







Feet

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Assessment description	Category
Children compare and order class foot lengths, then create graphs to display and interpret the data.	Spoken/signed
	Technique
	Observation record
Context for assessment	Alignment
Children develop an increasingly sophisticated understanding of size as they apply their understandings of uniform informal units to compare the foot lengths of children in their class. They then have opportunities to make links between concrete representations, measurements and data displays.	<p><i>Australian Curriculum v6.0</i>, Year 2 Mathematics Australian Curriculum content and achievement standard ACARA — Australian Curriculum, Assessment and Reporting Authority www.australiancurriculum.edu.au</p> <p>Year 2 Mathematics standard elaborations www.qsa.qld.edu.au/downloads/p_10/ac_math_yr2_se.doc</p>
	Connections
	<p>This assessment can be used with the QSA Australian Curriculum resource titled <i>Year 2 unit overview — Mathematics exemplar</i> available at www.qsa.qld.edu.au/yr2-maths-overview.html</p>
	Definitions
	<p>Informal units: Informal units are uniform units of measure that are not part of a standardised system of units. Informal units are sometimes referred to as ‘non-standard units’. For example, an informal unit for length could be paperclips of uniform length. By contrast centimetres are uniform formal units of measure.</p> <p>See the Australian Curriculum glossary for technical terms used in this assessment www.qsa.qld.edu.au/yr2-maths-resources.html</p>
In this assessment	
<ul style="list-style-type: none"> • Teacher guidelines • Task-specific standards — continua • Task-specific standards — matrix • Assessment resource: Feet • Model response • Note: No Student booklet 	

Teacher guidelines

Identify curriculum

Content descriptions to be taught	
Measurement and Geometry	Statistics and Probability
Using units of measurement <ul style="list-style-type: none"> Compare and order several shapes and objects based on length, area, volume and capacity using appropriate uniform informal units ACMMG037 	Data representation and interpretation <ul style="list-style-type: none"> Collect, check and classify data (ACMSP049) Create displays of data using lists, table and picture graphs and interpret them ACMSP050
General capabilities (GCs) and cross-curriculum priorities (CCPs) This assessment may provide opportunities to engage with the following GCs and CCPs. Refer also to the Resources tab on the Mathematics curriculum hub www.qsa.qld.edu.au/13656.html	
 Literacy  Numeracy  ICT capability  Critical and creative thinking  Personal and social capability	 Aboriginal and Torres Strait Islander histories and cultures
Achievement standard This assessment provides opportunities for children to demonstrate the following highlighted aspects.	
<p>By the end of Year 2, students recognise increasing and decreasing number sequences involving 2s, 3s and 5s. They represent multiplication and division by grouping into sets. They associate collections of Australian coins with their value. Students identify the missing element in a number sequence. Students recognise the features of three-dimensional objects. They interpret simple maps of familiar locations. They explain the effects of one-step transformations. Students make sense of collected information.</p> <p>Students count to and from 1000. They perform simple addition and subtraction calculations using a range of strategies. They divide collections and shapes into halves, quarters and eighths. Students order shapes and objects using informal units. They tell time to the quarter hour and use a calendar to identify the date and the months included in seasons. They draw two-dimensional shapes. They describe outcomes for everyday events. Students collect data from relevant questions to create lists, tables and picture graphs.</p>	
Source: ACARA, The Australian Curriculum v6.0, www.australiancurriculum.edu.au	

Sequence learning

Suggested learning experiences
This assessment leads on from the learning experiences outlined in the QSA's Year 2 Mathematics unit overview. The knowledge, understanding and skills developed in the exemplar unit will prepare children to engage in this assessment: <ul style="list-style-type: none"> See unit overview — Mathematics exemplar (Is the whole greater than the sum of its parts?) www.qsa.qld.edu.au/yr2-maths-overview.html
Adjustments for needs of learners
To make adjustments, teachers refer to learning area content aligned to the child's chronological age, personalise learning by emphasising alternate levels of content, general capabilities or cross-curriculum priorities in relation to the chronological age learning area content. The emphasis placed on each area is informed by the child's current level of learning and their strengths, goals and

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interests. Advice on the process of curriculum adjustment for all children and in particular for those with disability, gifted and talented or for whom English is an additional language or dialect are addressed in *Australian Curriculum — Student Diversity* materials.

