Mathematics v8.1

Year 7 Syllabus

Year Level Description

The proficiency strands **understanding, fluency, problem-solving** and **reasoning** are an integral part of mathematics content across the three content strands: number and algebra, measurement and geometry, and statistics and probability. The proficiencies reinforce the significance of working mathematically within the content and describe how the content is explored or developed. They provide the language to build in the developmental aspects of the learning of mathematics. The achievement standards reflect the content and encompass the proficiencies.

At this year level:

- understanding includes describing patterns in uses of indices with whole numbers,
 recognising equivalences between fractions, decimals, percentages and ratios, plotting
 points on the Cartesian plane, identifying angles formed by a transversal crossing a pair
 of lines, and connecting the laws and properties of numbers to algebraic terms and
 expressions
- **fluency** includes calculating accurately with integers, representing fractions and decimals in various ways, investigating best buys, finding measures of central tendency and calculating areas of shapes and volumes of prisms
- problem-solving includes formulating and solving authentic problems using numbers and measurements, working with transformations and identifying symmetry, calculating angles and interpreting sets of data collected through chance experiments
- reasoning includes applying the number laws to calculations, applying known geometric
 facts to draw conclusions about shapes, applying an understanding of ratio and
 interpreting data displays.

Number and Algebra

Measurement and Geometry

Statistics and Probability

NUMBER AND PLACE VALUE

Investigate index notation and represent whole numbers as products of powers of prime numbers (ACMNA149)

Numeracy

Investigate and use square roots of perfect square numbers (ACMNA150)

Same Numeracy

Apply the associative, commutative and distributive laws to aid mental and written computation (ACMNA151)

Numeracy

Compare, order, add and subtract integers (ACMNA280)

Numeracy

REAL NUMBERS

Compare fractions using equivalence. Locate and represent positive and negative fractions and mixed numbers on a number line (ACMNA152)

Literacy

Numeracy

USING UNITS OF MEASUREMENT

Establish the formulas for areas of rectangles, triangles and parallelograms, and use these in problem-solving (ACMMG159)

Numeracy

Calculate volumes of rectangular prisms (ACMMG160)

Numeracy

SHAPE

Draw different views of prisms and solids formed from combinations of prisms (ACMMG161)

Numeracy

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 (ACMMG181)

Literacy

Numeracy

CHANCE

Construct sample spaces for single-step experiments with equally likely outcomes (ACMSP167)

Numeracy

© Critical and creative thinking

Assign probabilities to the outcomes of events and determine probabilities for events (ACMSP168)

Numeracy

© Critical and creative thinking

DATA REPRESENTATION AND INTERPRETATION

Identify and investigate issues involving numerical data collected from primary and secondary sources (ACMSP169)

Literacy

Numeracy

© Critical and creative thinking

★ Ethical understanding

Intercultural understanding

Construct and compare a

Solve problems involving addition and subtraction of fractions, including those with unrelated denominators (ACMNA153)

- Literacy
- **Same Numeracy**
- Critical and creative thinking

Multiply and divide fractions and decimals using efficient written strategies and digital technologies (ACMNA154)

- Numeracy
- Information and

Communication Technology (ICT) capability

Express one quantity as a fraction of another, with and without the use of digital technologies (ACMNA155)

- Numeracy
- Information and

Communication Technology (ICT) capability

Round decimals to a specified number of decimal places (ACMNA156)

GEOMETRIC REASONING

Identify corresponding, alternate and co-interior angles when two straight lines are crossed by a transversal (ACMMG163)

Numeracy

Investigate conditions for two lines to be parallel and solve simple numerical problems using reasoning (ACMMG164)

© Critical and creative thinking

Demonstrate that the angle sum of a triangle is 180° and use this to find the angle sum of a quadrilateral (ACMMG166)

Numeracy

Classify triangles according to their side and angle properties and describe quadrilaterals (ACMMG165)

- Literacy
- Numeracy

range of data displays including stem-and-leaf plots and dot plots (ACMSP170)

- Literacy
- Numeracy
- © Critical and creative thinking

Calculate mean, median, mode and range for sets of data. Interpret these statistics in the context of data (ACMSP171)

- Literacy
- Numeracy
- © Critical and creative thinking

Describe and interpret data displays using median, mean and range (ACMSP172)

- Literacy
- Numeracy
- © Critical and creative thinking

Numeracy

Connect fractions, decimals and percentages and carry out simple conversions (ACMNA157)

- Numeracy
- Information and

Communication Technology (ICT) capability

Find percentages of quantities and express one quantity as a percentage of another, with and without digital technologies (ACMNA158)

- **Numeracy**
- Information and

Communication Technology (ICT) capability

Recognise and solve problems involving simple ratios (ACMNA173)

- Literacy
- Numeracy
- © Critical and creative thinking

MONEY AND FINANCIAL MATHEMATICS

Investigate and calculate 'best buys', with and without

digital technologies (ACMNA174)



Numeracy

Information and

Communication Technology (ICT) capability

© Critical and creative thinking

PATTERNS AND ALGEBRA

Introduce the concept of variables as a way of representing numbers using letters (ACMNA175)

© Critical and creative thinking

Create algebraic expressions and evaluate them by substituting a given value for each variable (ACMNA176)

Numeracy

© Critical and creative thinking

Extend and apply the laws and properties of arithmetic to algebraic terms and expressions (ACMNA177)

Literacy

Numeracy

© Critical and creative thinking

LINEAR AND NON-LINEAR RELATIONSHIPS

Given coordinates, plot points on the Cartesian plane, and find coordinates for a given point (ACMNA178)

- Numeracy
- © Critical and creative thinking

Solve simple linear equations (ACMNA179)

- Numeracy
- © Critical and creative thinking

Investigate, interpret and analyse graphs from authentic data (ACMNA180)

- Literacy
- Numeracy
- © Critical and creative thinking

