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

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)

Numeracy

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

Measurement and Geometry

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)

Statistics and Probability

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

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

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

Literacy

Numeracy

Critical and creative thinking

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

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

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 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.

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)

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

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)

Literacy

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

Year 7 Achievement Standard

Number and Algebra

At Standard, students solve problems involving the comparison, addition and subtraction of integers. They make the connections between whole numbers and index notation and the relationship between perfect squares and square roots. Students use fractions, decimals and percentages, and their equivalences. They express one quantity as a fraction or percentage of another. Students solve problems involving percentages and all four operations with fractions and decimals. They compare the cost of items to make financial decisions. Students represent numbers using variables. They connect the laws and properties for numbers to algebra. Students assign ordered pairs to given points on the Cartesian plane. They interpret simple linear representations and model authentic information. Students solve simple linear equations and evaluate algebraic expressions after numerical substitution.

Measurement and Geometry

Students describe different views of three-dimensional objects. They represent transformations in the Cartesian plane. Students solve simple numerical problems involving angles formed by a transversal crossing two lines. They use formulas for the area and perimeter of rectangles and calculate volumes of rectangular prisms. Students classify triangles and quadrilaterals. They name the types of angles formed by a transversal crossing parallel lines.

Statistics and Probability

Students identify issues involving the collection of continuous data. They construct stem-and-leaf plots and dot plots. Students describe the relationship between the median and mean in data displays. They calculate mean, mode, median and range for data sets. Students determine the sample space for simple experiments with equally likely outcomes and assign probabilities to those outcomes.

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