Mathematics Level 9 map – template

**Use this curriculum area map to identify where content descriptions and achievement standards are explicitly addressed within your school’s teaching and learning plans. This template will help you to both map the Victorian Curriculum F–10 Version 2.0 and audit your current teaching and learning plans.**

# Instructions

1. Enter your details in the footer on page 1.
2. Enter the title of each teaching and learning unit in the first column of each mapping table. Indicate the connections to the curriculum by checking the box of the relevant content description(s) and writing the number of the relevant sentence(s) from the achievement standard.
3. Complete all the mapping tables, listing all teaching and learning units. Check that all achievement standard sentences have been covered. Detail any comments, notes and actions.
4. Complete the Assessment, Analysis of Curriculum Coverage and Next Steps sections on the final page.

**Hint:** Use your completed curriculum area map to start populating or updating your **curriculum area plan**.

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| **Achievement standard (AS) paragraph for Number strand, with numbered sentences** | **Y/N** |
| 1. By the end of Level 9, students recognise and use rational and irrational numbers to solve problems. |  |

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| **Achievement standard (AS) paragraph for Algebra strand, with numbered sentences** | **Y/N** |
| 1. Students extend and apply the exponent laws with positive integers and the zero exponent to variables. |  |
| 1. They expand binomial products and factorise monic quadratic expressions. |  |
| 1. They find the distance between 2 points on the Cartesian plane, sketch linear graphs and find the gradient and midpoint of a line segment. |  |
| 1. Students use mathematical modelling to solve problems involving change, including simple interest in financial contexts and change in other applied contexts, choosing to use linear and quadratic functions. |  |
| 1. They graph quadratic functions and use null factor law to solve monic quadratic equations with integer roots algebraically. |  |
| 1. Students investigate and describe the effects of variation of parameters on functions and relations, using digital tools where appropriate, and make connections between their graphical and algebraic representations. |  |

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|  | **Strand** | **Number** | | **Algebra** | | | | | | | | | | | | | |
|  | **Content description (CD)** | recognise that the real number system includes the rational numbers and the irrational numbers, and solve problems involving real numbers with and without using digital tools  VC2M9N01 | | apply the exponent laws to numerical expressions with integer exponents and the zero exponent, and extend to variables  VC2M9A01 | | simplify algebraic expressions, apply the distributive law to expand algebraic expressions including binomial products, and factorise monic quadratic expressions  VC2M9A02 | | sketch linear graphs of equations in various algebraic forms, using the coordinates of 2 points, and solve linear equations  VC2M9A03 | | find the gradient of a line segment, the midpoint of the line interval and the distance between 2 distinct points on the Cartesian plane  VC2M9A04 | | identify and graph quadratic functions, solve quadratic equations graphically and numerically, and use null factor law to solve monic quadratic equations with integer roots algebraically, using graphing software and digital tools as appropriate  VC2M9A05 | | use mathematical modelling to solve applied problems involving change, including financial contexts involving simple interest; formulate problems, choosing to use either linear or quadratic functions or other simple variations; interpret solutions in terms of the context; evaluate the model and report methods and findings  VC2M9A06 | | experiment with the effects of the variation of parameters on graphs of related functions, using digital tools, making connections between graphical and algebraic representations, and generalising emerging patterns  VC2M9A07 | |
| **Teaching and learning unit** | **Semester/Year** | **CD** | **AS no.** | **CD** | **AS no.** | **CD** | **AS no.** | **CD** | **AS no.** | **CD** | **AS no.** | **CD** | **AS no.** | **CD** | **AS no.** | **CD** | **AS no.** |
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| **Comments, notes, actions** |  | | | | | | | | | | | | | | | | |

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| **Achievement standard (AS) paragraph for Measurement strand, with numbered sentences** | **Y/N** |
| 1. Students apply formulas to solve problems involving the surface area and volume of right prisms, cylinders and composite shapes. |  |
| 1. They solve problems involving ratio, similarity and scale in two-dimensional situations. They determine percentage errors in measurements. |  |
| 1. Students apply Pythagoras’ theorem and use trigonometric ratios to solve problems involving right-angled triangles. |  |
| 1. They use mathematical modelling to solve practical problems involving direct and indirect proportion, ratio and scale, evaluating the model and communicating their methods and findings. |  |
| 1. Students express small and large numbers in scientific notation. |  |

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| **Achievement standard (AS) paragraph for Space strand, with numbered sentences** | **Y/N** |
| 1. Students apply the enlargement transformation to images of shapes and objects, and interpret results. |  |
| 1. They design, use and test algorithms based on geometric constructions or theorems. |  |