For information to support children with diverse learning needs, see:

- Queensland Studies Authority materials for supporting children with diverse learning needs www.qsa.qld.edu.au/10188.html
- Australian Curriculum Student Diversity www.australiancurriculum.edu.au/StudentDiversity/Overview
- The *Melbourne Declaration on Educational Goals for Young Australians* www.mceecdya.edu.au/mceecdya/melbourne_declaration,25979.html
- The *Disability Standards for Education* www.ag.gov.au.

Resources

Objects

- uniform informal units, e.g. blocks (such as Unifix cubes), paperclips, pegs, counters, buttons, coins, multi-base arithmetic blocks (MABs)
- scissors, markers
- paper, laminating pouches.

Develop assessment

Preparing for the assessment

Word Wall

Compile a Word Wall of mathematical terms, e.g. *uniform informal unit, measurement, list, table, graph, title, column, row, axis, key, more, less.*

Measure, collect and compare

For a range of shapes and objects (such as body parts):

- use a range of uniform informal units to measure length and area, e.g. blocks (such as Unifix cubes), hand spans, paperclips, pegs, counters, buttons, strides, coins, multi-base arithmetic blocks (MABs)
- check and compare accuracy of measurements.

Order and display

- order shapes and objects according to uniform informal measurements by comparing whether the measurement is the same, more or less.

Interpret and pose questions

For a range of shapes and objects (such as body parts):

- interpret measurement data using lists, tables and graphs
- identify questions that could be asked about the data.

Implementing

Section 1. Collecting, comparing and ordering data

Child role

Collect data:

- Remove your shoe and sock from your right foot.
- Place your right foot on a piece of blank white paper.
- Get another child to trace around your foot.
- Write your name in the outline.
- Measure your shoe size using *Assessment resource: Feet*.
- Write your shoe size underneath your name.
- Cut around the outline.

Compare and order data:

- Choose the most appropriate uniform informal unit to measure foot length.
- Use your selected unit to measure the length of each foot outline.
- Record the data you collect in a table.
- Compare and order foot lengths and write the results as a list of children's names (from shortest to longest foot length).
- Check your list by placing the foot outlines in the same order as the list, and visually inspecting the result make changes if necessary.

Teacher role

- Prepare 'Measure your shoe size' from *Assessment resource: Feet* by cutting along the marked line, laminating the page, then positioning or taping it to the floor so that the line is flush against a wall.
- Assign children to groups for collecting data.
- Model how to hold the pen directly upright when drawing around the foot of other children.
- Model how to measure shoe size using 'Measure your shoe size' from *Assessment resource: Feet*.

Presentation:

- Arrange the most convenient method of drawing around feet, e.g. children could attach blank paper to a clipboard for children sitting in a chair.
- Provide children with a list of uniform informal units they have used in class, e.g. blocks (such as Unifix cubes), hand spans, paperclips, pegs, counters, buttons, strides, coins, multi-base arithmetic blocks (MABs).
- Have children choose the most suitable uniform informal unit to use to measure the foot length.
- Give each child time to use their selected unit to measure the length of each foot outline, before passing the foot outline on to the next

Implementing

child.

- Have children compare and order the measurement data they have just collected from shortest to longest, and write this as a list.
- Prepare a line for sorting foot outlines, e.g. clothes line with pegs, line attached to the blackboard or the floor.
- Add headings of 'Shortest' and 'Longest'.
- While the class is working on another task, give each child time to order the set of foot outlines according to their list, and then to visually check their work.

Section 2. Displaying data

Child role

Complete *Graph 1: Class shoe sizes* from *Assessment resource: Feet* using the number written on each foot outline.

