Year 1 unit overview — Australian Curriculum: Mathematics

Source: Australian Curriculum, Assessment and Reporting Authority (ACARA), *Australian Curriculum v3.0: Mathematics for Foundation–10*, <www.australiancurriculum.edu.au/Mathematics/Curriculum/F-10>.

| School name | Unit title | Duration of unit |
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| Our School | Measure and compare drink bottles | 2 weeks |

| Unit outline |
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| Children explore and develop their knowledge of comparison of capacities. They develop their knowledge through exploration of concepts that lead to the children placing a small collection of drink bottles in order according to capacity on a number line.The big ideas of the unit include:* developing an understanding of uniform units
* measuring uniform units for comparisons
* ordering objects by capacity
* using number lines to order, e.g. placing children on a continuum of heights.

Inquiry questions for the unit:* How do I compare the capacity of two objects?
* How would I measure the capacity of this container?
* What is the language of measurement?
* How can we explain our measurements?
* What makes a good way of measuring?
* Which measuring tool will give the most accurate measurement?
* Why is it important to measure?
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| Identify curriculum |
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| Content descriptions to be taught | General capabilities and cross‑curriculum priorities |
| Number and Algebra | Measurement and Geometry | Statistics and Probability |
| Number and place value * Recognise, model, read, write and order numbers to at least 100. Locate these numbers on a number line [(ACMNA013)](http://www.australiancurriculum.edu.au/Curriculum/ContentDescription/ACMNA013)
* Represent and solve simple addition and subtraction problems using a range of strategies including counting, partitioning and rearranging parts [(ACMNA015)](http://www.australiancurriculum.edu.au/Curriculum/ContentDescription/ACMNA015)
 | Using units of measurement * Measure and compare the lengths and capacities of pairs of objects using uniform informal units [(ACMMG019)](http://www.australiancurriculum.edu.au/Curriculum/ContentDescription/ACMMG019)
 |  | gc_literacy Literacy* Develop language of comparison and measurement

gc_numeracy Numeracy* Develop measuring skills

gc_ict **ICT capability*** Use computers to represent solutions and explain reasoning

gc_critical Critical and creative thinking* Show reasoning to measure and compare capacities

gc_personal_social **Personal and social capability*** Develop communication skills for conversation and communication of ideas
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| Achievement standard |
| By the end of Year 1, students describe number sequences resulting from skip counting by 2s, 5s and 10s. They identify representations of one half. They recognise Australian coins according to their value. Students explain time durations. They describe two-dimensional shapes and three-dimensional objects. Students describe data displays.Students count to and from 100 and locate numbers on a number line. They carry out simple additions and subtractions using counting strategies. They partition numbers using place value. They continue simple patterns involving numbers and objects. Students order objects based on lengths and capacities using informal units. They tell time to the half hour. They use the language of direction to move from place to place. Students classify outcomes of simple familiar events. They collect data by asking questions and draw simple data displays. |
| Proficiencies |
| Opportunities to develop proficiencies include:**Understanding** * connecting names, numerals and quantities
* partitioning numbers in various ways.

**Fluency** * locating numbers on a line
 | **Problem Solving** * using materials to model authentic problems
* discussing the reasonableness of the answer

**Reasoning** * explaining direct and indirect comparisons of length using uniform informal units
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| Relevant prior curriculum | Curriculum working towards |
| **In the Australian Mathematics Curriculum at Foundation Year**Number and AlgebraNumber and place value* Connect number names, numerals and quantities, including zero, initially up to 10 and then beyond.
* Represent practical situations to model addition and sharing.

Measurement and GeometryUsing units of measurement * Use direct and indirect comparisons to decide which is longer, heavier or holds more, and explain reasoning in everyday language.
 | **In the Australian Mathematics Curriculum at Year 2**Number and AlgebraNumber and place value* Recognise, model, represent and order numbers to at least 1000.
* Solve simple addition and subtraction problems using a range of efficient mental and written strategies.

Measurement and GeometryUsing units of measurement* Compare and order several shapes and objects based on length, area, volume and capacity using appropriate uniform informal units.
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| Bridging content |
| In the Year 1 Learning Statements children build knowledge, understanding and skills to:Number* count up to 100and identify and represent whole numbers to at least 50
* work out basic facts and mental strategies to combine, add, take away or find the difference required in everyday situations and explain the processes used
* identify from given situations and visuals whether repeated addition (combining) or repeated subtraction (sharing) is occurring and give reasons
* count or subitise (identify small groups without counting) the number of groups or rows and the number of objects in each group or row and record this using drawings and diagrams

Measurement * directly compare measurable attributes of objects and describe the relationship (longer/shorter, bigger/smaller, holds more/less, heavier/lighter)
* describe ways to measure length, area, and volume using multiple repeats of uniform informal units and attending to gaps and overlaps, and for mass by hefting
* reflect on strategies for measuring
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| Links to other learning areas |
| Technology — representation of findings and decisions |

| Assessment | Make judgments |
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| Describe the assessment | Assessment date | Teachers gather evidence to make judgements about the following characteristics of student work:Understanding* description and identification of concepts
* description of choices made, strategies used, and checks of reasonableness of answers in mathematical investigations
* modelling and representation

