Victorian Curriculum Foundation–10

VICTORIAN CURRICULUM AND ASSESSMENT AUTHORITY

Level 7

Mathematics

Mathematics Level Description

In Level 7, students work with powers of whole numbers, use index notation, represent numbers as products of powers of prime numbers, and investigate square roots of perfect squares. They use number properties to assist with calculation and order, and to add and subtract integers. Students find equivalent fractions, represent positive and negative fractions and mixed numbers on a number line and add, subtract, multiply and divide fractions and decimals with and without the use of technology. They express one quantity as a fraction of another, round to a specified number of decimal places, and convert between fractions, decimals and percentages. They find percentages of quantities and one quantity as a percentage of another. They solve simple ratio problems and calculate best buys with and without the use of technology.

Students use variables to express relationships in real life data, and interpret and analyse corresponding graphs. They use pro-numerals to construct simple algebraic expressions and substitute numerical values into these. They solve simple linear equations and plot points on the Cartesian plane.

Students use formulas for calculating areas of triangles, rectangles and related shapes, and volumes of cubes and rectangular prisms. They form two-dimensional representations of prisms, buildings and other structures. They use simple combinations of transformations, with and without technology, to create geometric patterns and identify line and point symmetry, apply parallel line and transversal angle properties, angles sums in triangles and quadrilaterals, classify triangles and quadrilaterals, and construct them using compass and straight edge and dynamic geometry technology.

Students construct sample spaces for simple experiments involving chance, and assign probabilities to outcomes. They use data from primary and secondary sources to investigate issues of interest, and employ data displays such as dot plots and stem and leaf plots to compare data sets, and calculate measures of centre and simple measures of spread to analyse and interpret the data.

Mathematics Content Descriptions

Number and Algebra	Measurement and Geometry	Statistics and Probability
Number and place value	**Using units of measurement**	**Chance**
Investigate index notation and represent whole numbers as products of powers of prime numbers (VCMNA238)	Establish the formulas for areas of rectangles, triangles and parallelograms and use these in problem solving (VCMMG258)	Construct sample spaces for single-step experiments with equally likely outcomes (VCMSP266)
Investigate and use square roots of perfect square numbers (VCMNA239)	Calculate volumes of rectangular prisms (VCMMG259)	Assign probabilities to the outcomes of events and determine probabilities for events (VCMSP267)
Apply the associative, commutative and distributive laws to aid mental and written computation and make estimates for these computations (VCMNA240)	**Shape**	**Data representation and interpretation**
	Draw different views of prisms and solids formed	Identify and investigate issues involving numerical

computations (VCMNA240)

Compare, order, add and subtract integers (VCMNA241)

Real numbers

Compare fractions using equivalence. Locate and represent positive and negative fractions and mixed numbers on a number line (VCMNA242)

Solve problems involving addition and subtraction of fractions, including those with unrelated denominators (VCMNA243)

Multiply and divide fractions and decimals using efficient written strategies and digital technologies (VCMNA244)

Express one quantity as a fraction of another, with and without the use of digital technologies (VCMNA245)

Round decimals to a specified number of decimal places (VCMNA246)

Connect fractions, decimals and percentages and carry out simple conversions (VCMNA247)

Find percentages of quantities and express one quantity as a percentage of another, with and without digital technologies. (VCMNA248)

Recognise and solve problems involving simple ratios (VCMNA249)

Money and financial mathematics

Investigate and calculate 'best buys', with and without digital technologies (VCMNA250)

Patterns and algebra

Introduce the concept of

prisms and solids formed from combinations of prisms (VCMMG260)

Location and transformation

Describe translations, reflections in an axis, and rotations of multiples of 90° on the Cartesian plane using coordinates. Identify line and rotational symmetries (VCMMG261)

Geometric reasoning

Identify corresponding, alternate and co-interior angles when two straight lines are crossed by a transversal (VCMMG264)

Investigate conditions for two lines to be parallel and solve simple numerical problems using reasoning (VCMMG265)

Demonstrate that the angle sum of a triangle is 180° and use this to find the angle sum of a quadrilateral (VCMMG263)

Classify triangles according to their side and angle properties and describe quadrilaterals (VCMMG262)

data collected from primary and secondary sources (VCMSP268)

Construct and compare a range of data displays including stem-and-leaf plots and dot plots (VCMSP269)

Calculate mean, median, mode and range for sets of data. Interpret these statistics in the context of data (VCMSP270)

Describe and interpret data displays using median, mean and range (VCMSP271)

introduce the concept of
variables as a way of
representing numbers using
letters (VCMNA251)

Create algebraic expressions
and evaluate them by
substituting a given value for
each variable (VCMNA252)

Extend and apply the laws
and properties of arithmetic to
algebraic terms and
expressions (VCMNA253)

Design and implement
mathematical algorithms
using a simple general
purpose programming
language (VCMNA254)

**Linear and non-linear
relationships**

Given coordinates, plot points
on the Cartesian plane, and
find coordinates for a given
point (VCMNA255)

Solve simple linear equations
(VCMNA256)

Investigate, interpret and
analyse graphs from real life
data, including consideration
of domain and range
(VCMNA257)

Mathematics Achievement Standard

Number and Algebra

Students solve problems involving the order, addition and subtraction of integers. They make the connections
between whole numbers and index notation and the relationship between perfect squares and square roots. They
solve problems involving all four operations with fractions, decimals, percentages and their equivalences, and
express fractions in their simplest form. Students compare the cost of items to make financial decisions, with and
without the use of digital technology. They make simple estimates to judge the reasonableness of results.
Students use variables to represent arbitrary numbers and connect the laws and properties of number to algebra
and substitute numbers into algebraic expressions. They assign ordered pairs to given points on the Cartesian
plane and interpret and analyse graphs of relations from real data. Students develop simple linear models for
situations, make predictions based on these models, solve related equations and check their solutions.

Measurement and Geometry

Students use formulas for the area and perimeter of rectangles. They classify triangles and quadrilaterals and
represent transformations of these shapes on the Cartesian plane, with and without the use of digital technology.
Students name the types of angles formed by transversals crossing parallel lines and solve simple numerical
problems involving these lines and angles. They describe different views of three-dimensional objects, and use
models, sketches and digital technology to represent these views. Students calculate volumes of rectangular
prisms.

Statistics and Probability

Students identify issues involving the collection of discrete and continuous data from primary and secondary sources. They construct stem-and-leaf plots and dot-plots. Students identify or calculate mean, mode, median and range for data sets, using digital technology for larger data sets. They describe the relationship between the median and mean in data displays. Students determine the sample space for simple experiments with equally likely outcomes, and assign probabilities outcomes.