Complete *Graph 2: Class foot lengths* from *Assessment resource: Feet*.

- Write the uniform informal unit you used beneath your graph.
- Select two colours, e.g. green for boys, purple for girls.
- Mark a cross (*) or a foot stamp in the appropriate colour to represent each child's foot outline on the graph.

Teacher role

Provide two graph outlines for each child (see *Assessment resource: Feet*) or have children make their own graphs in their journals.

- Ask children to select the best scale for each graph based on the data collected.

Section 3. Analysing data

Child role

Answer questions your teacher asks you about the data you have collected.

Teacher role

Ask children questions about the data collected to gauge their understanding. Make observations. Children can write their answers or give them verbally.

Examples of questions you could ask include:

- What uniform informal unit did you choose?
- Why did you choose it?
- Did you have to change the order of your foot outlines when you checked your work?
- Explain what you would do to make your answers more accurate.
- Which shoe size has the most crosses for the class?
- What is the longest shoe size for the boys? For the girls?
- Which shoe size has the most crosses for the boys? For the girls?
- What is something the data tells us about our Year 2 shoe sizes?
- How can we be sure that is the case?
- If we measured the feet at a different time of the year, what could we expect to see?
- Will the measurements be the same for next

Implementing

- year's Year 2 class? Why do you think that?
- Would the measurements be the same if we changed the uniform informal unit? Why do you think that?
 - What is something the data doesn't tell us about our Year 2 shoe sizes?
 - Make up your own question about your data. Tell me your answer.

Make judgments

When making judgments about the evidence in children's responses to this assessment, teachers are advised to use the task-specific standards provided. The development of these task-specific standards has been informed by the Queensland Year 2 standard elaborations. See www.qsa.qld.edu.au/downloads/p_10/ac_math_yr2_se.doc.

The Queensland standard elaborations for Mathematics

The Queensland Year 2 standard elaborations for Mathematics is a resource to assist teachers to make consistent and comparable evidence-based A to E (or equivalent) judgments. It should be used in conjunction with the Australian Curriculum achievement standard and content descriptions for the relevant year level.

The Queensland Mathematics standard elaborations provide a basis for judging *how well* children have demonstrated what they know, understand and can do using the Australian Curriculum achievement standard.

The Australian Curriculum achievement standards dimensions of Understanding and Skills are used to organise the Queensland Mathematics standard elaborations. Understanding and skills in Mathematics are organised as Understanding and Fluency, and Problem Solving and Reasoning.

The valued features of Mathematics drawn from the achievement standard and the content descriptions for Understanding and Fluency, and Problem solving and Reasoning are organised as:

- Using units of measurement
- Data representation and interpretation.

Task-specific standards

Task-specific standards give teachers:

- a tool for directly matching the evidence of learning in the response to the standards
- a focal point for discussing children's responses
- a tool to help provide feedback to children.

Task-specific standards are not a checklist; rather they are a guide that:

- highlights the valued features that are being targeted in the assessment and the qualities that will inform the overall judgment
- specifies particular *targeted aspects* of the curriculum content and achievement standard
- aligns the valued feature, task-specific descriptor and assessment
- allows teachers to make consistent and comparable on-balance judgments about a child's work by matching the qualities of children's responses with the descriptors

- clarifies the curriculum expectations for learning at each of the five grades (A–E or the early years equivalent)
- shows the connections between what children are expected to know and do, and how their responses will be judged and the qualities that will inform the overall judgment
- supports evidence-based discussions to help children gain a better understanding of how they can critique their own responses and achievements, and identify the qualities needed to improve
- encourages and provides the basis for conversations among teachers, children and parents/carers about the quality of children’s work and curriculum expectations and related standards.

Task-specific valued features

Task-specific valued features are the discrete aspects of the valued features of Mathematics targeted in a particular assessment and incorporated into the task-specific standards for that assessment. They are selected from the Queensland Mathematics standard elaborations valued features drawn from the Australian Curriculum achievement standard and content descriptions.

