

YEAR 7

MATHEMATICS

2016

ACG Parnell College,

MoE No. 2085



YEAR 7

MATHEMATICS

2016

ACG Parnell College,

MoE No. 2085

| WHOLE NUMBERS |
| --- |
| **MNZC LEVELS: 3, 4** | **TIME ALLOCATION: 12 PERIODS** |
| **Learning Outcomes:**At the end of this topic, students should be able to:* demonstrate the use of place value
* order whole numbers
* use a number line to represent whole numbers
* write whole numbers in numeral form and in words
* write whole numbers in expanded and simple form
* operate with values up to and greater than one million
* round numbers to the nearest 10, 100, 1000 etc.
* estimate answers by using leading figure approximations
* maintain addition, subtraction, multiplication and division facts
* demonstrate the instant recall of basic multiplication facts
* be able to apply the rules of BEDMAS.
* write and solve story problems involving one or more of the four arithmetic operations
* use a calculator and mental methods to perform the four operations
* perform calculations involving × and ÷ by powers of ten
* use algorithms involving addition multiplication and division
* recall the definition of natural and whole numbers
* explain odd, even, counting, square, triangular, prime, composite and square numbers
* find factors, multiples and lowest common multiples of numbers
* find the prime factorisation of composite numbers
* apply the distributive property.
* be able to expand numbers written in index form and vice versa.
* Apply the divisibility test for 2, 3,4, 5, 8, 10
 |
| **Text References:**Signpost 7 Chapters 1 & 3 | **Assessment:**Common Test 1Worth 50% of S1 Term Mark |

| PROBLEM SOLVING |
| --- |
| **MNZC LEVELS: 3, 4** | **TIME ALLOCATION: 8 PERIODS** |
| **Learning Outcomes:**At the end of this topic, students should be able to:* devise and use different problem-solving strategies to explore situations mathematically.
* find, and use with justification, a mathematical model as a problem solving strategy.
* use equipment when exploring mathematical ideas.
 |
| **Text References:**Signpost 7 Chapter 2  | **Assessment:**Common Test 2 assessed with AlgebraWorth 50% of S1 Term Mark |

| PATTERNS & ALGEBRA |
| --- |
| **MNZC LEVELS: 3 & 4** | **TIME ALLOCATION: 12 Periods.** |
| **Learning Outcomes:**At the end of this topic, students should be able to:* continue a numerical or spatial pattern
* find missing values or diagrams in a pattern
* make patterns from a rule written in words or as a general formula
* write a rule in words that describes a pattern, either numerical or spatial
* write a general formula to describe a numerical or spatial pattern
* solve simple equations by inspection or intuition
* understand the language of Algebra
* find and explain in words, simple formulae that can be used to solve a practical problem
* read coordinates and plot points in the first quadrant
* substitute values into an equation to find the answer
* apply and interpret product notation
* write division of pronumerals in fraction form
* simplify expressions by collecting like terms
* apply Commutative properties for addition and multiplication
* graph input and output pairs on a number plane for relationship rules
 |
| **Text References:**Signpost 7 Chapters 4 & 7 | **Assessment:**Common Test 2Combined with Problem Solving – Worth 50% of S1 Term Mark |

| ANGLES |
| --- |
| **MNZC LEVELS: 3 & 4** | **TIME ALLOCATION: 4 Periods.** |
| Learning Outcomes:At the end of this topic, students should be able to:* apply 3 point notation to name angles
* classify angles according to size
* use a protractor to measure or draw an angle
* calculate complementary and supplementary angles
* Name a line, ray and line segment using correct notation
 |
| **Text References:**Signpost 7 Chapter 5NZ Mathematics 7 Ex 3A page 77-78 | **Assessment:**Tested in S1 examination. |

| ANGLES & LINES |
| --- |

| DECIMALS |
| --- |
| **MNZC LEVELS: 3 & 4** | **TIME ALLOCATION: 8 Periods.** |
| Learning Outcomes:At the end of this topic, students should be able to:* add and subtract decimals
* multiply decimals by whole numbers
* multiply and divide decimals by powers of 10
* multiply and divide decimals by decimal numbers
* convert decimals to fractions and percentages
* understand recurring decimals
* round decimals.
 |
| **Text References:**Signpost 7 Chapter 6 | **Assessment:**Tested in S1 examination. |

| DIRECTED NUMBERS |
| --- |
| **MNZC LEVELS: 3 & 4** | **TIME ALLOCATION: 8 Periods.** |
| Learning Outcomes:At the end of this topic, students should be able to:* order positive and negative integers
* plot integers on a number line
* plot coordinates on a all four quadrants of a Cartesian plane.
 |
| **Text References:**Signpost 7 Chapter 7 | **Assessment:**Assessed in S1 examination |

| 2D & 3D GEOMETRY |
| --- |
| **MNZC LEVELS: 3 & 4** | **TIME ALLOCATION: 8 Periods.** |
| Learning Outcomes:At the end of this topic, students should be able to:* define and name polygons with up to 8 sides
* classify triangles and quadrilaterals
* draw polygons using geometric symbols
* find the size of missing angles in triangles and quadrilaterals
* differentiate prisms and pyramids
* draw nets of common 3D shapes
* draw isometric and obliques projections
* draw elevations of simple shapes constructed from cubes
 |
| **Text References:**Signpost 7 Chapter 8 | **Assessment:**Common Test 4Worth $33\frac{1}{3}$ % of S2 Term Mark |

