

Mathematics Level 8

Contents

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Aboriginal and Torres Strait Islander content has been excluded as accuracy cannot be guaranteed, and it is better to be respectful than cover the entire curriculum inaccurately.

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Contents

This book is the **Mathematics Level 8** student workbook. It is written for **Level 8** of the Victorian Curriculum F–10 Version 2.0 (VC2), Mathematics — Year 8 in Victorian schools. **One year level, not a band.** Every content description in this book is a Level 8 content description: Level 7 is assumed behind the students and is never re-taught, and Level 9 is deliberately set up but never taught. The book is complete at 29 content descriptions.

The series is ten booklets:

- **Chapter 1 — Number: integers, exponents, the real number system and percentages** — Maths8_Chapter01 — subtopics 1A–1F: the four operations with integers and rational numbers; the exponent laws with positive integer exponents and the zero exponent; fractions as terminating and recurring decimals; irrational numbers and the real number line; percentage increase, percentage decrease and percentage error, worked both with and without a calculator; and modelling with rational numbers and percentages — profit, loss, GST and income tax. Test T1, with its fully worked solutions, is at the back of this booklet (111 pp)
- **Chapter 2 — Algebra: linear expressions, relations and algorithms** — Maths8_Chapter02 — subtopics 2A–2E: expanding, factorising, rearranging and simplifying linear expressions; graphing linear relations and solving linear equations and one-variable inequalities; modelling with linear relations, including profit and loss; experimenting with linear functions and making and testing conjectures, with a graphing tool required; and algorithms and testing procedures, where errors are identified and corrected. Test T2, with its fully worked solutions, is at the back of this booklet (85 pp)
- **Chapter 3 — Measurement: area, circles, volume and Pythagoras' theorem** — Maths8_Chapter03 — subtopics 3A–3D: perimeter and area of composite and irregular shapes; circumference and area of a circle, established before it is used; volume and capacity of right prisms; and Pythagoras' theorem, finding the hypotenuse and finding a shorter side. Test T3, with its fully worked solutions, is at the back of this booklet (57 pp)
- **Chapter 4 — Measurement: time, rates and ratio** — Maths8_Chapter04 — subtopics 4A–4C: 12- and 24-hour time and duration across multiple time zones — the only place time zones are taught in the whole F–10 Mathematics curriculum; rates as single quantities with compound units, worked in both directions; and modelling with ratios and rates, including distance–time at constant speed. Test T4, with its fully worked solutions, is at the back of this booklet (53 pp)
- **Chapter 5 — Space: congruence, similarity and position in three dimensions** — Maths8_Chapter05 — subtopics 5A–5D: conditions for congruence and similarity; properties of quadrilaterals proved from congruent triangles; algorithms that test for congruence and similarity; and position and location in three dimensions — the only place a three-dimensional coordinate system appears in F–10 Mathematics — with dynamic geometry software required. Test T5, with its fully worked solutions, is at the back of this booklet (73 pp)
- **Chapter 6 — Statistics: samples, sampling and variation** — Maths8_Chapter06 — subtopics 6A–6D: populations and samples, and census, sampling, experiment and observation; random and non-random sampling, and analysing and reporting a distribution; variation between random samples and the effect of sample size; and planning and conducting a statistical investigation from a sample. Test T6, with its fully worked solutions, is at the back of this booklet (67 pp)
- **Chapter 7 — Probability: complementary events and combinations of two events** — Maths8_Chapter07 — subtopics 7A–7C: complementary events, applied to events that are not equally likely; two events with two-way tables, tree diagrams and Venn diagrams; and simulating compound events, with a simulation tool required. Test T7, with its fully worked solutions, is at the back of this booklet (56 pp)
- **Chapter 8 — Extended tasks** — Maths8_Chapter08_Tasks — the three tasks a timed test cannot evidence: I1 plan and conduct a statistical investigation from a sample and report with acknowledged uncertainty (VC2M8ST04), I2 formulate, solve and review a linear model in a real context (VC2M8A03), and I3 formulate, solve and review a rate, ratio or percentage model in a financial or measurement context (VC2M8M07 and VC2M8N06), each with a 20-mark rubric (25 pp)
- **Chapter 9 — End-of-year review** — Maths8_Chapter09_Review — the cumulative review R8 across all 29 content descriptions and all six strands, sectioned by strand, split into Part 1 (no digital tools) and Part 2