Task-specific valued features for this assessment			
The following table identifies the valued features for this assessment and makes explicit the understandings and skills that children will have the opportunity to demonstrate. This ensures that the alignment between what is taught, what is assessed and what is reported is clear.			
Australian Curriculum achievement standard dimensions	Australian Curriculum proficiency strands	Queensland standard elaborations valued features	Task-specific valued features
Understanding and Skills	Understanding and Fluency	<ul style="list-style-type: none"> • Procedural fluency — recall and use of facts, definitions, technologies and procedures. • Mathematical language and symbols. 	<ul style="list-style-type: none"> • Measurement of foot lengths using uniform informal units. • Comparison and ordering of measurements. • Use of mathematical language and symbols when discussing results and organising data.
	Problem solving and Reasoning	<ul style="list-style-type: none"> • Reasoning and justification. 	<ul style="list-style-type: none"> • Explanation of choices and description of results of uniform informal unit measurements. • Inferences from data to answer questions.

The task-specific standards for this assessment are provided in two models using the same task-specific valued features:

- a matrix
- a continua.

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Matrix and Continua

Task-specific standards can be prepared as a matrix or continua. Both the continua and the matrix:

- use the Queensland standard elaborations to develop task-specific descriptors to convey expected qualities in children’s work — A to E or equivalent
- highlight the same valued features from the Queensland standard elaborations that are being targeted in the assessment and the qualities that will inform the overall judgment
- incorporate the same task-specific valued features, i.e. make explicit the particular understanding / skills that children have the opportunity to demonstrate for each selected valued feature
- provide a tool for directly matching the evidence of learning in the child’s response to the standards to make an on-balance judgment about achievement
- assist teachers to make consistent and comparable evidence-based A to E or equivalent judgments.

Continua

The continua model of task-specific standards uses the dimensions of the Australian Curriculum achievement standard to organise task-specific valued features and standards as a number of reference points represented progressively along an A–E continuum. The task-specific valued features at each point are described holistically. The task-specific descriptors of the standard use the relevant degrees of quality described in the Queensland standard elaborations.

Teachers determine a position along each continuum that best matches the evidence in the children’s responses to make an on-balance judgment about achievement on the task.

The continua model is a tool for making an overall on-balance judgment about the assessment and for providing feedback on task-specific valued features.

Matrix

The matrix model of task-specific standards uses the structure of the Queensland standard elaborations to organise the task-specific valued features and standards A to E. The task-specific descriptors of the standard described in the matrix model use the same degrees of quality described in the Queensland standard elaborations.

Teachers make a judgment about the task-specific descriptor in the A to E (or equivalent) cell of the matrix that best matches the evidence in the children’s responses in order to make an on-balance judgment about how well the pattern of evidence meets the standard.

The matrix is a tool for making both overall on-balance judgments and analytic judgments about the assessment. Achievement in each valued feature of the Queensland standard elaboration targeted in the assessment can be recorded and feedback can be provided on the task-specific valued features.

Use feedback

Feedback to children	Evaluate the information gathered from the assessment to inform teaching and learning strategies. Focus feedback on the child's personal progress and the next steps in the learning journey. Offer feedback that: <ul style="list-style-type: none">• focuses on the use of mathematical language and conventions• highlights the importance of interpretation and comparison to draw mathematical conclusions. The task-specific standards for this assessment can be used as a basis for providing feedback to children.
Resources	For guidance on providing feedback, see the professional development packages titled: <ul style="list-style-type: none">• <i>About feedback</i> www.qsa.qld.edu.au/downloads/p_10/as_feedback_about.doc• <i>Seeking and providing feedback</i> www.qsa.qld.edu.au/downloads/p_10/as_feedback_provide.doc

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Name

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Purpose of assessment: To compare and order class foot lengths, then create graphs to display and interpret the data.

