

Mathletics

NWEA Australian Curriculum (RIT bands)

Understanding Practice and Fluency (UPF)



Measurement and Geometry

November, 2021

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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
ACMMG290 Compare objects using familiar metric units of area and volume	Area and volume	Measuring mass in grams and kilograms
		Comparing area using metric units
ACMMG085 Convert between units of time	Converting units of time	Using cubic cm to measure volume
ACMMG086 Use 'am' and 'pm' notation and solve simple time problems	AM/PM and elapsed time	Converting units of 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

		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

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

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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