(tools permitted or required where the content description allows or requires them), with fully worked solutions (16 pp)

- **Chapter 0 — Contents** — Maths8_Chapter00_Contents — this booklet: how to use the book, what it covers, teacher notes, safety notes and the Chapter 6 word list (0 pp)

Series total: ten booklets $\approx$ 543 pages. The built booklets — Maths8_Chapter00_Contents, Maths8_Chapter01 to Maths8_Chapter07, Maths8_Chapter08_Tasks and Maths8_Chapter09_Review — are in S:\Files\VC2Maths\Textbook8\.

How to use this book

The chapters follow the strands. Six strands, seven chapters, in VCAA's own strand order: Number $\rightarrow$ Algebra $\rightarrow$ Measurement $\rightarrow$ Space $\rightarrow$ Statistics $\rightarrow$ Probability. Measurement alone is split into two chapters — Chapter 3 is geometric measurement (area, circles, volume, Pythagoras' theorem) and Chapter 4 is quantitative and applied measurement (time, rates, ratio) — because seven content descriptions covering composite area, circles, volume and capacity, Pythagoras' theorem, time zones, rates and ratio modelling do not make one teachable chapter or one sitable test. No chapter mixes strands, and no cross-strand chapter is created to tidy up a theme.

Book order is a strand order, not a mandated teaching order. A school will resequence to suit its own scope and sequence; that is expected, and the subtopics are written to survive reordering. If you resequence, these are the links to plan around: **1A before 1B** — 1B's powers of negative bases need 1A's sign rules, including why $(-1)^4 = 1$ and $(-1)^5 = -1$; **1B before 1C** — 1C's terminating-decimal test reads the prime factorisation of the denominator; **1C before 1D** — irrationals are defined as what is left once terminating and recurring decimals are accounted for; **1E alongside 3A** — 3A's grid estimates of irregular areas are where measurement error becomes visible and 1E's percentage error becomes usable; **1D before 3B** — 1D connects π to the circumference-to-diameter ratio and 3B formalises it; **2B and 2C before 4C** — 4C teaches the constant-speed distance–time relationship as a rate of change and cross-refers to both; **5A and 5B before 5C** — 5C operates on them; **6A before 6B, 6B before 6C, all three before 6D** — each builds the last; and **7A before 7B, 7B before 7C**. Tasks I1, I2 and I3 run alongside their supporting subtopics over about two lessons each.

One content description per subtopic, exactly. Each of the 29 subtopics owns exactly one VC2 content description, quoted by its verbatim code, and its teaching sequence is built to deliver that content description. VCAA's elaborations — the examples it suggests for what a content description might look like — are carried in each subtopic's code line for linkage and coverage, not as a checklist to work through. A subtopic that teaches its content description fully while drawing on only some of its elaborations is correct, not under-covered.

The shape of every subtopic. Each subtopic opens with the content description it owns, quoted word for word with its code and elaboration ids. Then:

- **Theory** — the teaching sequence, carried by the figure, the number line, the table and the worked model as much as by the prose. The Level 7 work a subtopic assumes is recalled in a sentence or two at the point of use and is never re-taught.
- **Worked examples** — first with help, then on your own.
- **Practice questions** — with help, then on your own, then **Maths in real life**: short applied items in real, sourced contexts.
- **Answers**, then fully worked solutions, so a student can check their own work and see the method, not just the result.

Most subtopics close the theory with a **Words of this subtopic** table that gathers every new term with what it means here, and several end with **What comes next**, a short note pointing to where the idea goes.

A subtopic is not one lesson. Each of the 29 subtopics is several lessons of work. Twenty-nine subtopics is a realistic year's worth for Year 8, not padding, and the subtopic is the unit of teaching and the unit of audit — “was VC2M8ST03 delivered?” is answerable by opening one file.

Calculator and digital-tool status is set by the content description, not by preference. There is **no CAS anywhere in this book**, and a scientific calculator is permitted only where a content description names digital tools. Subtopic **1E is taught and assessed both with and without a calculator** — its content description requires the result with and without digital tools, and it carries a calculator-free strand of theory, worked examples and questions. Three subtopics make a digital tool **compulsory**: **2D** (graphing software), **5D** (dynamic geometry software or other digital tools) and **7C** (simulation) — a hand-drawn illustration or a pre-computed table does not deliver those content descriptions. Five content descriptions permit a tool where appropriate — 1A, 1C, 1F, 2B and 3A — and everywhere else the curriculum is silent and no calculator rule is added. Software is named by category — graphing software, dynamic geometry software, spreadsheet, simulation tool — never by product name, and no menu paths are given, so the book does not date with a software release.

Terminology follows VCAA, not textbook habit. The **exponent laws**, not “index laws” — the synonym is noted once, in 1B, because students meet it elsewhere, and never again. **Pythagoras’ theorem**, with the apostrophe after the s. **Natural numbers**, not counting numbers. **Congruence** in prose.

The notation in this book. Subtraction and negative numbers use a proper minus — -3 , $5 - 8 = -3$ — never a hyphen; integers run through all four operations at this level, negative coefficients enter algebra in 2A, and negative coordinates appear on the Cartesian plane in 2B, so the glyph is content, not typography. Multiplication is $\times$ and division is $\div$ in arithmetic; in algebra, multiplication is implied ($3x$, not $3 \times x$) and the fraction bar divides. π , $\sqrt{}$ and $^\circ$ are set as symbols, exponents as true superscripts, and recurring decimals carry the overbar: $0.\overline{3}$. Ratios are written 2:3 with no spaces, and Pythagoras’ theorem is written $a^2 + b^2 = c^2$ with the hypotenuse named. Metric units follow a space and are never pluralised — 12 cm, 3.5 kg, 250 mL, 5 km — with cm^3 and m^3 as true superscripts, never $\text{cm}3$, and compound units as km/h and \$/kg. Times are 14:35 for 24-hour and 2:35 pm for 12-hour; time zones are written out on first use in 4A — AEST (UTC+10), AEDT (UTC+11), ACST (UTC+9:30), AWST (UTC+8). Dates are in Australian order: 7 August 2026, or 07/08/2026.

Everything real is really real. Every price, rate, fare, timetable, temperature record, population figure and exchange rate in the book is real, named and carries a source line with a retrieval date, so a reader can see where the numbers come from. Prices are in Australian dollars, current at a stated date, with GST at 10% where relevant. Every tax table cites the same named financial year’s ATO rates and never leaves the year unstated; exchange rates are the RBA’s on a stated date. Where a context is fictional — a class fundraiser, a made-up canteen — it is transparently fictional.

The reading stays at Year 8. Sentences are short. Every new mathematics word is named and taught where it first appears and is collected in the subtopic’s **Words of this subtopic** table, and the general vocabulary is held at or below a Year 8 ceiling, so the difficulty lands on the mathematics, not on the reading. Chapter 6’s examinable vocabulary is gathered again in the word list at the end of this booklet.

What this book keeps out. Level discipline is the most common way a junior-secondary book goes wrong, so the boundaries are stated once, here. Each of these first appears at Level 9 or Level 10 and is out, even where it sits exactly one step past a Level 8 content description:

- no gradient, no $y = mx + c$ and no intercepts — 2B graphs from a table of values and from the relation itself, and never computes a slope;
- no midpoint and no distance between two points;
- no surface area, and no cylinders or composite solids — 3C is right prisms only;
- no scientific notation, no negative exponents, and no exponent laws applied to variables — 1B stops at positive integer exponents and the zero exponent, on numbers;
- no binomial products and no factorising quadratics — 2A is linear expressions only;
- no trigonometry and no sine, cosine or tangent ratios;
- no absolute or relative error as named quantities, and no exact-value convention — VC2M8N05 names percentage error, and percentage error is the book’s only error concept;
- no enlargement as a formal transformation with a scale factor — 5A establishes the conditions for similarity, and the enlargement is used only to generate similar shapes;
- no simultaneous equations, and no inequalities graphed on a number line;
- no sampling without replacement, no two-step chance experiments and no conditional probability — Level 8 determines all possible outcome combinations for two events and stops there.