Understanding and Skills			
Understanding and Fluency		Problem solving and Reasoning	
Measurement of foot lengths using uniform informal units. Comparison and ordering of measurements.	Use of mathematical language and symbols when discussing results and organising data.	Explanation of choices and description of results of uniform informal unit measurements. Inferences from data to answer questions.	
<ul style="list-style-type: none"> Measurement of length of foot outline by counting the uniform informal units, accurately accounting for gaps and overlaps. Correct comparison and ordering using several uniform informal unit measurements. 	<ul style="list-style-type: none"> Effective and clear use of mathematical language and symbols when describing and explaining results and organising and correctly graphing data. 	<ul style="list-style-type: none"> Clear explanation of choices and a strategy to improve the accuracy of the uniform informal unit measurements. Valid inferences about data and clear explanations of conclusions. 	
<ul style="list-style-type: none"> Use of uniform informal units to measure the length of foot outline. Use of informal measurements to identify whether one is the same, more or less than the other. 	<ul style="list-style-type: none"> Use of everyday language and some mathematical language and symbols when describing results and organising data appropriately in lists, tables and graphs. 	<ul style="list-style-type: none"> Description of information in tables and graphs and of uniform informal unit measurements. Inferences about the data. 	
<ul style="list-style-type: none"> Placement of uniform informal units in a linear arrangement to measure outlines, with direction. 	<ul style="list-style-type: none"> Use of everyday language to make lists of data and compare and order outlines. 	<ul style="list-style-type: none"> Partial descriptions of conclusions. 	
			<p>A P</p> <p>M C</p> <p>W W</p> <p>E X</p> <p>B A</p>

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Purpose of assessment: To compare and order class foot lengths, then create graphs to display and interpret the data.

		Applying (AP)	Making connections (MC)	Working with (WW)	Exploring (EX)	Becoming aware (BA)	
Understanding and Skills dimensions	Understanding & Fluency	Procedural fluency Measurement of foot lengths using uniform informal units. Comparison and ordering of measurements.	Measurement of length of foot outline by counting the uniform informal units, accurately accounting for gaps and overlaps. Correct comparison and ordering using several uniform informal unit measurements.	Measurement of length of foot outline by counting the uniform informal units, accounting for gaps and overlaps to improve accuracy. Comparison and ordering using uniform informal unit measurements.	Use of uniform informal units to measure the length of foot outline. Use of informal measurements to identify whether one is the same, more or less than the other.	Some use of uniform informal units in a linear arrangement to measure outlines, with guidance.	Placement of uniform informal units in a linear arrangement to measure outlines, with direction.
		Mathematical language and symbols Use of mathematical language and symbols when discussing results and organising data.	Effective and clear use of mathematical language and symbols when describing and explaining results and organising and correctly graphing data.	Consistent use of mathematical language and symbols when describing and explaining results and organising and graphing data.	Use of everyday language and some mathematical language and symbols when describing results and organising data appropriately in lists, tables and graphs.	Use of everyday language and some aspects of mathematical language and symbols when describing results and collecting data.	Use of everyday language to make lists of data and compare and order outlines.
	Problem solving & Reasoning	Reasoning and justification Explanation of choices and description of results of uniform informal unit measurements. Inferences from data to answer questions.	Clear explanation of choices and a strategy to improve the accuracy of the uniform informal unit measurements. Valid inferences about data and clear explanations of conclusions.	Explanation of choices and a strategy about the accuracy of measuring using uniform informal units. Inferences about data and explanations of conclusions.	Description of information in tables and graphs and of uniform informal unit measurements. Inferences about the data.	Partial descriptions of conclusions.	Isolated statements about data.

