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For Chapters 6–10, see Teacher Companion Part Two.

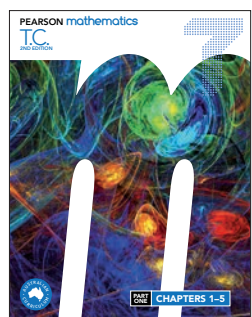
PEARSON mathematics



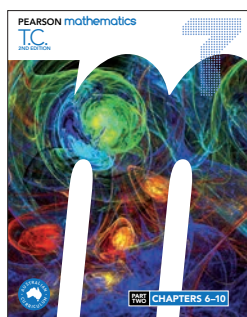
Student Book



Homework Program



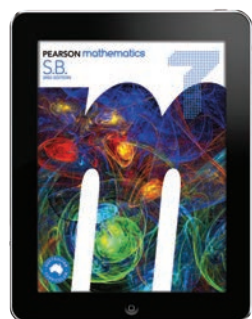
Teacher Companion 1



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 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.

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

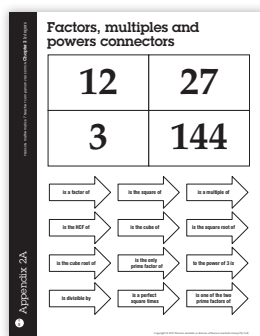
Active participation and inquiry

Class activities

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

Factors, multiples and powers connector

Connectors help students build conceptual links. Provide students with a set of four cards containing numbers and a set of 12 arrows (Appendix 2A). The arrows should describe various relationships such as 'is a factor of' or 'is a multiple of' or 'raised to power of 3 is'. Working in pairs or small groups, students lay out arrows between pairs of cards to form relationships. Students record these relationships. The group that makes the largest number of correct relationships is the winner.



Recap

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

Recap

Question	Answer
1 Calculate 9×8 .	72
2 Calculate 7^2 .	49
3 What is $123 \div 3$?	41
4 Arrange the following numbers in ascending order (smallest to largest): 33, 5, 3, 21, 12, 0, 13	0, 3, 5, 12, 13, 21, 33
5 Calculate $4^2 \times 10^2$.	$16 \times 100 = 1600$

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

- Finding factors
- Divisibility tests
- Finding lowest common multiples
- Finding highest common factors

Homework Program

- Skills/Practice 2A

Lightbook Starter

- Check-in 2.1

Appendices

- 1A 12×12 multiplication grid
- 2A Factors, multiples and power connectors
- 2B Factor game boards

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

Misconception: Confusing area with perimeter

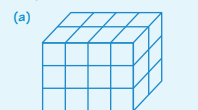
Area and perimeter are often taught together and it is common for students to confuse the two concepts. Students must understand that the perimeter is a length and is therefore measured in mm, cm, m and km. Area is the number of squares or space within a flat shape and is measured in mm^2 , cm^2 , m^2 and km^2 . A good task for students to do is one that uses both perimeter and area skills. See the Area vs Perimeter race activity on page 339 for a suitable task.

Suggested examples

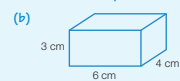
- examples not in the Student Book that help model the working of questions in each section

Suggested examples

1 Find the volume of the following shapes.



Each cube represents 1 cm^3



Answer:

(a) 24 cm^3

(b) $6 \times 4 \times 3 = 72$

The volume is 72 cm^3

2 The volume of a rectangular prism is 30 cm^3 . What might the dimensions of the prism be (assuming the dimensions are whole numbers)?

Answers and worked solutions

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

Answers

Pearson Mathematics 7 Curriculum Correlation

Australian Curriculum: Mathematics correlation

This maps the Australian Curriculum: Mathematics syllabus to *Pearson Mathematics 7*.