| FRACTIONS |
| --- |
| **MNZC LEVELS: 3 & 4** | **TIME ALLOCATION: 8 Periods.** |
| Learning Outcomes:At the end of this topic, students should be able to:* Represent fractions as a diagram.
* Show fractions on a number line.
* Determine the numerator and denominator.
* Simplify fractions.
* Find equivalent fractions.
* Add or subtract fractions of same denominator or of fractions that are easy to change to common denominator.
* Add or subtract fractions and whole numbers including mixed numbers.
* Multiply and divide fractions including mixed numbers.
* Compare and order fractions.
* Convert between mixed and improper fractions
* Find a fraction of a quantity
* Use ratios to solve practical problems.
 |
| **Text References:**Signpost 7 Chapter 9 | **Assessment:**Tested in S2 examination. |

| MEASUREMENT |
| --- |
| **MNZC LEVELS: 4-5** | **TIME ALLOCATION: 12 Periods.** |
| Learning Outcomes:At the end of this topic, students should be able to:* Understand that measurement requires the use of a common unit to compare the same attribute.
* Be able to convert between length units, units of mass and convert between volume and capacity units
* Determine the perimeter of 2D shapes using different measurement techniques and formulae.
* Determine the area of 2D shapes by counting squares.
* Calculate area of a rectangle, triangle and parallelogram using the formula.
* Calculate the area of composite shapes.
* Recognise, choose and use appropriate standard units of measurement for area, volume and capacity.
* Determine the volume and capacity of 3D shapes by counting cubes.
* Solve word problems involving area, volume and capacity.
 |
| **Text References:**Signpost 7 Chapter 10 | **Assessment:**Common Test 5Combined with Percentages and Probability – Worth $33\frac{1}{3} \% $of S2 Term Mark |

| PERCENTAGES |
| --- |
| **MNZC LEVELS: 4-5** | **TIME ALLOCATION: 8 Periods.** |
| Learning Outcomes:At the end of this topic, students should be able to:* Be able to convert fractions and decimals to percentages and vv
* Find a percentage of a quantity
* Find one quantity as a percentage of another
* Solve percentage word problems
 |
| **Text References:**Signpost 7 Chapter 11 | **Assessment:**Common Test 5Combined with Measurement and Probability– Worth $33\frac{1}{3} $% of S2 Term Mark |

| PROBABILITY |
| --- |
| **MNZC LEVELS: 4** | **TIME ALLOCATION: 8 Periods.** |
| Learning Outcomes:At the end of this topic, students should be able to:* use the language associated with chance
* express chance using numbers such as "nine times out of ten" or "90%"
* by considering frequency tables, make inferences about a population
* find all possible outcomes of an event using a systematic approach, such as the sample space
* perform experiments to find the relative frequency of an event
* investigate games and activities that involve chance
 |
| **Text References:**Signpost 7 Chapter 12 | **Assessment:**Common Test 5Combined with Measurement and Percentages – Worth $33\frac{1}{3} $% of S2 Term Mark |

| STATISTICS |
| --- |
| **MNZC LEVELS: 4** | **TIME ALLOCATION: 12 Periods.** |
| Learning Outcomes:At the end of this topic, students should be able to:* Pose questions for investigation.
* Identify variables of interest to be collected.
* Devise a strategy for collecting data.
* Understand how to draw different bar, pie and strip, stem and leaf graphs, pictographs and dot plots.
* Collect and present data using strip graphs, dot plots, bar graphs, picture graphs, stem and leaf graphs, and tally charts.
* Find mean, mode, median and range of a set of data.
* Talk about and consider features of data in graphs using their own language (including clusters, middle and spread).
* Report on the findings of a statistical investigation, using pictures and words.
* Collect and graph simple time series data.
 |
| **Text References:**Signpost 7 Chapter 14 | **Assessment:**Statistical assignment – Worth 34% of S2 Term Mark |

| TRANSFORMATIONS |
| --- |
| **MNZC LEVELS: 3 & 4** | **TIME ALLOCATION: 8 Periods.** |
| Learning Outcomes:At the end of this topic, students should be able to:* use mirrors, paper folding and cutting to explore reflection and rotational symmetry
* Draw in the axes of symmetry of figures
* Give the order of rotational symmetry of figures.
* design patterns which involve translation, reflection of rotation for example using the tangram shapes
* tessellate quadrilaterals, triangles or shapes of their own design
* recognise congruent shapes
 |
| **Text References:**Signpost 7 Chapter 15 | **Assessment:**Not assessed. |

| Venn Diagrams |
| --- |
| **MNZC LEVELS: 3 & 4** | **TIME ALLOCATION: 4 Periods.** |
| Learning Outcomes:At the end of this topic, students should be able to:* Organising and interpreting data using diagrams, graphs and models.
* Interpreting symbols
 |
| **Text References:**Worksheets | **Assessment:**Not assessed.  |

| Venn Diagrams |
| --- |
| **MNZC LEVELS: 4 & 5** | **TIME ALLOCATION: 4 Periods.** |
| Learning Outcomes:At the end of this topic, students should be able to:* Apply distributive rule to expressions with pronumerals.
* Simplify expressions with index notation
 |
| **Text References:**Photocopy sheets | **Assessment:**Not assessed.  |

| Venn Diagrams |
| --- |

| Algebra Extension |
| --- |