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|  | **Strand** | **Measurement** | | | | | | | | | | **Space** | | | | | |
|  | **Content description (CD)** | solve problems involving the volume and surface area of right prisms, cylinders and composite objects using appropriate units  VC2M9M01 | | solve problems involving very small and very large measurements, timescales and intervals expressed in scientific notation  VC2M9M02 | | solve spatial problems, applying angle properties, scale, similarity, ratio, Pythagoras’ theorem and trigonometry in right-angled triangles  VC2M9M03 | | calculate and interpret absolute, relative and percentage errors in measurements  VC2M9M04 | | use mathematical modelling to solve practical problems involving direct proportion, rates, ratio and scale, including financial contexts; formulate the problems and interpret solutions in terms of the situation; evaluate the model and report methods and findings  VC2M9M05 | | recognise the constancy of the sine, cosine and tangent ratios for a given angle in right-angled triangles using properties of similarity  VC2M9SP01 | | apply the enlargement transformation to shapes and objects using dynamic geometry software as appropriate; identify and explain, using language of similarity, ratio and scale, aspects that remain the same and those that change  VC2M9SP02 | | design, test and refine algorithms involving a sequence of steps and decisions based on geometric constructions and theorems; discuss and evaluate refinements  VC2M9SP03 | |
| **Teaching and learning unit** | **Semester/Year** | **CD** | **AS no.** | **CD** | **AS no.** | **CD** | **AS no.** | **CD** | **AS no.** | **CD** | **AS no.** | **CD** | **AS no.** | **CD** | **AS no.** | **CD** | **AS no.** |
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| **Comments, notes, actions** |  | | | | | | | | | | | | | | | | |

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| **Achievement standard (AS) paragraph for Statistics strand, with numbered sentences** | **Y/N** |
| 1. Students compare and analyse the distributions of multiple numerical data sets, choose representations, describe features of these data sets using summary statistics and the shape of distributions, and consider the effect of outliers. |  |
| 1. They explain how sampling techniques and representation can be used to support or question conclusions or to promote a point of view. |  |

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| **Achievement standard (AS) paragraph for Probability strand, with numbered sentences** | **Y/N.** |
| 1. Students determine sets of outcomes for two-step chance experiments and represent these in various ways. |  |
| 1. They assign probabilities to the outcomes of two-step chance experiments. |  |
| 1. They design and conduct experiments or simulations for combined events using digital tools. |  |

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|  | **Strand** | **Statistics** | | | | | | | | | | **Probability** | | | | | |
|  | **Content description (CD)** | analyse reports of surveys in digital media and elsewhere for information on how data was obtained around everyday questions and issues involving at least one numerical and at least one categorical variable, to estimate population means and medians  VC2M9ST01 | | analyse how different sampling methods, and different samples using the same method, can affect the results of surveys and how choice of representation can be used to support a particular point of view  VC2M9ST02 | | represent the distribution of multiple data sets for numerical variables using comparative representations such as back-to-back stem-and-leaf plots and histograms; describe data, using terms including ‘skewed’, ‘symmetric’ and ‘bi-modal’; compare data distributions using mean, median and range to describe and interpret numerical data sets with consideration of centre, spread and shape, and the effect of outliers on these measures  VC2M9ST03 | | choose appropriate forms of display or visualisation for a given type of data; justify selections and interpret displays for a given context  VC2M9ST04 | | plan and conduct statistical investigations involving the collection and analysis of different kinds of data; report findings and discuss the strength of evidence to support any conclusions  VC2M9ST05 | | list all outcomes for two-step chance experiments both with and without replacement, using lists, tree diagrams, tables or arrays; assign probabilities to outcomes and events  VC2M9P01 | | calculate relative frequencies from given or collected data to estimate probabilities of events involving ‘and’, inclusive ‘or’ and exclusive ‘or’  VC2M9P02 | | design and conduct repeated chance experiments and simulations using digital tools to estimate probabilities that cannot be determined exactly  VC2M9P03 | |
| **Teaching and learning unit** | **Semester/Year** | **CD** | **AS no.** | **CD** | **AS no.** | **CD** | **AS no.** | **CD** | **AS no.** | **CD** | **AS no.** | **CD** | **AS no.** | **CD** | **AS no.** | **CD** | **AS no.** |
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| **Comments, notes, actions** |  | | | | | | | | | | | | | | | | |

# Assessment

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| **Teaching and learning unit** | **Assessment task name(s) and type(s)** | **AS no.** |
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# Analysis of curriculum coverage

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| <The following questions could be used as prompts for the analysis process:   * Have you addressed all the content descriptions? * Have you addressed all the sentences in the achievement standard? * Where are there gaps in the content description coverage? * Where are there gaps in the achievement standard coverage? * Are all content descriptions equal? Do you think they all take the same amount of time to teach? * Is anything being over-taught? * Is anything being missed completely or given insufficient attention?> |

# Next steps

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| <The following questions could be used as prompts for next steps:   * What implications would gaps in content description coverage have on your teaching and learning plans? * What implications would gaps in achievement standard coverage have on assessment? * How will you address any gaps?   Use your completed curriculum area map to start populating or updating your curriculum area plan.> |