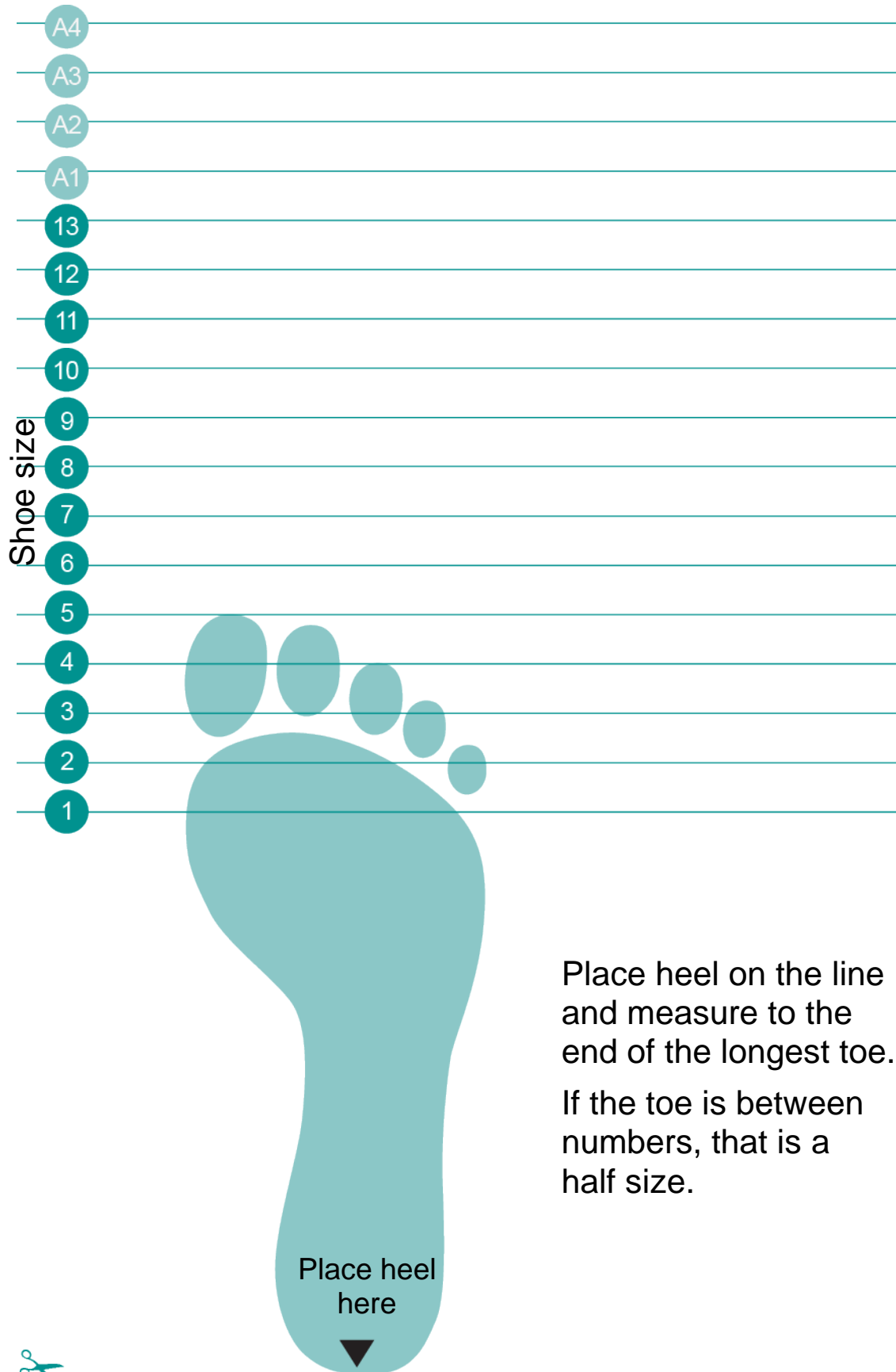
Notes on assessment resources

The following pages contain resources referred to in the Implementing table of the *Teacher guideline*:

- Measure your shoe size — Section 1: Collecting, comparing and ordering data
- Graph 1: Class shoe sizes — Section 2: Displaying data
- Graph 2: Class foot lengths — Section 2: Displaying data.

Please note that the resource 'Measure your shoe size' should be printed at the exact size provided.

