

# **BRAINTastic! Maths**

## **Content Overview**

### ***P-K***

In completing this Content Module, students will have experience with:

- Reading and representing numbers to 20
- Counting forwards and backwards by 1s from given starting numbers
- Finding missing numbers in counting sequences to 10
- Using ordinal numbers to “tenth”
- Modelling addition and subtraction with groups of objects
- Modelling multiplication and division by sharing objects and arranging objects in equal rows
- Matching pairs of objects
- Ordering and comparing objects by length, area, mass
- Sequencing daily events
- Matching season names to pictures
- Recognising a variety of line types
- Identifying similar shapes of different sizes
- Using simple positional language such as in, on, above, under, into, beside, between

### ***Lower Primary***

In completing these Content Modules, students will have experience with:

- Reading, writing, ordering and representing two and three digit numbers using place value information (e.g. 3 tens + 7 units = 37)
- Skip counting forwards and backwards by 2s, 5s and 10s
- Using strategies such as equal groups, arrays and repeated addition/subtraction for multiplication and division
- Identifying odd and even numbers
- Identifying and using halves and quarters of an object or group
- Reading and interpreting picture and basic column graphs
- Using tally marks to collect and represent data
- Using appropriate informal units to estimate and measure length, area, volume and capacity, mass and duration
- Comparing and ordering two or more measurements in informal units
- Telling time on the hour and half hour
- Using calendars
- Naming and ordering days of the week, months and seasons of the year
- Recognising and naming 2D and 3D shapes in standard and non-standard orientations
- Identifying a line of symmetry and completing a symmetrical pattern
- Identifying and ordering angles using direct comparison
- Following directions and understanding representations of the position of objects in drawings and maps

## ***Middle Primary***

In completing these Content Modules, students will have experience with:

- Reading, writing, ordering and representing numbers up to four digits using place value information
- Adding and subtracting numbers to four digits
- Multiplying and dividing a two digit number by a single digit number
- Practising number facts to  $10 \times 10$
- Finding multiples and factors for given numbers
- Comparing and using common fractions, including finding fractional equivalents in halves, quarters and eighths; fifths and tenths; tenths and hundredths
- Working with decimals up to two decimal places, including ordering, comparing, adding and subtracting
- Identifying and using percentages in everyday situations and converting common percentages to fractions and decimals
- Using money to perform everyday transactions including giving change
- Constructing and interpreting a variety of graphs
- Using formal units to estimate, measure and record length (m, cm, mm), area ( $m^2$ ,  $cm^2$ ), volume and capacity ( $cm^3$ , L, mL) and mass (g, kg)
- Converting between units: m and cm; cm and mm; L and mL; seconds and minutes; minutes and hours; hours and days
- Describing and naming 2D and 3D shapes
- Identifying all lines of symmetry for a given 2D shape
- Identifying nets of 3D shapes
- Describing cross-sections
- Recognising and comparing angles with and without visible arms (e.g. corners of shapes and the opening of a door or slope of a hill)
- Identifying and describing right angles and comparing the size of different angles
- Following directions and routes on maps and plans
- Using coordinates to describe the location of objects on a simple map or plan
- Using the compass directions; N, S, E and W; NE, NW, SE and SW

## ***Upper Primary***

In completing these Content Modules, students will have experience with:

- Using place value information to read, write, order numbers of any size
- Working with prime and composite numbers
- Using an algorithm to multiply any number by an operator of up to 2 digits and to divide any number by a single digit divisor
- Working with common fractions, including ordering, comparing and adding simple fractions
- Converting between thirds, sixths and twelfths
- Working with unit fractions, mixed numerals and improper fractions
- Working with decimals to three decimal places, including multiplying /dividing by whole numbers and adding/subtracting
- Calculating and converting between different expressions of simple percentages
- Using a variety of graphs (including column, line, picture, pie and divided bar graphs) to represent data including those using many-to-one correspondence
- Calculating the mean for a small data set
- Representing the likelihood of simple events numerically
- Using  $km^2$  and ha to measure area,  $m^3$  to measure volume/capacity, and tonnes to measure mass

- Converting between units: m and km; mm, cm and m; km<sup>2</sup> and ha; cm<sup>3</sup> and mL; kg and g; kg and tonnes
- Converting between am/pm and 24-hour time
- Working with Australian time zones, including changes made by the use of daylight savings by some states
- Creating and interpreting timelines and timetables
- Identifying, describing and classifying 2D and 3D shapes on the basis of their features and properties
- Describing and comparing quadrilaterals
- Identifying tessellating patterns created by reflection, translation and/or rotation
- Identifying shapes with rotational symmetry and the order of that symmetry
- Measuring and classifying angles: acute, obtuse, right, reflex, straight and revolution
- Interpreting scale, including enlarging/reducing images and reading maps and plans

### ***Lower Secondary***

In completing this Content Module, students will have experience with:

- Exploring the counting and measurement systems of other cultures and times in history
- Simplifying, expanding and factorising algebraic expressions
- Solving linear and quadratic equations
- Determining midpoint, length and gradient of intervals
- Performing operations with directed numbers, fractions, decimals and mixed numerals
- Using ratios and rates
- Finding squares, cubes and related roots
- Using index notation and laws
- Expressing numbers using scientific notation
- Rounding numbers, including to a specified number of significant figures
- Solving consumer arithmetic problems
- Determining probability and relative frequency
- Working with complementary and two-stage probability events
- Identifying variables and using appropriate graphs to reflect given data
- Interpreting a variety of graphs including simple parabolas and hyperbolas
- Analysing data using mean, median, mode, range and standard deviation
- Making conversions between metric units
- Using and developing formulae for the area of triangles, rectangles, parallelograms and circles
- Finding the areas of composite shapes
- Calculating surface area and volume for given 3D shapes
- Comparing times across Australian and international time zones
- Determining and comparing the properties of 2D and 3D shapes
- Determining similarity and congruence
- Working with parallel and perpendicular lines, including their properties
- Using angle properties and relationships
- Following and constructing deductive reasoning