# Mathletics

## NWEA Australian Curriculum v8.4 (RIT bands)

## Skill Quests


## Measurement and Geometry

May, 2022

Mathletics

# 189–200

## 1. Using units of measurement

| Outcome | Quests | Content |
|---|---|---|
| ACMMG061 Measure, order and compare objects using familiar metric units of length, mass and capacity | Length, mass and capacity | Comparing, ordering and measuring length |
| | | Measure & compare units of volume & capacity |
| | | Using the kilogram to measure mass |
| ACMMG062 Tell time to the minute and investigate the relationship between units of time | Telling time | Telling time to the minute |

## 2. Shape

| Outcome | Quests | Content |
|---|---|---|
| ACMMG063 Make models of three-dimensional objects and describe key features | 3D objects | Exploring prisms and nets |
| | | Rectangular prism nets |

## 3. Geometric reasoning

| Outcome | Quests | Content |
|---|---|---|
| ACMMG064 Identify angles as measures of turn and compare angle sizes in everyday situations | Identifying and comparing angles | Identifying and comparing angles |
| | | Introducing angles |

## 4. Location and transformation

| Outcome | Quests | Content |
|---|---|---|
| ACMMG065 Create and interpret simple grid maps to show position and pathways | Grid referenced maps | Interpreting and creating grid referenced maps |
| ACMMG066 Identify symmetry in the environment | Lines of symmetry | Recognising and drawing lines of symmetry |

# 201–210

## 1. Using units of measurement

| Outcome | Quests | Content |
|---|---|---|
| ACMMG084 Use scaled instruments to measure and compare lengths, masses, capacities and temperatures | Length, mass, capacity and temperature | Metric units of length |
| | | Length and 3D objects |
| | | Introducing perimeter |
| | | Temperature |
| | | Measuring capacity in millilitres |
| | | Measuring mass in grams and kilograms |
| ACMMG290 Compare objects using familiar metric units of area and volume | Area and volume | Comparing area using metric units |
| | | Using cubic cm to measure volume |
| ACMMG085 Convert between units of time | Converting units of time | Converting units of time |
| ACMMG086 Use ‘am’ and ‘pm’ notation and solve simple time problems | AM/PM and elapsed time | AM/PM and elapsed time problems |

## 2. Shape

| Outcome | Quests | Content |
|---|---|---|
| ACMMG087 Compare the areas of regular and irregular shapes by informal means | Area of regular and irregular shapes | Measuring & comparing regular and irregular shapes |
| ACMMG088 Compare and describe two dimensional shapes that result from combining and splitting common shapes, with and without the use of digital technologies | Composing and decomposing 2D shapes | Composing and decomposing 2D shapes |

## 3. Location and transformation

| Outcome | Quests | Content |
|---|---|---|
| ACMMG090 Use simple scales, legends and directions to interpret information contained in basic maps | Scales, legends and directions | Using legends and cardinal compass directions |
| | | Solving measurement problems |
| ACMMG091 Create symmetrical patterns, pictures and shapes with and without digital technologies | Symmetrical patterns, pictures & shapes | Introducing transformations |

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|---|---|---|
| | | Creating and drawing symmetrical designs |
| | | Recognising tessellations |

## 4. Geometric reasoning

| Outcome | Quests | Content |
|---|---|---|
| ACMMG089 Compare angles and classify them as equal to, greater than, or less than, a right angle | Classifying angles | Classifying angles |

# 211–217

## 1. Using units of measurement

| Outcome | Quests | Content |
|---|---|---|
| ACMMG108 Choose appropriate units of measurement for length, area, volume, capacity and mass | Length, area, volume, capacity and mass | Comparing and ordering metric lengths |
| | | Selecting appropriate units for measuring |
| ACMMG109 Calculate perimeter and area of rectangles using familiar metric units | Perimeter and area | Calculating perimeter of rectangles |
| | | Calculating the area of rectangles |
| ACMMG110 Compare 12- and 24-hour time systems and convert between them | 24-hour time | Using 24-hour time |

## 2. Shape

| Outcome | Quests | Content |
|---|---|---|
| ACMMG111 Connect three-dimensional objects with their nets and other two-dimensional representations | Nets | Nets |

## 3. Location and transformation

| Outcome | Quests | Content |
|---|---|---|
| ACMMG113 Use a grid reference system to describe locations. Describe routes using landmarks and directional language | Grid reference and directional language | Grid-referenced maps |
| | | Using landmarks and directional language |
| ACMMG114 Describe translations, reflections and rotations of two-dimensional shapes. Identify line and rotational symmetries | Transformations and symmetry | One-step transformations |
| | | Symmetry |
| ACMMG115 Apply the enlargement transformation to familiar two-dimensional shapes and explore the properties of the resulting image compared with the original | Enlarging 2D shapes | Enlarging 2D shapes |

## 4. Geometric reasoning

| Outcome | Quests | Content |
|---|---|---|
| ACMMG112 Estimate, measure and compare angles using degrees. Construct angles using a protractor | Angles | Identifying and measuring angles |
| | | Classifying and constructing angles |