Measure your shoe size



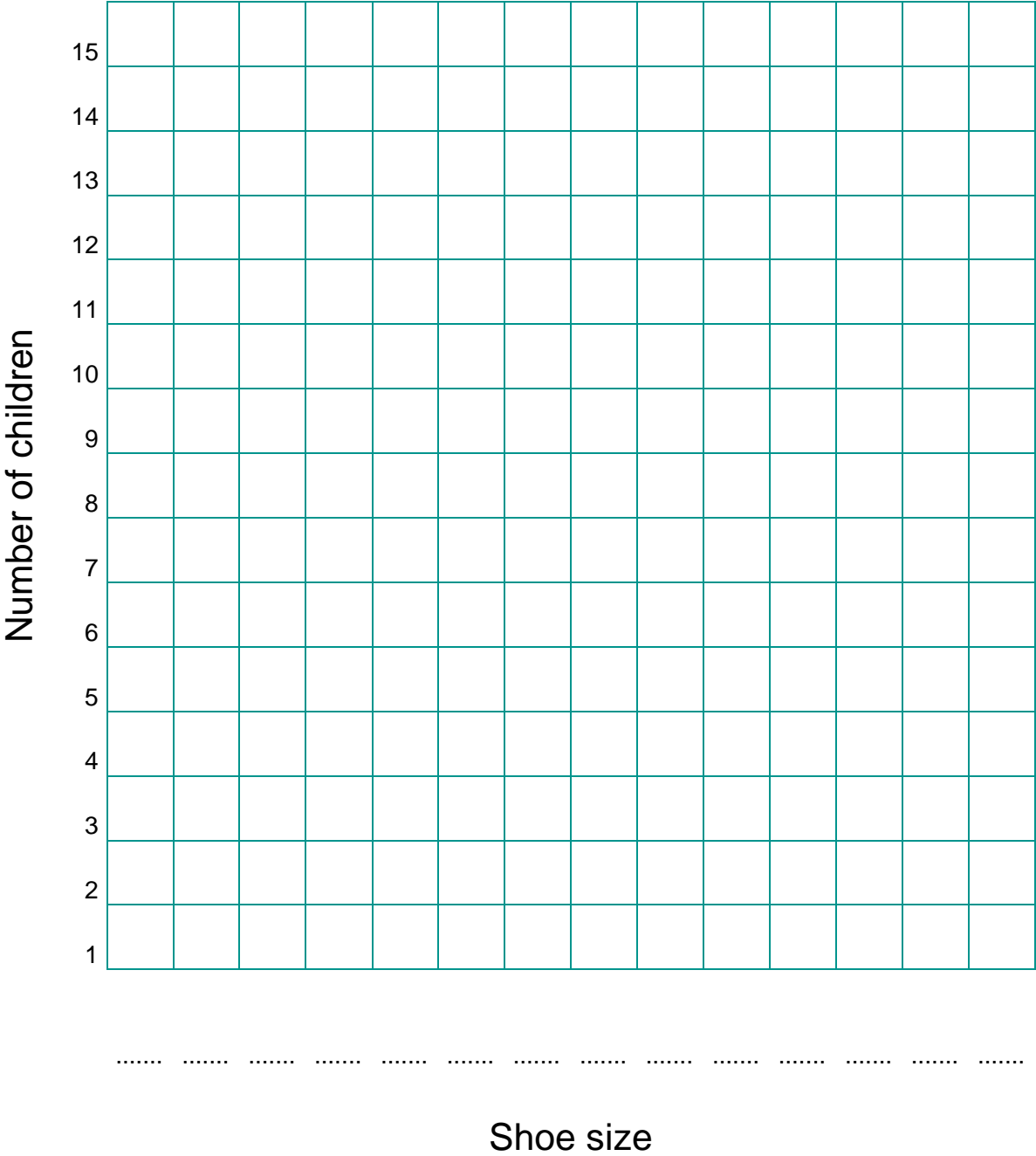
Place heel on the line and measure to the end of the longest toe.

If the toe is between numbers, that is a half size.

