Prep 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 |
| --- | --- | --- |
| Our School | Comparisons challenges | Term 3 |

| Unit outline |
| --- |
| Children explore and develop knowledge skills and understanding about mathematics through the five main contexts for learning and development.Children are provided with a series of challenges relating to comparison of different measurements. Learning opportunities in this unit will be collaboratively developed between children and adults. Learning will value and develop the wide range of early experiences with mathematics from their home and community lives. Learning will be embedded within each learning context, using intentional teaching to make learning explicit, challenge children to consider new ideas, test current thinking and develop deeper understandings.Children begin to demonstrate their emergent knowledge, understanding and skills within Number and Algebra, and Measurement and Geometry, by investigating and communicating the “big ideas” about:* comparing measurements, including capacity, length and mass
* using the language of comparison and measurement
* quantities and their representations
* attributes of objects and collections
* ideas around order, sequence and pattern.

Inquiry questions for the unit:* How can I order the length of our feet?
* How do I compare two objects?
* What is the language of comparison?
* What makes a good way of measuring capacity, length or mass?
* Why is it important to compare?
* Where do we use measurement in our world?
 |

| Identify curriculum |
| --- |
| Content descriptions to be taught | General capabilities and cross‑curriculum priorities |
| Number and Algebra | Measurement and Geometry | Statistics and Probability |
| Number and place value* Compare, order and make correspondences between collections, initially to 20, and explain reasoning [(ACMNA289)](http://www.australiancurriculum.edu.au/Curriculum/ContentDescription/ACMNA289)
 | Using units of measurement* Use direct and indirect comparisons to decide which is longer, heavier or holds more, and explain reasoning in everyday language [(ACMMG006)](http://www.australiancurriculum.edu.au/Curriculum/ContentDescription/ACMMG006)
* Compare and order the duration of events using the everyday language of time [(ACMMG007)](http://www.australiancurriculum.edu.au/Curriculum/ContentDescription/ACMMG007)
 |  | gc_literacy Literacy* Develop language of comparison

gc_numeracy Numeracy* Develop estimation skill

gc_ict **ICT capability*** Use digital technologies to create online and pictographic representations of ordering

gc_critical Critical and creative thinking* Use thinking skills to complete group activities and open-ended tasks

gc_personal_social **Personal and social capability*** Develop communication skills for conversation and communication of ideas
 |
| Achievement standard |
| By the end of the Foundation year, students make connections between number names, numerals and quantities up to 10. They compare objects using mass, length and capacity. Students connect events and the days of the week. They explain the order and duration of events. They use appropriate language to describe location.Students count to and from 20 and order small collections. They group objects based on common characteristics and sort shapes and objects. Students answer simple questions to collect information. |

|  |
| --- |
| Proficiencies |
| Opportunities to develop proficiencies include:**Understanding** * connecting names, numerals and quantities

**Fluency** * comparing the lengths of objects
 | **Problem Solving** * using materials to model authentic problems
* sorting objects
* using familiar counting sequences to solve unfamiliar problems
* discussing the reasonableness of the answer

**Reasoning** * explaining comparisons of quantities
* explaining processes for indirect comparison of length
 |
| Relevant prior curriculum | Curriculum working towards |
| **In the Queensland kindergarten learning guideline**Active learning key focusKnowledge, skills and dispositions:* active investigation of mathematical ideas, processes and language in everyday life related to shape and to comparing, changing, measuring and recording quantities.
 | **In the Australian Curriculum: Mathematics at Year 1**Number and AlgebraNumber and place value* Count collections to 100 by partitioning numbers using place value.

Measurement and GeometryUsing units of measurement* Measure and compare the lengths and capacities of pairs of objects using uniform informal units.
* Describe duration using months, weeks, days and hours.
 |
| Bridging content |
| In the Early Years Curriculum GuidelinesEarly mathematical understandingsChildren build early mathematical understandings about number, patterns & algebra, measurement, chance & data and space by:* investigating and communicating about quantities and their representations, and attributes of objects and collections.
 |
| Links to other learning areas |
| Learning is integrated within early years contexts for learning and embedded across a range of learning areas, including Social and personal learning, Health and physical learning, and Active learning processes.  |

| Assessment | Make judgments |
| --- | --- |
| 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) |
| Students are given opportunities to demonstrate their knowledge, skills and understanding through both formative and summative assessment. The assessment is collated in student folios and allows for ongoing feedback to students on their learning.Prep 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 students to develop the understanding and skills required to complete these assessments. As students engage with these learning experiences the teacher can provide feedback on specific skills. | Ongoing — driven by the developmental sequence of the unit. |
| The QSA Assessment Bank package *Pick-a-package* has been developed to support this unit. It focuses on direct and indirect comparisons of mass in a socio-dramatic play situation**Mathematical investigation (Demonstration)**Children are given a series of challenges with different objects to measure using direct and indirect means of comparison. Challenges are performed across the term to check for understanding of the concepts as they are developed. Challenges need to reflect direct and indirect comparisons and could include:* longer (length) — measure and compare the length of the feet of children in the class
* longer (height) — measure and compare the height of children in the class
* heavier — compare a series of different fruits and place them in order of lightest to heaviest
* holds more — which cup holds more?
* time — which activity will take the longest time?

Teachers observe the children’s ability to make comparisons and explain their reasoning. In explaining their reasoning, children describe the attributes they use to make their comparisons. Throughout the unit teachers gather evidence about children’s learning, including:* anecdotal notes and observations about individual children’s progress toward Number and Algebra and Measurement and Geometry knowledge, skills and understandings during everyday learning experiences
* objects or artefacts that the children develop or make within everyday learning experiences, e.g. collage constructions demonstrating shapes, drawings and illustrations (including reasoning)
* annotated digital photo story of comparisons.
 |

| Teaching and learning | Supportive learning environment |
| --- | --- |
| Teaching strategies and learning experiences | Adjustments for needs of learners | Resources |
| Socio-dramatic play Children use the language of direct and indirect comparison within socio-dramatic play, e.g. the longest truck in the sandpit, the widest road.Exploratory play: Indoors Children:* talk about, explain and describe their comparisons for the class using language associated with measurement and comparison, e.g. activities involving measurement and the language of comparison.

Teacher: * supports investigations in exploratory play, e.g. prompting explanation of comparison of everyday objects
* facilitates drawing of diagrams and writing of explanations to demonstrate strategies for comparing
* introduces new vocabulary and models the use of new words within all play experiences relating to comparing measurements
* begins to create relevant word walls, including pictures.

Exploratory play: OutdoorsTeacher and children:* actively investigate quantities, and select and create suitable measurements
* use a variety of scales, rulers, tape measures and other measuring tools to talk about and compare length, mass, capacity, time. They investigate how we use measurement in everyday situations.

Teacher: * makes explicit the language of comparison of quantities during exploratory play, e.g. in sand and water play.

Routines and transitions* Teacher and children play transition games, e.g. “pass the bag”, where children select and compare two objects (hefting, length).
 | 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. | **ICT** * interactive whiteboards or learning objects that look at ordering and comparing

**Equipment*** scoops
* funnels
* buckets
* bottles
* sand
* water
* jugs
* measuring cups
* spoons
* rain gauge
* measuring tapes
* blocks
 |
| * Teacher, on a daily basis, makes explicit the regular patterns of the day through use of a digital daily planner.

Real-life situations* Teacher and children collaboratively investigate comparison problems and draw solutions.
* Teacher uses comparative language to describe objects brought into the classroom.

Focused learning and teachingTeachers and children:* roleplay being human balance scales, e.g. they hold up their arms: “Imagine if I had an orange in this hand and a brick in the other. What would happen? Why?”
* actively compare different measurements, such as length of the wrist and length around head.

Teacher:* creates counting and sorting activities using a variety of materials
* uses explicit language of comparison including:
* longer: length, long, longer, longest, longer than, short, shorter, shortest, shorter than, height
* heavier: mass, heavy, light, heavier than, lighter than, scales, balance
* holds more: capacity, volume, full, empty, half full, hollow, solid
* time: fast, slow, slowly, quick, quickly, hurry, before, after
* models indirect comparison of measurement through scaffolded experiences with real-life materials describing attributes used to make comparisons
* models the hefting process to compare objects
* reads texts to children that explore and expand on comparative measurement language.
 |  |  |

| Use feedback |
| --- |
| 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.
 |