And what Level 7 taught is used, not re-taught: in particular, the parallel-line angle relationships and the angle sum of a triangle are tools in 5B's proofs, and transformations are a tool in 5A — neither has a Level 8 content description of its own, and neither carries theory or test marks here.

The checks are classroom instruments, pitched for Year 8. They are longer and more formal than a Level 6 book and well short of a Year 10 book: items are single-context, scaffolding is visible in the first item of each block, and no paper runs past 90 minutes. See the teacher notes below for administration.

Which book is which. This is the single-level Year 8 book. A Levels 7–8 band edition also exists; it owns the same 29 Level 8 content descriptions, and that is the only thing the two share — chapter numbering, subtopic codes, titles, the assessment plan and every line of content differ, and nothing is imported either way. The Level 7 book owns Level 7 and the Level 9 book owns Level 9: nothing here is handed off to either, and nothing from either is picked up here.

What this book covers

The table below is the coverage register for this book, reproduced from the series plan without change: all 29 content descriptions of VC2 Mathematics Level 8, each against the subtopic that owns it, with its elaboration ids and the number of banked multiple-choice questions already keyed to it. **Every code appears exactly once as an owner.**

There are no gaps and nothing is deferred to another book. Rows are in code order, so a coverage audit can diff this table directly. This is the table the series coverage audit checks.

#	Code	Strand	Owner	Elaboration ids	MCQs in bank
1	VC2M8N01	Number	1D	.E01 .E02 . E03 .E04	12
2	VC2M8N02	Number	1B	.E01 .E02 . E03 .E04	15
3	VC2M8N03	Number	1C	.E01 .E02	6
4	VC2M8N04	Number	1A	.E01 .E02 . E03	9
5	VC2M8N05	Number	1E	.E01 .E02 . E03	9
6	VC2M8N06	Number	1F	.E01 .E02 . E03 .E04	12
7	VC2M8A01	Algebra	2A	.E01 .E02 . E03	117
8	VC2M8A02	Algebra	2B	.E01 .E02 . E03 .E04 .E 05 .E06	108
9	VC2M8A03	Algebra	2C	.E01 .E02 . E03 .E04	72
10	VC2M8A04	Algebra	2E	.E01 .E02	36
11	VC2M8A05	Algebra	2D	.E01 .E02 . E03	54
12	VC2M8M01	Measurement	3A	.E01 .E02 . E03	49
13	VC2M8M02	Measurement	3C	.E01 .E02 . E03 .E04	72
14	VC2M8M03	Measurement	3B	.E01 .E02 . E03 .E04	72
15	VC2M8M04	Measurement	4A	.E01 .E02 . E03	54
16	VC2M8M05	Measurement	4B	.E01 .E02 .	90

#	Code	Strand	Owner	Elaboration ids	MCQs in bank
				E03 .E04 .E05	
17	VC2M8M06	Measurement	3D	.E01 .E02 .E03 .E04	67
18	VC2M8M07	Measurement	4C	.E01 .E02 .E03 .E04 .E05 .E06	18
19	VC2M8SP01	Space	5A	.E01 .E02 .E03 .E04 .E05 .E06	18
20	VC2M8SP02	Space	5B	.E01 .E02 .E03	9
21	VC2M8SP03	Space	5D	.E01 .E02 .E03 .E04 .E05 .E06	18
22	VC2M8SP04	Space	5C	.E01 .E02 .E03	9
23	VC2M8ST01	Statistics	6A	.E01 .E02 .E03 .E04	12
24	VC2M8ST02	Statistics	6B	.E01 .E02 .E03 .E04	12
25	VC2M8ST03	Statistics	6C	.E01 .E02 .E03 .E04 .E05	15
26	VC2M8ST04	Statistics	6D	.E01 .E02 .E03	9
27	VC2M8P01	Probability	7A	.E01 .E02 .E03	9
28	VC2M8P02	Probability	7B	.E01 .E02 .E03 .E04	12
29	VC2M8P03	Probability	7C	.E01 .E02 .E03	9
				111 elaborations	1,004

Notes on this table:

- The **Elaboration ids** column shows suffixes only, for width; the full id is the code plus the suffix — row 1's first id is VC2M8N01 .E01. The suffix is positional in VCAA's order within its content description and is never renumbered.
- **Elaborations are illustrations, not requirements.** The content description is the expectation; an elaboration is one way VCAA suggests it might look. The ids are carried for linkage and coverage — they join each subtopic to the question bank. A subtopic is authored to its content description's verbs and objects, not as a walk through the elaborations.
- **One elaboration that carries Aboriginal and Torres Strait Islander content is not taught in this book:** VC2M8P02 .E04 — the instructive game Battendi, of the Ngarrindjeri Peoples of Lake Murray and Lake Albert. It is excluded under the notice on the first page of every booklet in this series, and the exclusion is recorded, not silent — the coverage audit reports it as an accepted exclusion. Because elaborations are illustrations, the content description is still delivered in full: 7B determines all possible outcome combinations for two events in neutral contexts and keeps its other elaborations, .E01–.E03.

- **The counts close.** 29 codes, 29 owners — every code is owned exactly once. 111 elaboration ids, each carried exactly once, and 1,004 banked questions keyed to these codes. Register check run against the authority file 2026-08-07: 29 codes listed, 29 owned, 0 unowned, 0 owned more than once, 0 left to another book. The Level 7 book owns Level 7 and the Level 9 book owns Level 9; nothing here is handed off to either, and nothing from either is picked up here.
- **The bank is uneven, and that is not a scope signal.** Five subtopics sit on 117, 108, 90, 72 and 72 banked items (2A, 2B, 4B, 3B, 3C); six sit on 9 (1A, 5B, 5C, 6D, 7A, 7C). Bank density measures the bank, not the curriculum — question counts are set per subtopic by the mathematics, and where the bank is thin, items are authored fresh to the same specification and keyed to the same code. VC2M8ST04 (9 banked items) and VC2M8A01 (117) are both worth 5 marks in the assessment below.
- **Codes that do not exist.** At Level 8, Number ends at N06, Algebra at A05, Measurement at M07, Space at SP04, Statistics at ST04 and Probability at P03. There is no VC2M8N07, no VC2M8A06, no VC2M8M08, no VC2M8SP05, no VC2M8ST05 and no VC2M8P04 — the numbering stops because the curriculum stops, not because anything is missing.

What this book does not cover. This book covers Level 8 only, and the only permitted cross-level statements are these, stated with codes so they can be checked against the authority files rather than from memory.

- **Assumed from Level 7 — reference it, never re-teach it:** addition and subtraction of integers and the four operations on positive rational numbers (VC2M7N08, VC2M7N06); exponent notation, expanded form and products of powers of primes (VC2M7N02); perfect squares and square roots, and rationals on a number line (VC2M7N01, VC2M7N03); percentages of quantities, ratios, the modelling cycle, and rounding and reasonableness (VC2M7N07, VC2M7N09, VC2M7N10, VC2M7N04); variables, substitution and the associative, commutative and distributive laws by name (VC2M7A01, VC2M7A02); solving linear equations with natural-number solutions and verifying by substitution, and tables of values and plotting on the Cartesian plane in all four quadrants (VC2M7A03, VC2M7A05); interpreting relationships in graphs built from authentic data (VC2M7A04); systematically varying a parameter with digital tools (VC2M7A06); areas of rectangles, triangles and parallelograms (VC2M7M01); π as the constant relating circumference, radius and diameter (VC2M7M03); volume of rectangular and triangular right prisms (VC2M7M02); modelling with ratios of lengths, areas and volumes (VC2M7M06, VC2M7N09); classifying triangles, quadrilaterals and polygons, and translations, reflections and rotations described by their effect on coordinates (VC2M7SP02, VC2M7SP03); parallel-line angle relationships and the interior angle sum of a triangle and other polygons (VC2M7M04, VC2M7M05); designing a sort-and-classify algorithm (VC2M7SP04); range, median, mean and mode, dot plots and stem-and-leaf plots, and planning and conducting an investigation (VC2M7ST01–VC2M7ST03); and sample space for a single-stage experiment, assigning probabilities to outcomes, and repeated experiments and simulations (VC2M7P01, VC2M7P02). These belong to the Level 7 book. Two are load-bearing: Level 8 has no angle-properties content description of its own — 5B uses the Level 7 angle facts as a tool inside a proof and carries no theory and no test marks for them — and no transformations content description of its own — 5A uses transformations the same way.
- **Set up but NOT taught — Level 9 and Level 10 own these:** gradient and $y = mx + c$ (VC2M9A04); midpoint and distance between two points (VC2M9A04); surface area (VC2M9M01); cylinders and composite solids (VC2M9M01); scientific notation (VC2M9M02); negative exponents and exponent laws applied to variables (VC2M9A01); binomial products and factorising quadratics (VC2M9A02, VC2M10A04); trigonometry (VC2M9SP01, VC2M9M03); absolute and relative error as named quantities and exact values (VC2M9M04); enlargement as a formal transformation (VC2M9SP02); simultaneous equations and inequalities graphed on a number line (VC2M10A09, VC2M10A08); and two-step chance experiments with and without replacement and conditional probability (VC2M9P01, VC2M10P01). A book that teaches these has over-run its level.
- **Towards Foundation Levels A–D** is a separate continuum for students with disability working below Foundation Level. None of its codes appears in this book's authority file.