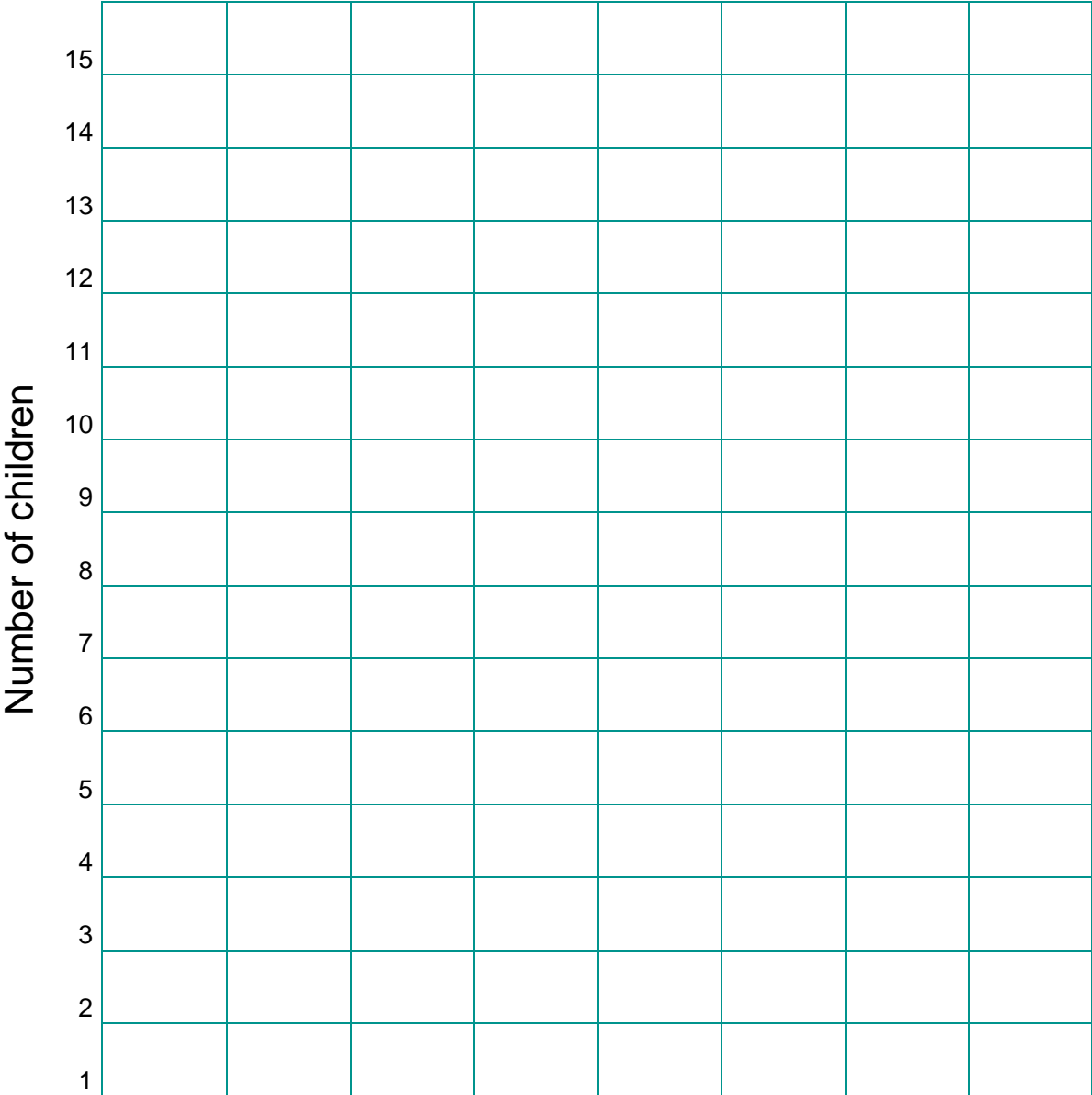
Place heel here

Cut along the line, laminate page, then tape to the floor so the line is flush against a wall.

Graph 1: Class shoe sizes



Graph 2: Class foot lengths



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Unit: