Maths and Me: 1st Class – Short-Term Plan, Unit 10: Measuring 1 (February: Week 1)

Strand(s) > Strand Unit(s)	Measuring > Measures.
Learning Outcome(s)	Through appropriately playful and engaging learning experiences children should be able to compare, approximate and measure length, weight, capacity and area using appropriate instruments and record using appropriate units of measurement.

Lesson	Focus of Learning (with Elements)	CM	Learning Experiences	Assessment
1	**Comparing and Ordering Lengths and Heights:** Describes and discriminates between objects using appropriate comparative language (C); Compares and orders objects according to length by making direct comparisons (U&C)		D Notice & Wonder L1 C D Think-Pair-Share L1–3 C D Reason & Respond L1–3 D Three-Act Task L2 C D Write-Hide-Show L3 **Print resources** Pupil's Book pages 67–69 Home/School Links Book page 25 PCM 44	**Intuitive Assessment:** responding to emerging misconceptions **Planned Interactions:** responding to insights gleaned from children's responses to learning experiences **Assessment Events:** information gathered from completion of the unit assessment in the Progress Assessment Booklet page 20
2	**Measuring Length:** Identifies the appropriate measurement instruments and units for a given situation (U&C); Collects and records measurement data in systematic ways (e.g. by using lists, tables) and compares results (C)			
3	**Metres:** Identifies the need for standard units to measure length (U&C); Recognises that units of measurement can simplify communication about measurement (C)			
4	**Review and Reflect:** Reviews and reflects on learning (U&C)			

Key: Elements: (U&C) Understanding and Connecting; (C) Communicating; (R) Reasoning; (A&PS) Applying and Problem-Solving. **CM: Cuntas Míosúil:** please tick when you have completed the focus of learning. **Learning Experiences:** C concrete activity; D digital activity; P activity based on printed materials, followed by lesson numbers.

Additional information for planning

Progression Continua	See '1st Class *Maths and Me* Progression Continua Overview' for a detailed breakdown of how all progression continua are covered.
Maths Language	See '1st Class *Maths and Me* Maths Language Overview', individual lesson plans and Unit 10 Maths Language Cards.
Equipment	See '1st Class *Maths and Me* Maths Equipment Overview' and individual lesson plans.
Inclusive Practices	• See Let's Strengthen and Let's Deepen suggestions throughout lesson plans. • See Unit 10 Let's Strengthen Suggestions for Teachers. (These address the Common Misconceptions and Difficulties listed below.) • See Unit 10 Let's Strengthen PCM. • See Unit 10 Let's Deepen PCM.
Integration	See individual lesson plans.

Background and rationale

- This unit is a one-week block of content located in February.
- This unit focuses primarily on attributes of length, including width and height. Therefore, it only addresses some of the learning experiences in the progression continua. By Measuring 3, all of the learning experiences in the progression continua pertaining to measuring will have been addressed, at least once.
- While the PMC 2023 does not specify when specific standard units should be introduced, *Maths and Me* incorporates a progression that reflects what has traditionally occurred in Irish classrooms:
  - JI: direct comparisons
  - SI: reviews JI and introduces indirect comparison, i.e. using units to measure
  - 1st Class: reviews SI and introduces measuring using standard units, i.e. metres
  - 2nd Class: reviews 1st Class and introduces measuring using centimetres.
- Using standard units for measuring is introduced in 1st Class and developed in 2nd Class. During 1st Class, it is important that the children begin to appreciate that without standard units it is difficult to communicate measurements effectively and to compare the measurements of two or more objects.
- As should be the practice with all estimation activities, the children will estimate one object at a time, then measure that object before estimating and measuring the next object (i.e. they should not do all the estimation and then do all the measuring). In this way, the children can refine their estimate each time, based on what they learned from the previous object.

The theme of this unit is **The School Garden**.

Common misconceptions and difficulties

- The children may fail to align the starting points when directly comparing the length of two objects or when laying a measuring tool alongside an object to measure it.
- They may fail to appreciate the need for accuracy or understand that when measuring using multiple non-standard units, the objects must be identical and not overlap or have gaps between them.
- They may not realise that it is most efficient to use short units for measuring small things, and long units for measuring big things (see Lesson 2).
- They may inaccurately use standard measuring tools. For example: If using a metre ruler which is slightly longer than a metre (i.e. where there is a blank section before 0 and after 100 on each end), the child may align the object to be measured with the end of the stick, and not with 0. Alternatively, some children may align the ruler at 1, probably because counting starts at one. While this will not greatly affect the accuracy of the results at this stage, it is important that the children are encouraged to measure accurately from the outset as good practice for the introduction of smaller units of measure (e.g. cm) in later classes.

The Unit 10 Let's Strengthen Suggestions for Teachers address the common misconceptions and difficulties listed above.

Mathematical models and representations

- Representations of classroom-based resources which could be used to measure, such as sticks, interlocking cubes and links
- Metre rulers
- Metre-long tape measure
- Number lines

Metre ruler

Teaching tip

The Number Line manipulative printable is available to support the unit. Click on the resources icon on the *Maths and Me* book cover on **edcolearning.ie**

Day 1, Lesson 1

Comparing and Ordering Lengths and Heights

Focus of learning (with Elements)

- Describes and discriminates between objects using appropriate comparative language (C)
- Compares and orders objects according to length by making direct comparisons (U&C)

Learning experiences

- (D) Digital activity: The School Garden
  MAM Routines: Notice & Wonder, with Think-Pair-Share; Reason & Respond
- (C) Concrete activity: Comparing and Ordering
  MAM Routine: Think-Pair-Share
- (P) Pupil's Book page 67: Comparing and Ordering Lengths and Heights

Equipment

- Children's own pencils and lunch boxes

Maths language

- long, short, tall, wide, narrow, is longer than, is shorter than, is taller than, is wider than, is narrower than, longest, shortest, tallest, widest

Warm-up

(D) Digital activity: The School Garden
MAM Routines: Notice & Wonder, with Think-Pair-Share

Display the poster and, using Think-Pair-Share, ask:

- What do you notice?
- What do you wonder?

Record the children's responses to both questions on the board. Allow the children the opportunity to respond to (agree/disagree with or query) others' responses, but do not confirm or reject any of the ideas. Note any 'wonderings' that could become the basis for a subsequent maths investigation.

Main event

(D) Digital activity: The School Garden
MAM Routine: Reason & Respond

Display the poster again and click to play or ask the following questions. Ask the children to give reasons for their answers. (Some of these questions may have already been answered in the warm-up.)

- What maths words can you use to describe objects or people in the picture?
- Which is the shortest tree?
- Which is the tallest tree?
- Which worm is the longest?
- Which worm is the shortest?
- Mia says she is taller than Lexi. What do you think?
- Is Dara shorter than Jay?
- Which is the widest flower bed?
- Which is the narrowest flower bed?
- Can you point to something that is narrower than the narrowest flower bed?

(C) Concrete activity: Comparing and Ordering
MAM Routine: Think-Pair-Share

Teaching tip

Be aware that some children may be sensitive to their height difference when compared to others. Allow these children to compare and order the heights of dolls, teddies or other available objects.

The children work in pairs. Ask each pair:

- Which of you, do you think, is shorter?
- How can you find out?
- Could we do this activity sitting down? Explain why.

Assessment Opportunity

Allow the children time to work together to come up with an answer and a self-selected strategy to justify their answer.

Share: Allow each pair to present their findings to the class. Discuss and evaluate the effectiveness of each strategy. Prompt each child to explain their height relationship to the other, i.e. 'I am taller/shorter than X.'

Repeat, putting two pairs together (or groups of three, depending on numbers).

- Which of you, do you think, is the shortest?
- Which of you, do you think, is the tallest?
- How can you find out?
- Why am I now using the words 'shortest' and 'tallest' instead of 'shorter' and 'taller'? (Explain that we only use 'taller/shorter' when comparing two, and 'shortest/tallest' when ordering three or more.)

Share: Allow each group to present their findings to the class. Discuss and evaluate the effectiveness of each strategy. Prompt each child to explain their height relationship to the other, i.e. 'I am taller/shorter than X.'

Teaching tip

The children record their findings using images in their Maths Journals and/or present their group's findings as a poster, e.g. drawing the group members, representing their actual heights relative to each other.

Repeat this activity using pencils. Each pair compares the length of their pencils. Then two pairs work together to order the pencils by length.

Repeat again, using lunch boxes. Each pair compares the width of their lunch boxes. Then two pairs work together to order the lunch boxes by width.

Do the children recognise that, for the comparisons and ordering to be fair, the objects must have the same starting point?

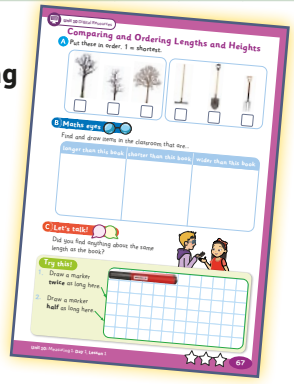
Let's strengthen

Children may need to be explicitly taught how to line up the objects so that they match on one end. They may need to see a demonstration on how to place the items on the table or floor when comparing height; and against a wall, the edge of a desk or a book when comparing length.

Let's deepen

Challenge the children to consider which parent is the tallest. How could we fairly establish this if the parents were not all available to come to school to be compared directly? Children may begin to appreciate the need to be able to measure the length (indirect comparison) for objects/people that cannot be compared directly.

P **Pupil's Book page 67: Comparing and Ordering Lengths and Heights**



Optional consolidation and extension possibilities

Integration Language, English: Language and vocabulary development using the theme of school, growth and/or spring. Language, Gaeilge: An Scoil, An Aimsir, An t-Earrach. Science: Plants and animals, environmental awareness and care. Geography: Human environments.

The concept of *length* can also be further developed in other subjects. PE: Athletics, lengths of races, throwing distances, etc. Music: Developing a sense of duration. SPHE: Growth and development.

Games Bank Play 'Tallest Tower', 'Longest Train' or 'Longest Snake'.

Review and Reflect Use the Prompt Questions Poster.

Display Set up a display for Length in the classroom. This could include examples of various tools for measuring length, as well as appropriate labels (see the Unit 10 Maths Language Cards). The children contribute samples of their own work/constructions from this unit and label them.

Let's Investigate Who has the longest name? Who has the shortest name (first name and/or surname)? How can we find out? How can we display our findings? If the children do not come up with their own suggestions, you could suggest that each child write their name on squared paper, putting one letter in each square. These can then be cut out and ordered vertically on a large sheet to create a display.

Day 2, Lesson 2

Measuring Length

Focus of learning (with Elements)

- Identifies the appropriate measurement instruments and units for a given situation (U&C)
- Collects and records measurement data in systematic ways (e.g. by using lists, tables) and compares results (C)

Learning experiences

- (D) Digital activity: Same But Different (3)
  ***MAM* Routines: Reason & Respond, with Think-Pair-Share**
- (D) Animation: Bed Lengths
  ***MAM* Routine: Three-Act Task**
- (P) Pupil's Book page 68: Measuring Length

Equipment

- Objects that could be used to measure longer objects, such as: bamboo gardening canes, long poster tubes, long toner boxes from a photocopier, PE equipment (e.g. hurdles, Unihoc sticks, obstacle ladders), large sheets of paper cut into strips, mop/brush handles
- PCM 44

Maths language

- measure

Teacher note: The children used smaller non-standard units (e.g. cubes, links) to measure smaller objects in *Maths and Me* for Senior Infants. The focus in this lesson is on applying those skills to measuring larger objects, in preparation for the introduction of the metre in the next lesson.

Warm-up

(D) **Digital activity: Same But Different (3)**
***MAM* Routines: Reason & Respond, with Think-Pair-Share**

Play the slideshow and, using Think-Pair-Share, ask the children to propose reasons for why the images are the same and why they are different.

Main event

(D) **Animation: Bed Lengths**
***MAM* Routine: Three-Act Task**

Play the animation, in which each flower bed is presented one by one.

Act 1: Notice & Wonder

Using Think-Pair-Share, ask the children:

- What do you notice?
- What do you wonder?

Record the children's responses to both questions on the board. Allow the children the opportunity to respond to (agree/disagree with or query) others' responses, but do not confirm or reject any of the ideas.

- (Reveal the focus question.) How long is each flower bed?

Act 2: Productive Struggle

Using Think-Pair-Share and Write-Hide-Show, click to play or say:

- Write an estimate for each bed that is too high on your MWB.
- Write an estimate that is too low.
- Write a reasonable estimate on your MWB.

The children work in pairs or small groups to answer the focus question. If necessary, prompt them by asking:

- Do you have enough information? What else do you need to know?

Once the children explain that they need to know the length of the object being used to measure the flower beds, play the next part of the animation and ask:

- What information do you have now?
- To get an answer, what needs to be done?
- What strategies can you use?

Distribute PCM 44: Bed Lengths to each group/pair. Encourage the children to consider how the lines of canes might be used to help measure the length of the flower beds.

Using Build it; Sketch it; Write it, the children choose their preferred way to mathematically model their strategies/solution(s).

Teaching tip

The children could record in their Maths Journals what they built, sketched or wrote above, using images and/or words.

Act 3: The Big Reveal

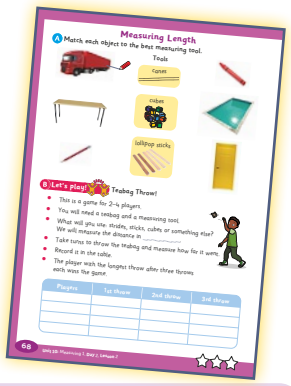
The children share and discuss their strategies, solutions and models. Click to play or ask:

- What answer did you get?
- How did you get that answer?
- Which is the longest flower bed?

Play the final part of the animation to reveal images of the flower beds with canes being laid along each. Click to play or ask:

- Is this the answer that you expected? Why or why not?
- What 'I wonder' questions did you answer?
- Do you have any new 'I wonder' questions?

P Pupil's Book page 68: Measuring Length



Let's strengthen

The children may need opportunities to revise how to measure smaller objects, before applying those skills to measuring larger objects (see the Unit 10 Let's Strengthen Suggestions for Teachers).

Let's deepen

Challenge the children to suggest how best to record the length of items that are not equal to whole-number answers. What if the measure is four and a bit? What can we do about the bit? Prompt the children to ascertain how much of the unit is being considered. Is it a big bit? A small bit? Almost a full piece? About a half? About a quarter? And how could this be justified?

Teaching tip

It is very important that the children begin to:

- Develop the idea of using short units for measuring small things, and long units for measuring big things
- Realise that the length of personal benchmarks, such as strides or arm spans, will differ from person to person.

Optional consolidation and extension possibilities

Games Bank Play 'Length Estimate'.

Headline Story Jay's stride is longer than Mia's stride.

Let's Investigate If you have a school garden or flower beds, you could conduct a similar investigation to the one in the Three-Act Task.

Story Read *Ants Rule: The Long and Short of It* by Bob Barner, or listen to a reading at: edco.ie/94yy

Story Read *Six Feet Long and Three Feet Wide* by Jeannie Billington.

Story Read *How Tall Was Milton?* by Lawrence F. Lowery.

Let's Strengthen The tasks on the Unit 10 Let's Strengthen PCM can be completed at any stage after this lesson.

Review and Reflect Use the Prompt Questions Poster.

Days 3 and 4, Lesson 3

Metres

Focus of learning (with Elements)

- Identifies the need for standard units to measure length (U&C)
- Recognises that units of measurement can simplify communication about measurement (C)

Learning experiences

- (D) Digital activity: Same But Different (4)
  ***MAM* Routines: Reason & Respond, with Think-Pair-Share**
- (D) Video: Metres
  ***MAM* Routines: Reason & Respond, with Write-Hide-Show**
- (C) Concrete activity: Taller Than a Metre?
  ***MAM* Routine: Reason & Respond**
- (C) Concrete activity: How Many in a Metre?
  ***MAM* Routines: Reason & Respond, with Write-Hide-Show**
- (P) Pupil's Book page 69: Metres

Equipment

- Metre rulers, metre-long measuring tapes, other items that are exactly 1 metre in length
- Multiple identical objects from the classroom (e.g. twisty colouring pencils, lollipop sticks, interlocking cubes, links, multiples of the same type of book or copy)

Maths language

- metre (m), rulers, measuring tape, about, length, height, width

Teaching tip

Ensure that there are sufficient metre-long measuring tools available for use. The most useful resources are any that are exactly 1 metre in length and that can be laid flat, and end to end, such as:

- Metre rulers and metre tapes where the total length is exactly 1 metre (i.e. no space at either end before 0 and after 100)
- Strips of paper, cardboard, plastic or wood that are exactly 1 metre in length.

See also the Let's Strengthen Suggestions for Teachers.

Warm-up

(D) **Digital activity: Same But Different (4)**
***MAM* Routines: Reason & Respond, with Think-Pair-Share**

Play the slideshow and, using Think-Pair-Share, ask the children to propose reasons for why the images are the same and why they are different.

Main event

(D) **Video: Metres *MAM* Routines: Reason & Respond, with Write-Hide-Show**

Before playing the video, ask the children to reflect on the previous lesson. Ask/say:

- How did Mia measure the flower beds?
- What if Mia used canes that were not all the same length? Would this be a good idea? Explain why.
- What other ways could this have been done?
- What if Mia used strides (demonstrate if necessary) to measure a different flower bed? Would this be a good idea? Explain why.
- What could be used instead to ensure that the results were fair and the same each time?

Play the video. Allow the children time to respond to the questions and to give reasons for their answers.

C Concrete activity: Taller Than a Metre?

***MAM* Routine: Reason & Respond**

After watching the video, ask the children to give reasons for their responses to the following question:

- The boy in the video was taller than a metre. Do you think you are taller than a metre or shorter than a metre?

The children use their MWBs to write 'T' or 'S' to indicate how they think they compare to a metre. From the top of the room, show the children a metre ruler (i.e. do not allow them to stand beside it yet). Ask:

- Do you want to change your answer? Explain why.

Distribute a metre ruler or tape to each group. Ask them to investigate to arrive at answers and to choose a way to display/record their answers. Afterwards, allow each group time to present their findings.

Let's deepen

Challenge the children to explain why standard units of measurement such as the metre are used, rather than strides, canes or other objects.

C Concrete activity: How Many in a Metre?

***MAM* Routines: Reason & Respond, with Write-Hide-Show**

You will need multiple identical objects in the classroom (e.g. twisty colouring pencils, lollipop sticks, interlocking cubes, links, same type of book or copy). Using lollipop sticks, ask:

- Is one lollipop stick longer or shorter than a metre?
- How can you prove it?
- How many lollipop sticks can we fit along a metre? Estimate.

Use Write-Hide-Show to collect estimates and record the most frequently occurring answers (or range of answers) on the board. Then allow the children to measure and count in small groups or pairs. Ask:

- What was the actual measure?

Repeat using other available resources. Collect estimates before measuring each time. Afterwards, ask/say:

- What did you notice?
- Were the answers different each time? Explain why.
- If the objects used were longer, did it take more or less of them to fit along the metre than when shorter objects were used?

Teaching tip

The children could record their findings in their Maths Journals, using images and/or words.

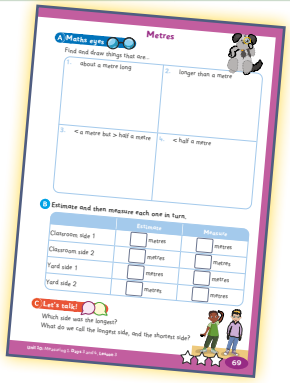
Let's deepen

Challenge the children to explain why the answers are less when longer objects are used.

If there are sufficient interlocking cubes, ask the children in groups to investigate how many connected interlocking cubes equal a metre. When they are to make their own 'metre ruler' they could use it to help complete the Pupil's Book page.

P Pupil's Book page 69: Metres

Encourage the children to work in small groups or pairs to complete this page.



Let's strengthen

Initially, many children will need to see actual reiterations of the same unit to appreciate how the total number equals the length. For example, laying down one metre ruler, marking the end point, and sliding it on may be too abstract for some children. They may need to see multiple metre sticks laid end to end, as opposed to laying down one.

Let's deepen

Challenge the children to suggest how they might measure length in metres with only two rulers/tapes and how they might measure length in metres with only one ruler/tape.

Assessment Opportunity

Optional consolidation and extension possibilities

Let's Investigate If you have a school garden or flower beds, you could conduct a similar investigation to that in the Three-Act Task.

Measuring Metres The children measure other items in metres as part of exploratory play. They could bring their metre measuring strip out to the yard and explore with it during their breaks.

Games Bank Play 'Tallest Tower', 'Longest Train' or 'Longest Snake'.

Review and Reflect Use the Prompt Questions Poster.

Day 5, Lesson 4

Review and Reflect

Focus of learning (with Elements)
• Reviews and reflects on learning (U&C)

Warm-up

Carry out a warm-up activity of your choice from one of the lessons in this unit.

Main event

Use this menu of activity ideas to choose how best to structure this last lesson of the unit to suit your needs and the needs of your class.

Let's talk!	Let's play!
Review and Reflect Poster: Use Think-Pair-Share alongside the prompt questions to review the unit. Use the photos and videos taken during the lessons to review and reflect.	Play 'Length Estimate', 'Tallest Tower', 'Longest Train' or 'Longest Snake' from the Games Bank. Play 'Teabag Throw!' again (see page 68 of the Pupil's Book). This could be developed into a STEM-themed Let's Investigate! activity: 'Does it make a difference if the teabag is wet or dry?'
Maths language	**Maths strategies and models**
Ask the children to explain the following terms (perhaps using examples or drawings on MWBs): length, height, width, long, short, tall, wide, narrow, is longer than, is shorter than, is taller than, is wider than, is narrower than, longest, shortest, tallest, widest, metre (m), rulers, measuring tape, less than (<), greater than (>). Use the Unit 10 Maths Language Cards to revise the key terms. For example: If the image and text are cut apart, can the children match them? Complete the My Maths Fact File on page 124 of the Pupil's Book.	Ask the children to give examples of the strategies they used in this unit, e.g. how to measure accurately, using the same size units, with no gaps or overlaps.

Progress Assessment Booklet	Maths Eyes
Complete Questions 41–42 on page 20. Alternatively, these can be left to do as part of a bigger review during the next review week.	Go for a walk through the school and/or local area and bring the metre measuring tools to measure items and distances. Alternatively, measure classroom items such as windows and windowsills, the whiteboard, tables, the distance from the toilet to a child's desk, etc.
Let's strengthen	**Let's deepen**
Identify children who might benefit from extra practice with some of the key concepts or skills in this unit. Use the Unit 10 Let's Strengthen PCM. Consult the Unit 10 Let's Strengthen Suggestions for Teachers.	Use the Unit 10 Let's Deepen PCM.

Notes