.

It incorporates the latest research as well as feedback from teachers and learners across Australia.

Content caters for students of all abilities, with improved differentiation of all exercise questions and more questions for students consolidating their skills.

Homework Program

The Homework Program provides a collection of tear-out worksheets for students to practise and revise mathematical concepts.

Teacher Companion

The Teacher Companion makes lesson preparation easy by combining full-colour Student Book pages with teacher support including improved contextual teaching suggestions and strategies, class activities, extra questions, worked solutions and answers for every question in the Student Book.

Pearson

Pearson Lightbook Starter

Lightbook Starter is an innovative digital resource powered by Pearson's award-winning Lightbook technology. It has been developed to help students learn key mathematical concepts, evaluate their understanding and track their progress. 'Before you begin' sections assess learner readiness before each chapter topic, while 'Check-in' questions can be used to evaluate learner understanding and practice after every chapter section.

Auto-correcting questions are linked to the Progress Tracker dashboard for easy analysis and viewing of results, which are mapped to progression through the Student Book as well as to Australian Curriculum: Mathematics and Victorian Curriculum: Mathematics content descriptions.

Pearson eBook

Much more than just pages on a screen, Pearson eBook is an online or offline version of your Student Book linked to interactive content, rich media resources and other useful content specifically developed for Mathematics. It supports you with appropriate online resources and tools for every section of the Student Book, including videos, eWorked Examples, interactive lessons, worksheets and more. Teacher resources include chapter tests, full teaching programs and curriculum mapping for the Australian Curriculum: Mathematics and for the Victorian Curriculum: Mathematics.

Pearson Places is the gateway to digital learning material for teachers and students across Australia. Access your content at **www.pearsonplaces.com.au**.

P **Pearson**Digital

Professional Learning, Training and Development

Did you know that Pearson also offers teachers a diverse range of training and development product-linked learning programs? We are dedicated to supporting your implementation of **Pearson Mathematics**, but it doesn't stop there.

Our courses align closely with Pearson Mathematics Second Edition and offer an in-depth learning experience, combining both practical and theoretical elements, enabling you to implement the resource effectively in your classroom.

Find out more about our product-linked learning, workshops, courses and conferences at Pearson Academy **www.pearsonacademy.com.au**.

We believe in learning.
All kinds of learning for all kinds of people,
delivered in a personal style.
Because wherever learning flourishes, so do people.

USING PEARSON
mathematics
Teacher Companion

Support for the whole department!

The *Pearson Mathematics 8 Teacher Companion* has been designed to provide support for all mathematics teachers at your school, from least to most experienced.

Active participation and inquiry

Class activities
- suggested games and activities that teachers might use to introduce, reinforce or revise mathematical concepts and skills
- useful BLMs provided

Equivalent fractions and decimal Snap/Memory/Go Fish
Students are to prepare 20 pairs of decimal and fraction cards that are equivalent. For example, one pair is $\frac{1}{2}$ and 0.5. They may also have a pair that is $\frac{3}{6}$ and 0.5 as this would enable more snaps. There is a limit of four of the same decimal, and it is best that students prepare this for their game. Once they have their cards, students may play any of the three games using their decimal fraction cards.
To modify the cards, some students may also have cards with diagrams on them.

Paper sizes
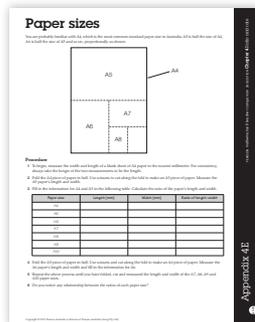
Recap
- quick questions for the beginning or end of class
- encouraging a calm, ordered beginning or end to the lesson

Recap

Question	Answer
1 If $v = u + at$, find v where $u = 10$, $a = 32$, $t = 2$.	74
2 If $F = ma$, find F where $m = 8$ and $a = 12$.	96
3 Which of the following are like terms to $4a$? $3ab, 2a, -a, 4a^2, -\frac{a}{7}$	$2a, -a, -\frac{a}{7}$

Resource summaries
- a list at the beginning of each section of all the digital and print resources available, including videos, interactives, tutorials and more

Resources
eWorked examples
- Ordering negative fractions and decimals
- Adding and subtracting negative decimals
- Adding and subtracting negative fractions
Lessons
- Operations on fractions 1
- Operations with fractions and decimals
Homework Program
- Skills/Practice 2A
Lightbook Starter
- Check-in 2.3

Comprehensive teaching support

Teaching strategies
- tips of the trade you would tell a new teacher if you had time
- common student misconceptions
- help for students experiencing difficulties
- suggestions for students who finish a task quickly

Magnitude and size
Test that your students understand that -19 is less than -2, even though the magnitudes of 19 and 2 imply the opposite. You could plot the numbers on a number line and point out that the further right on a number line a number is, the larger it is. Alternatively, for an advanced class this could lead into a discussion about 'absolute value' (absolute value is the magnitude of an integer, and is enclosed in straight lines: |). Thus, although -19 < -2, |-19| > |-2|.

Suggested examples
- examples not in the Student Book that help model the working of questions in each section

Suggested examples
1 Place the following fractions on a number line: $-\frac{2}{2}, \frac{3}{3}, -\frac{5}{6}, \frac{3}{2}, \frac{12}{6}, -1\frac{2}{3}$
Answer:
To place the fractions with a denominator of 2, you need to partition each whole into 2. To place the fractions with a denominator of 3, you need to partition each whole number into 3. To place the fractions with a denominator of 6, you need to partition each whole number into 6.

2 Calculate: $\frac{2}{3} - \left(-\frac{1}{6}\right)$
Answer:
$= \frac{2}{3} + \frac{1}{6}$
$= \frac{4}{6} + \frac{1}{6} = \frac{5}{6}$

Answers and worked solutions
- answers and solutions showing the working required for every Student Book question and feature

Answers

Pearson Mathematics 8 Curriculum Correlation

Australian Curriculum: Mathematics correlation

This maps the Australian Curriculum: Mathematics syllabus to *Pearson Mathematics 8*.

For further details and for correlations to the Victorian Curriculum, see the Teacher Resources available to download from the eBook, or from the ProductLink page on the Pearson Places website.

Number and Algebra	Pearson Mathematics 8
Number and place value	**Chapter 1 Integers and indices** **Chapter 2 Fractions, decimals and percentages**
Use index notation with numbers to establish the index laws with positive integral indices and the zero index (ACMNA182) • evaluating numbers expressed as powers of positive integers	1.5 Multiplying and dividing numbers in index form 1.6 Powers of powers, products and quotients
Carry out the four operations with rational numbers and integers, using efficient mental and written strategies and appropriate digital technologies (ACMNA183) • using patterns to assist in finding rules for the multiplication and division of integers • using the number line to develop strategies for adding and subtracting rational numbers	1.1 Integers review 1.2 Integer multiplication 1.3 Integer division 1.4 Combined operations with integers 2.1 Working with fractions and decimals 2.3 Negative fractions and decimals 2.5 Writing fractions and decimals as percentages 2.6 Writing percentages as fractions and decimals
Real numbers	**Chapter 2 Fractions, decimals and percentages** **Chapter 4 Ratio and rate**
Investigate terminating and recurring decimals (ACMNA184) • recognising terminating, recurring and non-terminating decimals and choosing their appropriate representations	2.1 Working with fractions and decimals 2.2 Types of decimals 2.3 Negative fractions and decimals
Investigate the concept of irrational numbers, including π (ACMNA186) • understanding that the real number system includes irrational numbers	2.2 Types of decimals
Solve problems involving the use of percentages, including percentage increases and decreases, with and without digital technologies (ACMNA187) • using percentages to solve problems, including those involving mark-ups, discounts, and GST • using percentages to calculate population increases and decreases	2.4 Estimating percentages 2.5 Writing fractions and decimals as percentages 2.6 Writing percentages as fractions and decimals 2.7 Writing one amount as a percentage of another 2.8 Finding a percentage of an amount 2.9 Increasing or decreasing by a given percentage 2.10 Financial applications of percentages
Solve a range of problems involving rates and ratios, with and without digital technologies (ACMNA188) • understanding that rate and ratio problems can be solved using fractions or percentages and choosing the most efficient form to solve a particular problem • calculating population growth rates in Australia and Asia and explaining their difference	4.1 Writing ratios 4.2 Simplifying ratios 4.3 Unit ratios and scale factors 4.4 Using ratios to find amounts 4.5 Scale drawings 4.6 Sharing an amount in a given ratio 4.7 Rates
Money and financial mathematics	**Chapter 2 Fractions, decimals and percentages**
Solve problems involving profit and loss, with and without digital technologies (ACMNA189) • expressing profit and loss as a percentage of cost or selling price, comparing the difference • investigating the methods used in retail stores to express discounts	2.10 Financial applications of percentages
Patterns and algebra	**Chapter 3 Algebra**
Extend and apply the distributive law to the expansion of algebraic expressions (ACMNA190) • applying the distributive law to the expansion of algebraic expressions using strategies such as the area model	3.6 Expanding brackets

Number and Algebra	Pearson Mathematics 8
Factorise algebraic expressions by identifying numerical factors (ACMNA191) • recognising the relationship between factorising and expanding • identifying the greatest common divisor (highest common factor) of numeric and algebraic expressions and using a range of strategies to factorise algebraic expressions	3.5 Multiplying and dividing algebraic terms 3.7 Factorising
Simplify algebraic expressions involving the four operations (ACMNA192) • understanding that the laws used with numbers can also be used with algebra	3.1 Variables and expressions 3.2 Substitution for variables 3.3 Using formulas 3.4 Simplifying expressions 3.5 Multiplying and dividing algebraic terms
Linear and non-linear relationships	**Chapter 6 Linear graphs** **Chapter 7 Linear equations**
Plot linear relationships on the Cartesian plane with and without the use of digital technologies (ACMNA193) • completing a table of values, plotting the resulting points and determining whether the relationship is linear • finding the rule for a linear relationship	6.1 Interpreting line graphs 6.2 Linear relationships 6.3 Finding the rule 6.4 Using linear relationships
Solve linear equations using algebraic and graphical techniques. Verify solutions by substitution (ACMNA194) • solving real life problems by using variables to represent unknowns	6.4 Using linear relationships 7.1 The language of equations 7.2 Solving linear equations 7.3 Solving more complex equations 7.4 Solving equations with the unknown on both sides 7.5 Solving problems using equations

Measurement and Geometry	Pearson Mathematics 8
Using units of measurement	**Chapter 5 Measurement**
Choose appropriate units of measurement for area and volume and convert from one unit to another (ACMMG195) • choosing units for area including mm^2, cm^2, m^2, hectares, km^2, and units for volume including mm^3, cm^3, m^3 • recognising that the conversion factors for area units are the squares of those for the corresponding linear units • recognising that the conversion factors for volume units are the cubes of those for the corresponding linear units	5.4 Area 5.5 Area of a circle 5.6 Finding the area of composite shapes 5.7 Volume and capacity
Find perimeters and areas of parallelograms, trapeziums, rhombuses and kites (ACMMG196) • establishing and using formulas for areas such as trapeziums, rhombuses and kites	5.1 Perimeter 5.4 Area 5.6 Finding the area of composite shapes
Investigate the relationship between features of circles such as circumference, area, radius and diameter. Use formulas to solve problems involving determining circumference and area (ACMMG197) • investigating the circumference and area of circles with materials or by measuring, to establish an understanding of formulas • investigating the area of circles using a square grid or by rearranging a circle divided into sectors	5.2 Circle relationships 5.3 Circumference 5.5 Area of a circle 5.6 Finding the area of composite shapes
Develop formulas for volumes of rectangular and triangular prisms and prisms in general. Use formulas to solve problems involving volume (ACMMG198) • investigating the relationship between volumes of rectangular and triangular prisms	5.7 Volume and capacity
Solve problems involving duration, including using 12- and 24-hour time within a single time zone (ACMMG199) • identifying regions in Australia and countries in Asia that are in the same time zone	5.8 Time

Measurement and Geometry	Pearson Mathematics 8
Geometric reasoning	**Chapter 8 Geometry**
Define congruence of plane shapes using transformations (ACMMG200) • understanding the properties that determine congruence of triangles and recognising which transformations create congruent figures • establishing that two figures are congruent if one shape lies exactly on top of the other after one or more transformations (translation, reflection, rotation), and recognising that the matching sides and the matching angles are equal	8.3 Congruence and transformation
Develop the conditions for congruence of triangles (ACMMG201) • investigating the minimal conditions needed for the unique construction of triangles, leading to the establishment of the conditions for congruence (SSS, SAS, ASA and RHS) • solving problems using the properties of congruent figures • constructing triangles using the conditions for congruence	8.3 Congruence and transformation 8.4 Congruent triangles
Establish properties of quadrilaterals using congruent triangles and angle properties, and solve related numerical problems using reasoning (ACMMG202) • establishing the properties of squares, rectangles, parallelograms, rhombuses, trapeziums and kites • identifying properties related to side lengths, parallel sides, angles, diagonals and symmetry	8.1 Angles review 8.2 Shapes review 8.4 Congruent triangles 8.5 Congruence and quadrilaterals

Statistics and Probability	Pearson Mathematics 8
Chance	**Chapter 9 Statistics and probability**
Identify complementary events and use the sum of probabilities to solve problems (ACMSP204) • identifying the complement of familiar events • understanding that probabilities range between 0 to 1 and that calculating the probability of an event allows the probability of its complement to be found	9.5 Understanding probability 9.6 Theoretical probability for single-step experiments 9.7 Venn diagrams and two-way tables
Describe events using language of 'at least', exclusive 'or' (A or B but not both), inclusive 'or' (A or B or both) and 'and' (ACMSP205) • posing 'and', 'or' and 'not' probability questions about objects or people	9.6 Theoretical probability for single-step experiments 9.7 Venn diagrams and two-way tables
Represent events in two-way tables and Venn diagrams and solve related problems (ACMSP292) • using Venn diagrams and two-way tables to calculate probabilities for events, satisfying 'and', 'or' and 'not' conditions • understanding that representing data in Venn diagrams or two-way tables facilitates the calculation of probabilities • collecting data to answer the questions using Venn diagrams or two-way tables	9.7 Venn diagrams and two-way tables
Data representation and interpretation	**Chapter 9 Statistics and probability**
Explore the practicalities and implications of obtaining data through sampling using a variety of investigative processes (ACMSP206) • investigating the uses of random sampling to collect data	9.1 Population sampling 9.4 Statistics from grouped data
Investigate the effect of individual data values, including outliers, on the mean and median (ACMSP207) • using displays of data to explore and investigate effects	9.2 Using sample measures of centre and spread 9.3 Frequency tables and graphs 9.4 Statistics from grouped data
Investigate techniques for collecting data, including census, sampling and observation (ACMSP284) • identifying situations where data can be collected by census and those where a sample is appropriate	9.1 Population sampling 9.4 Statistics from grouped data
Explore the variation of means and proportions of random samples drawn from the same population (ACMSP293) • using sample properties to predict characteristics of the population	9.2 Using sample measures of centre and spread 9.4 Statistics from grouped data