West Torrens Partnership *(Draft 15/09/14)*	Australian Curriculum Mathematics V7.0	Year 7

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. *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

Achievement Standard

By the end of Year 7, 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. They 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. They interpret simple linear representations and model authentic information. Students describe different views of three-dimensional objects. They represent transformations in the Cartesian plane. They solve simple numerical problems involving angles formed by a transversal crossing two parallel lines. Students identify issues involving the collection of continuous data. They describe the relationship between the median and mean in data displays.

Students use fractions, decimals and percentages, and their equivalences. They express one quantity as a fraction or percentage of another. Students solve simple linear equations and evaluate algebraic expressions after numerical substitution. They assign ordered pairs to given points on the Cartesian plane. Students 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 line. Students determine the sample space for simple experiments with equally likely outcomes and assign probabilities to those outcomes. They calculate mean, mode, median and range for data sets. They construct stem-and-leaf plots and dot-plots.

Content Descriptors

Number and Algebra

- Investigate index notation and represent whole numbers as products and powers of prime numbers
- Investigate and use square roots of perfect square numbers
- Compare, order, add and subtract integers
- Apply the associate, commutative and distributive laws to aid mental and written computation
- Compare fractions using equivalence. Locate and represent fractions as mixed numerals on a number line
- Solve problems involving addition and subtraction of fractions, including those with unrelated denominators
- Multiply and divide fractions and decimals using efficient written strategies and digital technologies
- Express one quantity as a fraction of another, with and without the use of digital technologies
- Round decimals to a specified number of decimal places
- Connect fractions, decimals and percentages and carry out simple conversations
- Finds percentages of quantities and express one quantity as a percentage of another, with and without digital technologies
- Recognise and solve problems involving simple ratios
- Investigate and calculate 'best buys', with and without digital technologies
- Introduce the concept of variables as a way of representing number using letters
- Create algebraic expressions and evaluate them by substituting a given value for each variable
- Extend and apply the laws and properties of arithmetic terms and expressions
- Given coordinates, plot points on the Cartesian plane, and find coordinates for a given point
- Solve simple linear equations
- Investigate, interpret and analyse graphs from authentic data

Measurement and Geometry

- Establish the formulas for areas of rectangles, triangles and parallelograms and use these in problem solving
- Calculate volumes of rectangular prisms
- Draw different views of prisms and solids formed from combinations of prisms
- Describe translations, reflections in an axis, and rotations of multiples of 90□ on the Cartesian plane using coordinates. Identify line and rotational symmetry.
- Classify triangles according to their side and angle properties and describe quadrilaterals
- Demonstrate that the sum of a triangle is 180□ and use this to find the angle sum of a quadrilateral
- Identify corresponding, alternative and co-interior angles when two parallel straight lines are crossed by a transversal
- Investigate conditions for two lines to be parallel and solve simple numerical problems using reasoning

Statistics and Probability

- Construct sample spaces for single-step experiments with equally likely outcomes
- Assign probabilities to the outcomes of events and determine probabilities for events
- Identify and investigate issues involving continuous or large count data collected from primary and secondary sources
- Construct and compare a range of data displays including stem-and-leaf plots and dot plots
- Calculate mean, median, mode and range for sets of data. Interpret these statistics in the context of data
- Describe and interpret data displays and the relationship between the median and mean

Source: http://www.australiancurriculum.edu.au/mathematics/Curriculum/F-10