Skills* use of problem solving strategies to investigate situations
* recall and use of mathematical facts, concepts calculations and procedures
* communication of calculations, answers and explanations, using mathematical language, conventions and symbols

For further advice and guidelines on constructing guides to making judgments refer to the Learning area standard descriptors: [www.qsa.qld.edu.au](http://www.qsa.qld.edu.au) |
| Children are given opportunities to demonstrate their knowledge, skills and understanding through both formative and summative assessment. The assessment is collated in folios and allows for ongoing feedback to children on their learning.Year 1 teachers make decisions about the length of time required to complete the tasks and the conditions under which the assessment is to be conducted.The teaching and learning experiences throughout the term provide opportunities for children to develop the understanding and skills required to complete these assessments. As children engage with these learning experiences, the teacher can provide feedback on specific skills. | Week 2 |
| Mathematical investigation (Demonstration): Measure and compare drink bottlesChildren compare pairs of objects using uniform informal units.In small groups or pairs, children are provided challenges that assist in applying understandings of the concepts in the task. These challenges include:* two bottles with the same capacity — children measure to see if the bottles have the same capacity and express their findings on a number line or record using tally marks
* two bottles with similar capacity but not the same — children measure, compare and express on a number line.

Teachers make observations about the children’s ability to measure, compare and explain their reasoning.  |
| Observation recordThroughout the unit teachers gather evidence about children’s learning, including:* anecdotes and observations that show children measuring and comparing during everyday activities within a range of contexts
* work samples that:
* demonstrate children directly comparing pairs of objects using uniform informal units
* show children reasoning and working through drawings, diagrams and written responses to measurement activities
* questioning and interviewing small groups of children to enable them to explain reasoning and demonstrate what they know and can do.

The assessment package *Walter’s water bottles* in the QSA Assessment Bank could be used as an assessment in this unit. | Ongoing |

| Teaching and learning | Supportive learning environment |
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| Teaching strategies and learning experiences | Adjustments for needs of learners | Resources |
| Children: * use, create and explore quantities as they design and make play spaces
* actively measure using uniform informal units
* explicitly use the language of comparison of quantities during exploratory play, e.g. in sand and water play
* discuss and design strategies to create uniform informal units
* explain reasoning to describe how they have ordered quantities
* use written formats to show reasoning through diagrams or drawings.

Teachers and children:* explore the differences in measurement when using non-uniform units and uniform informal units. Link this to real-life applications and the need for accurate measurement
* explore and record assorted measurements to define a uniform informal unit; discuss the differences and difficulties that occurred within these processes.

Teacher:* models strategies for comparing assorted objects using multiples of uniform informal units
* discusses rules for measurement of capacity, building on discussions about comparing lengths
* explores the use of various mathematical words to describe attributes of capacity, e.g. more, less, full, empty, hollow, solid, more than, less than, same
* models estimation strategies for measurement and explain reasoning
* brainstorms real-life situations when people need to measure, link these to “how” people measure
* models strategies for measuring assorted objects
* gives feedback on written recordings of reasoning.

Real-life situationsThese may include: * cooking
* watering plants
* buckets in the sandpit
* containers that hold liquids
* rainfall
* “How much water will the tea cup hold”?
 | Section 6 of the *Disability Standards for Education* (The Standards for Curriculum Development, Accreditation and Delivery) states that education providers, including class teachers, must take reasonable steps to ensure a course/program is designed to allow any student to participate and experience success in learning. The *Disability Standards for Education 2005* (Cwlth) is available from: <www.ag.gov.au> select Human rights and anti-discrimination > Disability standards for education. | **Equipment*** scoops
* funnels
* buckets
* bottles
* sand
* water
* jugs
* measuring cups
* spoons
* rain gauge
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| Use feedback |
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| Ways to monitor learning and assessment | Teachers meet to collaboratively plan the teaching, learning and assessment to meet the needs of all learners in each unit.Teachers create opportunities for discussion about levels of achievement to develop shared understandings; co-mark or cross mark at key points to ensure consistency of judgments; and participate in moderating samples of student work at school or cluster level to reach consensus and consistency. |
| Feedback to students | Teachers strategically plan opportunities and ways to provide ongoing feedback (both written and informal) and encouragement to children on their strengths and areas for improvement.Children reflect on and discuss with their teachers or peers what they can do well and what they need to improve.Teachers reflect on and review learning opportunities to incorporate specific learning experiences and provide multiple opportunities for children to experience, practise and improve. |
| Reflection on the unit plan | Identify what worked well during and at the end of the unit, including:* activities that worked well and why
* activities that could be improved and how
* assessment that worked well and why
* assessment that could be improved and how
* common student misconceptions that need, or needed, to be clarified.
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