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 7
Number and place value	Chapter 1 Whole numbers Chapter 2 Integers
Investigate index notation and represent whole numbers as products of powers of prime numbers (ACMNA149) <ul style="list-style-type: none"> defining and comparing prime and composite numbers and explaining the difference between them applying knowledge of factors to strategies for expressing whole numbers as products of powers of prime factors, such as repeated division by prime factors or creating factor trees solving problems involving lowest common multiples and greatest common divisors (highest common factors) for pairs of whole numbers by comparing their prime factorisation 	1.2 Indices 2.1 Multiples, factors and divisibility 2.2 Primes and composites 2.3 Prime factors
Investigate and use square roots of perfect square numbers (ACMNA150) <ul style="list-style-type: none"> investigating square numbers such as 25 and 36 and developing square-root notation investigating between which two whole numbers a square root lies 	1.2 Indices
Apply the associative, commutative and distributive laws to aid mental and written computation (ACMNA151) <ul style="list-style-type: none"> understanding that arithmetic laws are powerful ways of describing and simplifying calculations 	1.1 Mental strategies 1.3 More strategies for multiplication and division 1.4 Estimating and rounding 1.5 Order of operations 1.6 Mixed whole number problems
Compare, order, add and subtract integers (ACMNA280)	1.1 Mental strategies 1.6 Mixed whole number problems 2.4 Introduction to integers 2.5 Adding and subtracting positive integers 2.6 Adding and subtracting negative integers 2.7 Simplifying addition and subtraction
Real numbers	Chapter 1 Whole numbers Chapter 3 Fractions Chapter 4 Decimals, percentage and ratio
Compare fractions using equivalence. Locate and represent positive and negative fractions and mixed numbers on a number line (ACMNA152) <ul style="list-style-type: none"> exploring equivalence among families of fractions by using a fraction wall or a number line (for example by using a fraction wall to show that $\frac{2}{3}$ is the same as $\frac{4}{6}$ and $\frac{6}{9}$) 	3.1 Understanding fractions 3.2 Working with fractions 3.3 Estimating and comparing fractions 4.1 Place value and comparing decimals

Number and Algebra	Pearson Mathematics 7
<p>Solve problems involving addition and subtraction of fractions, including those with unrelated denominators (ACMNA153)</p> <ul style="list-style-type: none"> exploring and developing efficient strategies to solve additive problems involving fractions (for example by using fraction walls or rectangular arrays with dimensions equal to the denominators) 	<p>3.4 Adding and subtracting fractions 3.7 Mixed fraction problems 4.4 Decimal addition and subtraction</p>
<p>Multiply and divide fractions and decimals using efficient written strategies and digital technologies (ACMNA154)</p> <ul style="list-style-type: none"> investigating multiplication of fractions and decimals, using strategies including patterning and multiplication as repeated addition, with both concrete materials and digital technologies, and identifying the processes for division as the inverse of multiplication 	<p>3.2 Working with fractions 3.5 Multiplying fractions 3.6 Dividing fractions 3.7 Mixed fraction problems 4.5 Decimal multiplication 4.6 Decimal division</p>
<p>Express one quantity as a fraction of another, with and without the use of digital technologies (ACMNA155)</p> <ul style="list-style-type: none"> using authentic examples for the quantities to be expressed and understanding the reasons for the calculations 	<p>3.1 Understanding fractions 3.7 Mixed fraction problems</p>
<p>Round decimals to a specified number of decimal places (ACMNA156)</p> <ul style="list-style-type: none"> using rounding to estimate the results of calculations with whole numbers and decimals, and understanding the conventions for rounding 	<p>1.4 Estimating and rounding 4.2 Rounding decimals 4.5 Decimal multiplication</p>
<p>Connect fractions, decimals and percentages and carry out simple conversions (ACMNA157)</p> <ul style="list-style-type: none"> justifying choices of written, mental or calculator strategies for solving specific problems including those involving large numbers understanding that quantities can be represented by different number types and calculated using various operations, and that choices need to be made about each calculating the percentage of the total local municipal area set aside for parkland, manufacturing, retail and residential dwellings to compare land use 	<p>4.1 Place value and comparing decimals 4.3 Decimals and fractions 4.7 Percentages, fractions and decimals 4.8 Using percentages</p>
<p>Find percentages of quantities and express one quantity as a percentage of another, with and without digital technologies (ACMNA158)</p> <ul style="list-style-type: none"> using authentic problems to express quantities as percentages of other amounts 	<p>4.8 Using percentages</p>
<p>Recognise and solve problems involving simple ratios (ACMNA173)</p> <ul style="list-style-type: none"> understanding that rate and ratio problems can be solved using fractions or percentages and choosing the most efficient form to solve a particular problem 	<p>4.9 Ratio 4.10 Rates</p>
Money and financial mathematics	Chapter 4 Decimals, percentage and ratio
<p>Investigate and calculate 'best buys', with and without digital technologies (ACMNA174)</p> <ul style="list-style-type: none"> applying the unitary method to identify 'best buys' situations, such as comparing the cost per 100 g 	<p>4.10 Rates</p>