- **VCE content is nowhere in this book.** The series plan carries a forward map to the VCE mathematics studies, and it is reference-only: no VCE key knowledge, notation or exam item enters a Level 8 subtopic. In particular, CAS is a VCE tool and does not appear anywhere in this book.

Teacher notes

Read the level. Assessment in this book is pitched for Year 8: written working shown throughout, reasoning marked where the content description requires a reason, and extended tasks where a timed test cannot reach the verb. It is longer and more formal than a Level 6 book and well short of a Year 10 book — items are single-context, scaffolding is visible in the first item of each block, and no paper runs past 90 minutes. Everything here is a school-designed instrument: nothing is a VCAA instrument, nothing contributes to a VCAA result, and nothing may be described as one. Every paper carries this standing notice:

This is a school-designed paper. It is not a VCAA instrument. Achievement in the Victorian Curriculum is reported against the Level 8 achievement standard, not against a mark on this paper.

The marking rule is 5 marks per subtopic. Every content description is worth the same, so a coverage audit can read delivery straight off the mark schedule, and an under-taught content description shows up as a short question rather than hiding inside a long one. A subtopic sitting on 117 banked items and one sitting on 9 are both worth 5 marks.

Chapter tests — 7 tests, 145 marks

Test	Chapter	Subtopics	Marks	Time	Equipment stated on the paper
T1	Ch1 Number: integers, exponents, the real number system and percentages	6	30	35 min	scientific calculator permitted on the 1A, 1C and 1F items; the 1E items carry calculator-free items, marked as such
T2	Ch2 Algebra: linear expressions, relations and algorithms	5	25	30 min	scientific calculator permitted on the 2B items; graphing or spreadsheet software required for the 2D items
T3	Ch3 Measurement: area, circles, volume and Pythagoras' theorem	4	20	25 min	ruler, protractor and pair of compasses; scientific calculator permitted on the 3A items
T4	Ch4 Measurement: time, rates and	3	15	20 min	—

Test	Chapter	Subtopics	Marks	Time	Equipment stated on the paper
	ratio				
T5	Ch5 Space: congruence, similarity and position in three dimensions	4	20	25 min	ruler, protractor and pair of compasses; dynamic geometry software required for the 5D items
T6	Ch6 Statistics: samples, sampling and variation	4	20	25 min	—
T7	Ch7 Probability: complementary events and combinations of two events	3	15	20 min	simulation access required for the 7C items
	Chapter tests	29	145		

Standing rules for every test:

- **Timing** is 1 minute per mark plus 5 minutes reading. The guidance durations are for planning a lesson, not a limit to beat, and no paper needs splitting.
- **Item types** are short-answer and extended-response. Multiple choice is used only where the judgement is genuinely a selection task — which congruence test applies (5A), which sampling method suits a context (6B), which representation shows the combinations best (7B) — and then with four options A–D, never A–E.
- **Reasoning is marked separately from the answer in T3, T5 and T6.** VC2M8M06 requires the right-angled case to be distinguished from acute and obtuse, VC2M8SP02 requires reasoning to be explained, VC2M8SP04 requires the algorithm to be described and evaluated, and VC2M8ST02 requires a report. An item worth 5 marks in those subtopics carries at least 1 mark for the stated reason; a correct number with no reason does not score full marks.
- **Calculator status follows the content description.** Calculator-free items are marked as such on the paper — T1's calculator-free 1E items, which the content description requires. Every other paper states whether a scientific calculator, spreadsheet, dynamic geometry software or simulation tool is permitted or required.
- **Every test carries fully worked solutions**, not just an answer key, plus a compact answer key for self-checking.
- **The equipment line is part of the instrument**, not a footnote: T3 without compasses has not assessed the 3B constructions, and T5 without dynamic geometry access has not assessed 5D.
- **Practice sets are separate from tests.** Each subtopic's practice set draws multiple-choice items from the bank by content-description code — the 1,004 items registered in the coverage table above — plus short-answer items authored for this book. Where the bank is thin, additional items are authored to the same specification and keyed to the same code.

Extended tasks — 3 tasks, 60 marks

The plan-and-conduct and formulate–solve–**review** verbs cannot be assessed in a timed test. Each task runs over about two lessons, ships with a marking rubric, and is part of the assessment of the book — not optional extra material.

Task	Assesses	Supported by	Marks
I1 — Plan and conduct a statistical investigation from a sample, and report with acknowledged uncertainty	VC2M8ST04	6A, 6B, 6C	20
I2 — Formulate, solve and review a linear model in a real context	VC2M8A03	2A, 2B	20
I3 — Formulate, solve and review a rate, ratio or percentage model in a financial or measurement context	VC2M8M07 and VC2M8N06	1E, 4B	20

Each rubric has four criteria worth 5 marks each: **formulating** the problem or question · **choosing** the representation, model or sampling method, with justification · **executing** the mathematics accurately · **interpreting, communicating and reviewing** the solution in terms of the context. The fourth criterion is where I2's and I3's marks are actually won: VC2M8A03, VC2M8M07 and VC2M8N06 all require the appropriateness of the model to be reviewed, so a response that stops at a correct answer sits at the middle of the rubric, not the top. I1's rubric requires the uncertainty to be acknowledged and the sampling method's limitations named, per VC2M8ST04. The four content descriptions are also assessed in written form in T2, T4, T6 and T1; the tasks are how the *conduct* and *review* halves are evidenced, so a student absent for a task is not left with an unassessed content description.

The end-of-year review — R8, 80 marks. Run once, after Chapter 7, as the Year 8 exit check and the readiness check for Level 9. It is cumulative, covers all 29 content descriptions and all six strands, and carries no new content. Guidance time is 90 minutes. The paper is **sectioned by strand** so a teacher can mark diagnostically against the Level 8 achievement standard, with the relevant achievement-standard extract quoted verbatim at the head of each section. It is **split into Part 1 (no digital tools)** — roughly one third of the marks — **and Part 2 (digital tools permitted or required where the content description allows or requires them)**: VC2M8N05 requires the work both with and without digital tools, while VC2M8A05, VC2M8SP03 and VC2M8P03 make a tool compulsory. R8 carries fully worked solutions and a compact answer key. Its Chapter 1, Chapter 2 and Chapter 6 sections are the ones a Year 9 teacher should read first — they are the sections whose Level 9 successors assume the most and re-teach the least.

Total assessed marks: 145 (chapter tests) + 60 (extended tasks) + 80 (end-of-year review) = 285. All 29 content descriptions are assessed at least once in a chapter test and again in R8; the four modelling and investigation descriptions (VC2M8N06, VC2M8A03, VC2M8M07, VC2M8ST04) are additionally assessed by the tasks above, which is where their conduct and review verbs are actually met. An assessment audit must check ownership in the coverage table and this section independently: a content description can be correctly owned in the register and still be unassessed, and that would be a defect.