# 218–221

## 1. Using units of measurement

| Outcome | Quests | Content |
|---|---|---|
| ACMMG135 Connect decimal representations to the metric system | Connecting decimals to the metric system | Decimal notation and the metric system |
| | | Decimal representation in capacity |
| | | Decimal representation in mass |
| ACMMG136 Convert between common metric units of length, mass and capacity | Converting units of length, capacity/mass | Converting metric units of length |
| | | Converting metric units of capacity |
| | | Converting metric units of mass |
| ACMMG137 Solve problems involving the comparison of lengths and areas using appropriate units | Length and area | Length problems |
| | | Calculating the area of triangles |
| ACMMG139 Interpret and use timetables | Using timetables | Using timetables |

## 2. Geometric reasoning

| Outcome | Quests | Content |
|---|---|---|
| ACMMG141 Investigate, with and without digital technologies, angles on a straight line, angles at a point and vertically opposite angles. Use results to find unknown angles | Angle properties | Adjacent and vertically opposite angles |

## 3. Location and transformation

| Outcome | Quests | Content |
|---|---|---|
| ACMMG142 Investigate combinations of translations, reflections and rotations, with and without the use of digital technologies | Rigid transformations | Rigid transformations |
| ACMMG143 Introduce the Cartesian coordinate system using all four quadrants | The Cartesian plane | Locating points on the Cartesian plane |

# 222–226

## 1. Using units of measurement

| Outcome | Quests | Content |
|---|---|---|
| ACMMG159 Establish the formulas for areas of rectangles, triangles and parallelograms, and use these in problem-solving | Solve area problems | Solving area problems involving rectangles |
| | | Solving area problems involving triangles |
| | | Solving area problems involving parallelograms |
| | | Solving area problems: simple composite figures |
| ACMMG160 Calculate volumes of rectangular prisms | Volume of rectangular prisms | Volume of rectangular prisms |

## 2. Shape

| Outcome | Quests | Content |
|---|---|---|
| ACMMG161 Draw different views of prisms and solids formed from combinations of prisms | Exploring different views of prisms and solids | Exploring different views of prisms and solids |

## 3. Location and transformation

| Outcome | Quests | Content |
|---|---|---|
| ACMMG181 Describe translations, reflections in an axis and rotations of multiples of 90° on the Cartesian plane using coordinates. Identify line and rotational symmetries | Transformations and symmetry | Transformations on the Cartesian plane |
| | | Line and rotational symmetry |

## 4. Geometric reasoning

| Outcome | Quests | Content |
|---|---|---|
| ACMMG163 Identify corresponding, alternate and co-interior angles when two straight lines are crossed by a transversal | Angle relationships and parallel lines | Angles at a point |
| | | Parallel and perpendicular line conventions |
| | | Angle relationships on parallel lines |

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| ACMMG164 Investigate conditions for two lines to be parallel and solve simple numerical problems using reasoning | Parallel lines and geometric reasoning | Proving parallel lines |
| | | Geometric reasoning using angle properties |
| ACMMG166 Demonstrate that the angle sum of a triangle is 180° and use this to find the angle sum of a quadrilateral | Solve problems with interior angle sums | Solving problems involving interior angle sums |
| ACMMG165 Classify triangles according to their side and angle properties and describe quadrilaterals | Triangles and quadrilaterals | Labelling and naming conventions |
| | | Geometry conventions |
| | | Properties of triangles |
| | | Convex and non-convex quadrilaterals |
| | | Reasoning, sketching and describing quadrilaterals |
| | | Using properties of triangles & quadrilaterals |

# 227–228

## 1. Using units of measurement

| Outcome | Quests | Content |
|---|---|---|
| ACMMG195 Choose appropriate units of measurement for area and volume and convert from one unit to another | Units of area and volume | Choosing and converting units of area |
| | | Choosing and converting units of volume |
| ACMMG196 Find perimeters and areas of parallelograms, trapeziums, rhombuses and kites | Perimeter and area of quadrilaterals | Finding the perimeter |
| | | Solving area problems involving trapeziums |
| | | Solving area problems involving rhombuses |
| | | Solving area problems involving kites |
| ACMMG197 Investigate the relationship between features of circles such as circumference, area, radius and diameter. Use formulas to solve problems involving circumference and area | Working with circles | Identifying parts of circles |
| | | Working with circumferences of circles |
| | | Finding perimeters of parts of circles |
| | | Finding arc lengths and perimeters of sectors |
| | | Solving area problems involving circles |
| | | Solving area problems involving parts of circles |
| ACMMG198 Develop formulas for volumes of rectangular and triangular prisms and prisms in general. Use formulas to solve problems involving volume | Working with prisms | Finding the volume of prisms |
| | | Finding the volume of rectangular prisms |
| | | Finding the volume of triangular prisms |
| | | Solving problems involving prisms |
| ACMMG199 Solve problems involving duration, including using 12- and 24-hour time within a single time zone | Solve problems involving time | Solving problems involving time |
| | | Rounding and converting time |

## 2. Geometric reasoning

| Outcome | Quests | Content |
|---|---|---|
| ACMMG200 Define congruence of plane shapes using transformations | Defining and working with congruence | Defining and working with congruence |
| ACMMG201 Develop the conditions for congruence of triangles | Determining congruence in triangles | Determining congruence in triangles |

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|---|---|---|
| ACMMG202 Establish properties of quadrilaterals using congruent triangles and angle properties, and solve related numerical problems using reasoning | Using properties of congruent triangles | Using properties of congruent triangles |

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