Newton Moore Senior High School
Mathematics
Year 7 Maths
2016

Course 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

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. 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. 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. They solve simple numerical problems involving angles formed by a transversal crossing two lines. 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 two parallel lines.

Statistics and Probability

Students identify issues involving the collection of continuous data. 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 to those outcomes. They calculate mean, mode, median and range for data sets. They construct stem-and-leaf plots and dot plots.

Course Outline

Week	Content
1-2	**Using Whole** • Identify and describe properties of prime, composite, odd and even *(ACMNA122)* • Select and apply efficient mental and written strategies and appropriate digital technologies to solve problems involving all four operations with whole numbers *(ACMNA123)* •
3-4	• **Fractions, Decimals and Percentages** • Compare fractions using equivalence. Locate and represent positive and negative fractions and mixed numbers on a number line. *(ACMNA152)* • Solve problems involving addition and subtraction of fractions, including unrelated denominations. *(ACMNA153)* • Express one quantity as a fraction of another, with and without the use of digital technologies. *(ACMNA155)* • Connect fractions, decimals and percentages and carry out simple conversions. *(ACMNA157)* • Find percentages of quantities and express one quantity as a percentage of another with and without digital technologies. *(ACMNA158)*
5-6	• **Variables** • Revise Order of operations • Introduce the concept of variables as a way of representing numbers using letters. *(ACMNA175)* • **Integers** • Compare, order, add and subtract integers. *(ACMNA280)*
7-8	**Area of Triangles, Quadrilaterals and Parallelograms** • Establish the formulas for areas of rectangles, triangles and parallelograms and use these in problem solving. *(ACMMG159)* • Use area formulas to triangles and quadrilaterals to solve composite shape problems.
9-10	• Calculate mean, median, mode and range for sets of data. Interpret these statistics in the context of data (ACMSP171) • Describe and interpret data displays using median, mean and range (ACMSP172)

Week	Content
11-12	• NAPLAN Revision • Compare fractions using equivalence (by using a fraction wall or a number line). • Solve problems involving addition and subtraction of fractions. • Multiply and divide fractions.
13-15	• NAPLAN Testing Week Four • Introduce the concept of variables. • Move fluently between algebraic and word representations. • Create algebraic expressions and perform substitutions. • Identify order of operations. • Apply the commutative and associative laws to algebraic terms and expressions.
16-17	• Calculate volumes of rectangular prisms. • Investigate volumes of cubes and rectangular prisms. • Establish and use the formula V = l×b×h. • Understand and use cubic units when finding volumes of cubes and rectangular prisms.
18-19	• Compare, order, add and subtract integers. • Given coordinates, plot points on the Cartesian plane, and find coordinates for a given point. • Plot points from a table of integer values. • Recognise simple patterns, such as points that lie on a straight line.
20	• **Index Notation** • Investigate index notation and represent whole numbers as products of powers of prime numbers. *(ACMNA149)*

Week	Content
21-24	• Investigate and use square roots of perfect square numbers. (ACMNA150) • Express one quantity as a fraction of another, with and without the use of • digital technologies (ACMNA157) • Recognise and solve problems involving simple ratios (ACMNA173) • Money and financial mathematics. Investigate and calculate 'best buys', • with and without digital technologies (ACMNA174)
25-26	• Linear and nonlinear relationships given coordinates, plot points on the • Cartesian plane, and find coordinates for a given point (ACMNA178) • Solve simple linear equations (ACMNA179) • Investigate, interpret and analyse graphs from authentic data (ACMNA180)
27-28	• Calculate volumes of rectangular prisms (ACMMG160) • Draw different views of prisms and solids formed from combinations of • prisms (ACMMG161)
29-30	• Describe translations, reflections in an axis, and rotations of multiples of 90° • on the Cartesian plane using coordinates. Identify line and rotational • symmetries (ACMMG181)

Week	Content
31-32	• Identify corresponding, alternate and Co-interior angles when two straight lines are crossed by a transversal (ACMMG163) • Investigate conditions for two lines to be parallel and solve simple numerical problems using reasoning (ACMMG164)
33-34	• Demonstrate that the angle sum of a triangle is 180° and use this to find the angle sum of a quadrilateral (ACMMG166) • Classify triangles according to their side and angle properties and describe quadrilaterals (ACMMG165)
35-36	• Construct sample spaces for single-step experiments with equally likely outcomes (ACMSP167) • Assign probabilities to the outcomes of events and determine probabilities for events (ACMSP168)
37-38	• Identify and investigate issues involving numerical data collected from primary and secondary sources (ACMSP169) • Construct and compare a range of data displays including stem and leaf plots and dot plots (ACMSP170)
39-40	• Project • Make scale drawings of a house/building • Use drawings to construct house out of specified materials

This course outline may be subject to change, any changes will be communicated to students.

Assessment Outline

Assessment Task	Number of Tasks	Task Weighting	Total Task Weighting
Tests (4 x Moderated)	7	4%	28%
Semester 1 (Moderated) Exam	1	5%	5%
Semester 2 (Moderated) Exam	1	7%	7%
Problem Solving Tasks	2	5%	10%
Investigations (2 x Moderated)	4	10%	40%
Other (e.g. homework, participation)	Continuous	10%	10%
			100%

Task	Assessment Task	Task Weighting	Number & Algebra	Measurement & Geometry	Statistics & Probability
1	Test 1	4%	✓		✓
2	Test 2	4%	✓		
3	Investigation 1	10%	✓		✓
4	Problem Solving 1	5%	✓	✓	✓
5	Test 3	4%	✓	✓	
6	Test 4	4%	✓		
7	Investigation 2	10%	✓	✓	
8	Exam	5%	✓	✓	✓
9	Test 5	4%	✓		

10	Test 6	4%	✓	✓	
11	Investigation 3	10%	✓	✓	
12	Problem Solving 2	5%	✓	✓	✓
13	Test 7	4%	✓		
14	Investigation 4	10%	✓	✓	✓
15	Exam	7%	✓		

The above weightings are intended to show the importance of each task compared to another. The allocation of a grade at the end of a semester is determined based on grade related descriptors issued by School Curriculum and Standards Authority.

Underline = Moderated assessment

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