The question bank. The bank holds 1,004 multiple-choice items keyed to the 29 codes in the coverage map — Algebra 387, Measurement 360, Number 63, Space 54, Statistics 48 and Probability 30. They are a practice resource for the subtopic exercise sets; they are not the assessment in this book, and no test leans on multiple choice for more than a sparing minority of its marks.

Administration

- **Equipment stated on the paper is permitted.** The equipment line and the calculator line are part of the instrument, not a footnote.
- **Reasoning marks are part of the instrument.** In T3, T5 and T6, award the reasoning mark only for a stated reason; a bare correct answer does not earn it.
- **The marks are evidence, not ranking.** Records feed reporting against the Level 8 achievement standard; they are not used to rank students.

- **The bank is a practice resource.** The 1,004 banked items are keyed by content-description code for the subtopic practice sets; they are not a test-building shortcut, and a question count is set by the mathematics of the subtopic, never by bank availability.

Safety notes

This is a written maths workbook, and its risks are the ordinary ones of classroom materials and classroom movement. Every subtopic and every test names its materials at the point of use; the standing rules below apply across the whole book.

1. **No flame, no heating, no chemicals, no blades.** Nothing in this book needs any of these.
2. **Compasses are pointed instruments.** The circle work in 3B and the constructions in 5A and 5B — and tests T3 and T5 — use a pair of compasses. Points stay down on the desk, compasses are passed handle-first and used at the desk, and they are collected at the end of the task. A bent or loose compass is swapped, not forced.
3. **Protractors and rulers are measuring tools.** They arrive in 3B and are used through 5A, 5B and 5C and tests T3 and T5. They lie flat on the page when measuring and constructing; they are not levers, frisbees or drumsticks. A chipped or cracked one is swapped, not used, and breakage is reported at once.
4. **String and tape measures stay local.** The 1D string-and-circle measurement of π and the 3D tape-measure work stay at the desk or in a cleared space. String is not swung, a tape measure is not snapped at anyone, and both are collected when the measuring is done.
5. **Chance equipment stays with its task.** The dice, spinners, coins and cards in Chapter 7 and test T7 are equipment for conducting and recording trials, not games; the teacher collects and counts them back when the trials are done.
6. **Surveys respect people.** The 6D investigation and task I1 ask only questions the teacher has approved, and they follow the ethical checks taught in 6D — consent, voluntary participation, privacy, no harm. Responses are recorded as numbers and counts, never as names. Surveying another class or year level needs the teacher's permission first, and the school's rules govern what may be asked and what may be kept.
7. **Real data stays printed.** The timetables, time-zone tables, tax tables, exchange rates and ABS and BoM data in Chapters 4 and 6 are printed in the book with their source lines and retrieval dates; no student browsing is needed to find them.
8. **Screens follow the school's rules.** The graphing work in 2D, the dynamic geometry work in 5D, the simulation work in 7C and any spreadsheet work run on school-approved devices and accounts, on school-approved data sets. Nothing personal is typed into a shared file, and investigation data is recorded as counts, never as names.

Word list

Chapter 6 names its vocabulary as examinable: the ten terms below are assessed in T6 and in R8, so they are gathered here as well as in the subtopics that teach them (6A and 6B). Every other subtopic gathers its own new words in its **Words of this subtopic** table; there is no book-wide glossary.

Word	What it means in this book
population	the whole group of people, objects or events we want information about — the statistical sense, which is wider than everyday English
sample	the part of the population from which data is actually collected
census	collecting data from every member of the population
sampling	collecting data from part of the population only — the gains are speed and cost, and the cost is uncertainty
experiment	changing or controlling something on purpose and recording the effect, usually by comparing two or more groups

Word	What it means in this book
observation	watching and recording what happens without changing anything
bias	when the way data is collected makes some members of the population, or some outcomes, more likely to appear in the data than others
random	describes <i>how</i> a selection is made: chance decides, so every possible result can happen and nobody can pick the outcome in advance — it does not mean “any old how”
sample space	the set of all possible outcomes of a random selection
sample distribution	the distribution of the values in a sample — what the data looks like once it is displayed

Four of these share a root and are easy to mix up; 6B teaches them as a set. The **sample space** is what *could* happen, the **sample** is what *did* happen, and the **sample distribution** is the shape of the values that came out.