Number and Algebra	Pearson Mathematics 7
Patterns and algebra	Chapter 1 Whole numbers Chapter 5 Algebra Chapter 7 Linear equations
Introduce the concept of variables as a way of representing numbers using letters (ACMNA175) <ul style="list-style-type: none"> understanding that arithmetic laws are powerful ways of describing and simplifying calculations and that using these laws leads to the generality of algebra 	5.1 Pronumerals and variables 5.5 Patterns and rules
Create algebraic expressions and evaluate them by substituting a given value for each variable (ACMNA176) <ul style="list-style-type: none"> using authentic formulas to perform substitutions 	5.2 Terms, expressions and equations 5.3 Using rules 5.4 Formulas and substitution 7.1 Number sentences 7.2 Introduction to equations
Extend and apply the laws and properties of arithmetic to algebraic terms and expressions (ACMNA177) <ul style="list-style-type: none"> identifying order of operations in contextualised problems, preserving the order by inserting brackets in numerical expressions, then recognising how order is preserved by convention moving fluently between algebraic and word representations as descriptions of the same situation 	5.1 Pronumerals and variables 5.3 Using rules 5.4 Formulas and substitution 5.5 Patterns and rules 5.6 Simplifying expressions with addition and subtraction 7.1 Number sentences 7.2 Introduction to equations
Linear and non-linear relationships	Chapter 5 Algebra Chapter 7 Linear equations
Given coordinates, plot points on the Cartesian plane, and find coordinates for a given point (ACMNA178) <ul style="list-style-type: none"> plotting points from a table of integer values and recognising simple patterns, such as points that lie on a straight line 	5.7 The Cartesian plane 5.8 Patterns and plotting points 5.9 Interpreting graphs
Solve simple linear equations (ACMNA179) <ul style="list-style-type: none"> solving equations using concrete materials, such as the balance model, and explain the need to do the same thing to each side of the equation using substitution to check solutions investigating a range of strategies to solve equations 	5.5 Patterns and rules 7.2 Introduction to equations 7.3 Solving equations using backtracking 7.4 Solving equations using the balance method 7.5 Solving problems with equations
Investigate, interpret and analyse graphs from [authentic / real life] data (ACMNA180) <ul style="list-style-type: none"> using travel graphs to investigate and compare the distance travelled to and from school interpreting features of travel graphs such as the slope of lines and the meaning of horizontal lines using graphs of evaporation rates to explore water storage 	5.9 Interpreting graphs

Measurement and Geometry	Pearson Mathematics 7
Using units of measurement	Chapter 6 Measurement
Establish the formulas for areas of rectangles, triangles and parallelograms, and use these in problem-solving (ACMMG159) <ul style="list-style-type: none"> building on the understanding of the area of rectangles to develop formulas for the area of triangles establishing that the area of a triangle is half the area of an appropriate rectangle using area formulas for rectangles and triangles to solve problems involving areas of surfaces 	6.1 Units of length 6.2 Perimeter 6.3 Area 6.4 Area of a parallelogram 6.5 Area of triangles and composite shapes

Measurement and Geometry	Pearson Mathematics 7
Calculate volumes of rectangular prisms (ACMMG160) <ul style="list-style-type: none"> investigating volumes of cubes and rectangular prisms and establishing and using the formula $V = l \times b \times h$ understanding and using cubic units when interpreting and finding volumes of cubes and rectangular prisms 	6.6 Volume
Shape	Chapter 6 Measurement Chapter 10 Transformation and visualisation
Draw different views of prisms and solids formed from combinations of prisms (ACMMG161) <ul style="list-style-type: none"> using aerial views of buildings and other 3-D structures to visualise the structure of the building or prism 	6.6 Volume 10.6 Drawing and visualising 3D shapes 10.7 Plan views and elevations
Location and transformation	Chapter 10 Transformation and visualisation
Describe translations, reflections in an axis and rotations of multiples of 90° on the Cartesian plane using coordinates. Identify line and rotational symmetries (ACMMG181) <ul style="list-style-type: none"> describing patterns and investigating different ways to produce the same transformation such as using two successive reflections to provide the same result as a translation experimenting with, creating and re-creating patterns using combinations of reflections and rotations using digital technologies 	10.1 Translations 10.2 Reflections 10.3 Rotations 10.4 Combined transformations 10.5 Symmetry
Geometric reasoning	Chapter 8 Angles and shapes
Identify corresponding, alternate and co-interior angles when two straight lines are crossed by a transversal (ACMMG163) <ul style="list-style-type: none"> defining and classifying pairs of angles as complementary, supplementary, adjacent and vertically opposite 	8.1 Measuring, estimating and drawing angles 8.2 Classifying and naming angles 8.3 Calculating angles 8.4 Angles and transversals
Investigate conditions for two lines to be parallel and solve simple numerical problems using reasoning (ACMMG164) <ul style="list-style-type: none"> constructing parallel and perpendicular lines using their properties, a pair of compasses and a ruler, and dynamic geometry software defining and identifying the relationships between alternate, corresponding and co-interior angles for a pair of parallel lines cut by a transversal 	8.4 Angles and transversals 8.8 Compass constructions
Classify triangles according to their side and angle properties and describe quadrilaterals (ACMMG165) <ul style="list-style-type: none"> identifying side and angle properties of scalene, isosceles, right-angled and obtuse-angled triangles describing squares, rectangles, rhombuses, parallelograms, kites and trapeziums 	8.5 Polygons 8.6 Triangles 8.7 Quadrilaterals
Demonstrate that the angle sum of a triangle is 180° and use this to find the angle sum of a quadrilateral (ACMMG166) <ul style="list-style-type: none"> using concrete materials and digital technologies to investigate the angle sum of a triangle and quadrilateral 	8.5 Polygons 8.6 Triangles 8.7 Quadrilaterals

Statistics and Probability	Pearson Mathematics 7
Chance	Chapter 9 Statistics and probability
Construct sample spaces for single-step experiments with equally likely outcomes (ACMSP167) <ul style="list-style-type: none"> discussing the meaning of probability terminology (for example probability, sample space, favourable outcomes, trial, events and experiments) distinguishing between equally likely outcomes and outcomes that are not equally likely 	9.7 Probability and sample space
Assign probabilities to the outcomes of events and determine probabilities for events (ACMSP168) <ul style="list-style-type: none"> expressing probabilities as decimals, fractionals and percentages 	9.7 Probability and sample space
Data representation and interpretation	Chapter 9 Statistics and probability
Identify and investigate issues involving numerical data collected from primary and secondary sources (ACMSP169) <ul style="list-style-type: none"> obtaining secondary data from newspapers, the Internet and the Australian Bureau of Statistics investigating secondary data relating to the distribution and use of non-renewable resources around the world 	9.1 Collecting data 9.3 Graphing univariate data 9.5 Graphing bivariate data 9.6 Comparing data sets
Construct and compare a range of data displays including stem-and-leaf plots and dot plots (ACMSP170) <ul style="list-style-type: none"> understanding that some data representations are more appropriate than others for particular data sets, and answering questions about those data sets using ordered stem-and-leaf plots to record and display numerical data collected in a class investigation, such as constructing a class plot of height in centimetres on a shared stem-and-leaf plot for which the stems 12, 13, 14, 15, 16 and 17 have been produced 	9.1 Collecting data 9.3 Graphing univariate data 9.4 Comparing parts of a whole with graphs 9.5 Graphing bivariate data 9.6 Comparing data sets
Calculate mean, median, mode and range for sets of data. Interpret these statistics in the context of data (ACMSP171) <ul style="list-style-type: none"> understanding that summarising data by calculating measures of centre and spread can help make sense of the data 	9.2 Measures of centre and spread 9.3 Graphing univariate data 9.6 Comparing data sets
Describe and interpret data displays using median, mean and range (ACMSP172) <ul style="list-style-type: none"> using mean and median to compare data sets and explaining how outliers may affect the comparison locating mean, median and range on graphs and connecting them to real life 	9.2 Measures of centre and spread 9.3 Graphing univariate data 9.5 Graphing bivariate data 9.6 Comparing data sets