Revision Date: 24/05/2024

Curriculum Planning & Assessment Resource

Mathematics
Grade 3

Alberta Regional Professional Development Consortia

Dedicated to the provision of professional learning opportunities at the local, regional and provincial levels

Curriculum Planning & Assessment Resource
Mathematics
Grade 3 Measurement 1

About This Document

This Curriculum Planning & Assessment Resource is intended to be a collection of sample activities, assessments, and resources that teachers may wish to use as they develop their unit plans. This document is not intended to be a sequential list of activities. Rather, the intent is that teachers choose from this resource what is appropriate for their context, and sequence it in their planning.

The sample activities, assessments and resources included in this document have undergone an initial review to determine appropriateness and alignment to the curriculum. However, it is expected that teachers use their professional judgement in selecting activities, assessments and resources that are appropriate for their context.

While every attempt has been made to provide credit and receive permissions, some errors or omissions may have occurred. Please contact info@arpdc.ab.ca to report any error or omissions.

Table of Contents

Important Links

New Learn Alberta Progressions
- Competency Progressions
- Numeracy Progressions
- Literacy Progressions

Recorded Video:
- How to Read these Curriculum Planning & Assessment Resources

Planners and Concept Maps
- K-3 Math Planners
- 4-6 Math Planners (under development)
- Assessment Planners (under development)
- K-3 Math Action Verbs and 4-6 Math Verb Resources

Curriculum Progressions
- Skills and Procedures Progression K-3 (under development)
- Concept Progressions (under development)

Interactive Numbered Outcomes Document with Skills

Acknowledgements

Thank you to all the teachers, numeracy specialists, and technical expertise from Alberta school divisions and ARPDC who collaborated to develop, review, and revise these planning and assessment documents to support curriculum implementation.

Grade 3 - Measurement 1

Organizing Idea

Measurement: Attributes such as length, area, volume, and angle are quantified by measurement.

Guiding Question

In what ways can length be communicated?

Learning Outcome

3M1.1 Students determine length using standard units.

Summative Assessment(s) - Transfer *(In Progress)*

Summative assessments can include the following.

- *Understanding/making sense of a novel context from the real world using one or more concepts (eg. “How are place value and money related?).*
- *Understanding/making sense of a novel context using one or more understandings (eg.Students use money to model the conversion of base 10 values and relate them to base 10 block’).*
- *Being able to describe* why *(linking concepts) something is true, a result, or what might be an extension using learned concepts and understandings.*
- *Apply learning (create products; undertake projects; taking action such as creating a campaign) in a novel context or taking action using the understanding(s).*
- *Construct arguments by taking a position and verifying/proving it with known understandings.*

Summative Assessment(s)

[*understanding surface vs deep vs transfer*]

3M1 Summative (EN) **3M1 évaluation sommative (FR)**

Click to Jump!

KUSP 3M1.1	KUSP 3M1.2	KUSP 3M1.3

Literature Connections

KUSP 3M1.1

Prerequisite Knowledge

- Use of a ruler/metre stick
- Identify when/where students have seen standard and nonstandard units of measurement and how they help to measure

Student Language | Essential vocabulary & concepts

- **Measure:** to determine the size, amount, degree or something, using standard or non-standard units
- **Perimeter:** the sum of the lengths of the sides of a polygon
- **Metric system:** a system of measuring using the base-ten system; the basic unit is the metre for length
- **Metric Units:** prefixes show the relationship to the metre
    - dm-decimetre; cm-centimetre; mm-millimetre
- **Imperial system:** a system of measure that includes feet, inches, and yards
- **Centimetre:** a unit for measuring length that is about the width of an index finger
- **Metre:** a unit for measuring length that is about the length of one big step; 1 m is 100 cm
- **Length:** the measurement from end to end; how long something is

I Know Statements | Metacognition

- I know the metre is the basic unit of length in the metric system.
- I know there are 100 cm in 1 m.
- I know there are 10 dm in 1 m.
- I know there are 1000 mm in 1 m.
- I know the imperial lengths are measured in inches, feet, and yards.
- I know 1 ft is 12 in.
- I know 1 yd is 26 in.
- I know 1 yr is 3 ft.
- I know length doesn't change when it is broken into parts or rearranged.
- I know that a standard measuring tool shows iterations of a standard unit.

Pre-Assessments

Nelson Pre-Assessments 2 & 3: Finding Each Students Pathway

- **Grade 2**:
    - Measuring Length Using Standard Units - p. 43
- **Grade 3:**
    - Measuring length - p. 31
    - Measuring Distance Around - p. 32

***Leaps and Bounds* Pages will be referenced in the PreAssessments answer Key for follow up for emerging learners.**

I Can Statements | Skills

- I can relate millimetres and centimetres to metres.
- I can relate inches to feet and yards.
- I can choose an appropriate unit of measure.
- I can measure length using centimetres, metres and millimetres.
- I can measure straight and curved lines using a measuring tool.
- I can identify units of measurement in the imperial system (yards, feet, inches).
- I can approximate a measurement in metric or imperial

Learning Recovery

- Use non-standard units to measure length.
- Use non-standard units to estimate length.

Enhancement

- Demonstrate an understanding of measurement by relating metres to kilometres.
- Measure and record length, width and height of a 3-D object.

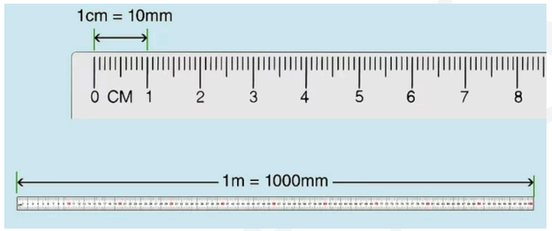
<table>
<tr><th>Learning Outcome</th><th colspan="5">3M1.1 Students determine length using standard units.</th></tr>
<tr><th>Knowledge</th><th>Understanding</th><th>Skills & Procedures</th><th>Achievement Indicators</th><th>Illustrative Examples</th><th>Assessments
(Explainer)</th></tr>
<tr>
<td>The basic unit of length in the metric system is the metre.

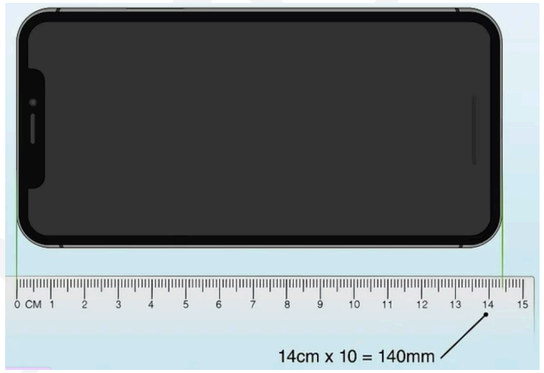
Metric units are named using prefixes that indicate the relationship to the basic unit, including
● milli: one thousand millimetres in one metre
● centi: one hundred centimetres in one metre
● deci: ten decimetres in one metre

Metric units are abbreviated for convenience, including
● m: metre
● dm:decimetre
● cm:centimetre

Standard measuring tools show iterations of a standard unit from an origin.

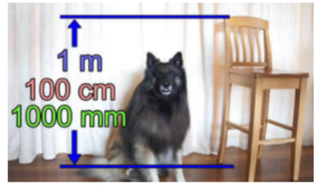
Units of length in the imperial system include inch, foot, and yard, related in these ways:
● 12 inches in one foot
● 36 inches in one yard
● 3 feet in one yard</td>
<td>Length is measured in standard units according to the metric system and the imperial system.

Length can be expressed in various units according to context and desired precision.</td>
<td>Relate millimetres, centimetres, and metres.</td>
<td>Demonstrate an understanding of measuring length by modelling and describing the relationship between mm, cm and m.</td>
<td> 



Wiki How

And because a centimeter is 10 millimeters:

1 meter = 1000 millimeters
 

The back of this kitchen chair is 1 meter

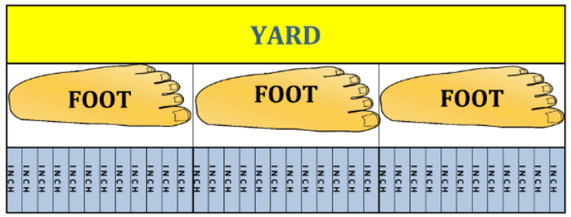
Image from Math is fun</td>
<td>3M1.1a - Relating Metric Measure - Surface
Note: measurement can be done first in the chart and justification can be combined with the skill “Justify the choice of millimetres, centimetres, or metres to measure various lengths.” found below.

Expressing Length in various Units - Surface Level - K5 Learning

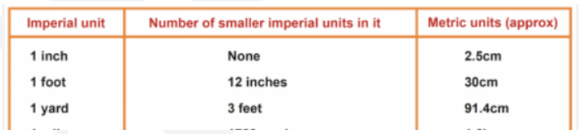
Worksheet 1 K5 Learning
Metric Units - a K5 Learning

Worksheet 2 K5 Learning
Metric Units - b K5 Learning</td>
</tr>
<tr>
<td>Relate inches to feet and yards.</td>
<td>Demonstrate an understanding of measuring length, modelling and describing the relationship</td>
<td>1 foot (ft) = 12 inches (in)
1 yard (yd) = 3 feet (ft)</td>
<td>3M1.1b - Relating Imperial Measure - Surface</td>
</tr>
</table>

<table>
<tr>
<td rowspan="2">Approximate conversions between metric and imperial are useful in real-world situations, including
• 2 ½ centimetres are approximately 1 inch
• 1 metre is approximately 3 feet
• 30 centimetres are approximately 1 foot
• 1 metre is approximately 1 yard</td>
<td rowspan="2"></td>
<td rowspan="2"></td>
<td>between inches, feet and yards.</td>
<td>An inch is about the same length as a paperclip.
There are 12 inches in a foot.
A foot is the length of a chromebook.
There are 3 feet in a yard.
A yard is about the same height as a table.

YARDS, FEET AND INCHES
 

1 yard = 3 feet = 36 inches 1 foot = 12 inches

Math Salamanders.com</td>
<td></td>
</tr>
<tr>
<td>Identify comparable units of measure between the metric and imperial systems (cm-inch, yard-metre, kilometre-miles).</td>
<td> 

TheSchoolRun

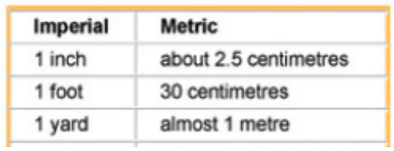
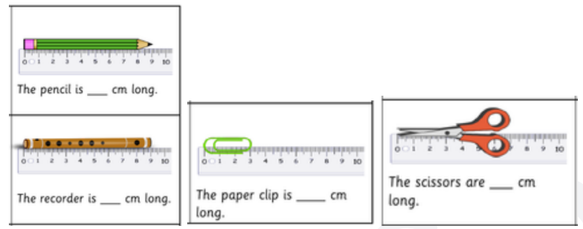
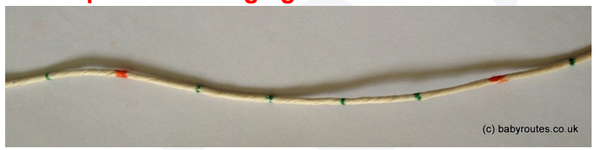
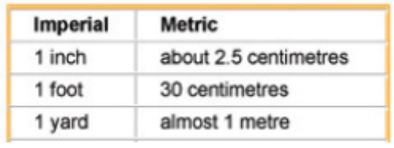
 

Image from Skillswise, BBC</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Justify the choice of millimetres, centimetres, or metres to measure various lengths.</td>
<td>Explain why millimetres, centimetres or metres is the best unit to use to measure an object.</td>
<td>Would you measure the distance from the classroom to the gym in centimetres? In millimetres? Why or why not?

Measuring distances in small units would take a long time and it is easy to forget the number and get confused. Instead, we use a metre to measure distances like that. A metre is 100 centimetres.</td>
<td>Can be combined with Relating Metric Measure above</td>
</tr>
</table>

		Measure lengths of straight lines and curves, with millimetres, centimetres, or metres.	Measure and record length of straight lines and curves in mm, cm and m using a measuring tool.	 Images from tes.com **Measure a piece of string against a metre ruler and cut it.**  Image from babyroutes.co.uk **Lay the string along the curved length you want to measure. What do you notice?** A trundle wheel can also be used to measure curved items.  Trundle Wheel image from Sona Edons catalogue	3M1.1d - Which Snake is the Longest? - **Deep** Source 3M1.1d - Snakes #1 & #2 - **Deep** 3M1.1d - Snakes #3 & #4 - **Deep**
		Recognize length expressed in metric or imperial units.	**Identify metric or imperial units used to measure an object.**	**Identify which measurements are imperial and which are metric.** 1. **230 mm__Metric__** 2. **66 m___Metric___** 3. **17 yard__Imperial___** 4. **56 cm__Metric___** 5. **4 inches____Imperial___** 6. **18 feet___Imperial____**	Card Sort for Imperial/Metric - Length Handout - **Surface** Card Sort for Imperial/Metric - Length - **Surface**
		Approximate a measurement in inches, feet, or yards using centimetres or metres.	**Transfer an imperial unit of measure into an approximate metric unit of measure.**	 | Imperial	Metric | |---|---| | 1 inch | about 2.5 centimetres | | 1 foot | 30 centimetres | | 1 yard | almost 1 metre | Image from Skillswise, BBC	3M1.1f - Transferring Measurements - **Deep** Reading an Imperial Ruler - **K5 Learning** **Note: students must have a working knowledge of Unit Fractions completed.**

Resources

Mathology

[ARPDC Math Little Books for Alberta Curriculum]
[Mathology Free Resources on New Learn Alberta]

Mathology Little Books
Mathology Little Book: Measurements About YOU!
Mathology Little Book: The Bunny Challenge

Mathology Activities
Mathology Grade 3: Measurement Unit 1, Length and Perimeter: Activities 2, 3 (measuring length around 2-D shapes and 3-D objects), 4-6

Math UP

- **AB_Length**
  - Lesson 1: The Metre
  - Lesson 2: The Centimetre
  - Lesson 3: The Millimetre
  - Lesson 4: Choosing Measurement Units
  - Lesson 5: Estimating and Comparing Lengths
  - Lesson 6: Exploring Other Measurement Systems
- **AB_Distance Around**
  - Lesson 1: Estimating and Measuring Perimeter
  - Lesson 2: One Perimeter, Multiple Shapes
  - Lesson 3: Perimeters of Special Shapes

Existing Texts

Math Focus 5 - Chapter 8 p. 254-263
Math Makes Sense 5 - Unit 4

NCETM (teacher guides and resources - non to match this unit)

Core Knowledge - Measuring Length Student Book

Core Knowledge - Measuring Length Teachers Guide

Websites/Other

Gizmos New Learn Alberta(Teacher Login Required)

Fido's Flower Bed (Perimeter and Area)
Measuring Trees
Cannonball Clowns

For access to additional resources login to Gizmos account. Request an account alberta@explorelearning.com

Indigenous Lesson Plans and Resources

Coming Soon

Problem Solving

Tasks - Graham Fletcher
Tasks - MS CASTILLOSMATH

Click to Jump!

KUSP 3M1.1	KUSP 3M1.2	KUSP 3M1.3

Literature Connections

KUSP 3M1.2

Prerequisite Knowledge

- Identify when/where students have seen units of measurement and discuss why they are important (i.e., scales, maps, measuring cups, etc.).
- Review places where and how the imperial system is used.
- Knowledge of how to correctly use a ruler.

Student Language | Essential vocabulary & concepts

- **Measure:** to determine the size, amount, degree or something, using standard or non-standard units
- **Perimeter:** the sum of the lengths of the sides of a polygon
- **Polygon:** a closed shape with three or more sides

I Know Statements | Metacognition

- I know that to find the perimeter of a polygon, I add all the lengths of the sides.
- I know that length remains the same when decomposed or rearranged.

Pre-Assessments

Nelson Pre-Assessments 2 & 3: Finding Each Students Pathway

- **Grade 2**:
  - Measuring Length Using Standard Units - p. 43
- **Grade 3:**
  - Measuring length - p. 31
  - Measuring Distance Around - p. 32

***Leaps and Bounds* Pages will be referenced in the PreAssessments answer Key for follow up for emerging learners.**

I Can Statements | Skills

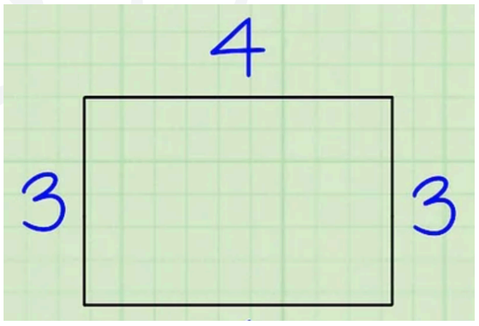
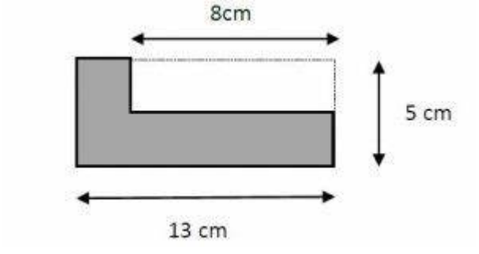
- I can measure the length of the side of a polygon.
- I can determine the perimeter of a polygon.
- I can determine the length of an unknown side given the perimeter of a polygon.

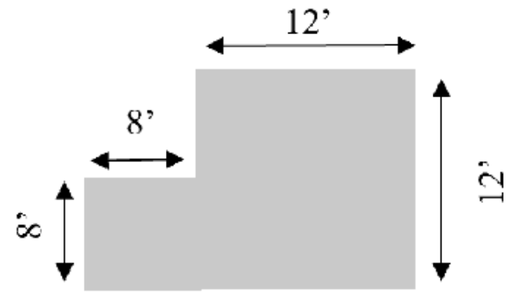
Learning Recovery

-

Enhancement

-

Learning Outcome	3M1.2 Students determine length using standard units.				
Knowledge	**Understanding**	**Skills & Procedures**	**Achievement Indicators**	**Illustrated Examples**	**Assessments ([Explainer])**
The perimeter of a polygon is the sum of the lengths of its sides.	Length remains the same when decomposed or rearranged.	Determine the perimeter of polygons.	Measure and record the perimeter of a polygon using cm and m.	**Measure the perimeter using a ruler or meter stick.** **Top of your desk, notebook, carpet…**  Sources: "SchoolHouse Boomerang Student Desk" by McDowell-Craig is licensed under CC BY 2.0 Notebook: Business Insider; Carpet: E-bay	3M1.2a - Changing Shape - Deep 3M1.2a - Finding Perimeter - Surface 3M1.2a - Finding Perimeter by Measuring with Grids - Deep
			Construct different shapes for a given perimeter.	**Use Cuisenaire rods to construct a polygon with a given number of rods. Create another polygon using the same rods and measure again.**	Perimeters of Irregular Shapes - K5 Learning 3M1.2a - Performance Assessment - Mini Transfer
		Determine the length of an unknown side given the perimeter of a polygon.	Calculate the length of an unknown side of a polygon when the perimeter is given.	 **X**  	

				 **What would the length of the unknown side(s) be?** *(images ARPDC created)*	

Resources

Mathology

[ARPDC Math Little Books for Alberta Curriculum]
[Mathology Free Resources on New Learn Alberta]

Mathology Little Books
Mathology Little Book: Measurements about YOU!
Mathology Little Book: The Bunny Challenge

Math UP

- **AB_Length**
  - **Lesson 1: The Metre**
  - **Lesson 2: The Centimetre**
  - **Lesson 3: The Millimetre**
  - **Lesson 4: Choosing Measurement Units**
  - **Lesson 5: Estimating and Comparing Lengths**
  - **Lesson 6: Exploring Other Measurement Systems**
- **AB_Distance Around**
  - **Lesson 1: Estimating and Measuring Perimeter**
  - **Lesson 2: One Perimeter, Multiple Shapes**
  - **Lesson 3: Perimeters of Special Shapes**

Existing Texts:

Math Focus 3 - Chapter 5
Math Focus 5 - Chapter 8
Math Makes Sense 3 - Unit 4
Math Makes Sense 5 - Unit 4

NCETM (teacher guides and resources)

Core Knowledge - Measuring Length Student Book

Core Knowledge - Measuring Length Teachers Guide

Websites/Other

Gizmos

New Learn Alberta (Teacher Login Required)
Fido's Flower Bed (Perimeter and Area)
Perimeters and Areas of Similar Figures
Polygon Angle Sum

For access to additional resources login to Gizmos account. Request an account
alberta@explorelearning.com

Indigenous Lesson Plans and Resources

Infusing Indigenous KNowledge into Curriculum
Main Website
Grade 3 Math
Explore measurement using examples such as:
• Measure using arm's length/span compared to height
• Measure with the thumb
- li pus (to measure an inch)
• Use foot paces to measure net setting
• Measure tipi parts
• Plan activities that Integrate measurement, geometry and patterns so students can build and manipulate shapes and use measuring tools:
• Model tipi making
• Small moccasins
• Bracelets
• Quilts
• Integrate with Science unit on Testing and Building Materials.
Explore how measurements were made in the past: • Feet
• Arms
• Fingers
• Rope/string
• Use examples such as building a tipi to discuss how dimensions were estimated.

Problem Solving

Coming Soon
Tasks - Graham Fletcher
Tasks - MS CASTILLOSMATH

Click to Jump!

KUSP 3M1.1	KUSP 3M1.2	KUSP 3M1.3

Literature Connections

KUSP 3M1.3

Assumable Curriculum / Prerequisite Knowledge / Vocabulary

- Use non-standard units to measure length.

Student Language | Essential vocabulary & concepts

- **Measure:** to determine the size, amount, degree or something, using standard or non-standard units
- **Referent:** an object that can be used to help estimate a measurement
- **Benchmark:** a known length to which another length can be compared
- **Estimate:** to find a measure that is close to the actual measure; close to an amount, but not exact
- **Centimetre:** a unit for measuring length that is about the width of an index finger
- **Metre:** a unit for measuring length that is about the length of one big step; 1 m is 100 cm

I Know Statements | Metacognition

- I know a benchmark is a known length such as the distance from a doorknob to the floor can be used to estimate a length in metres or the width of my little finger can be used to estimate a length in centimetres.
- I know a length can be estimated when an exact measure is not needed.

Pre-Assessments

Nelson Pre-Assessments 2 & 3: Finding Each Students Pathway

- **Grade 2**:
  - Measuring Length Using Standard Units - p. 43
- **Grade 3:**
  - Measuring length - p. 31
  - Measuring Distance Around - p. 32

***Leaps and Bounds* Pages will be referenced in the PreAssessments answer Key for follow up for emerging learners.**

I Can Statements | Skills

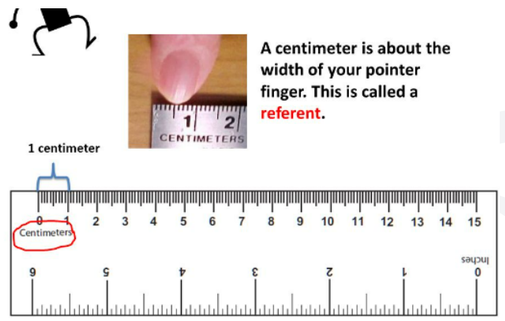
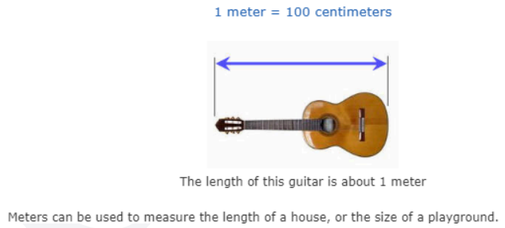
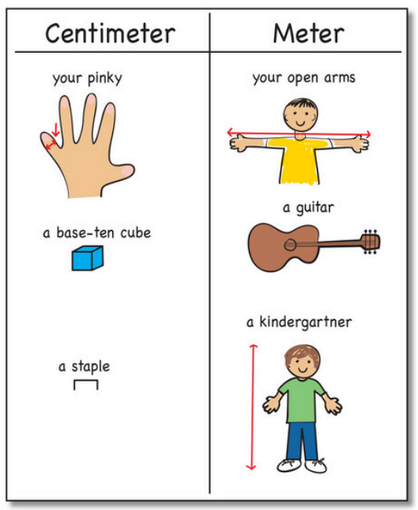
- I can identify referents for a centimetre and a metre.
- I can estimate length by comparing it to a benchmark.
- I can estimate visually by using my referents for cm and m.

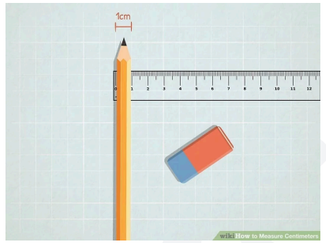
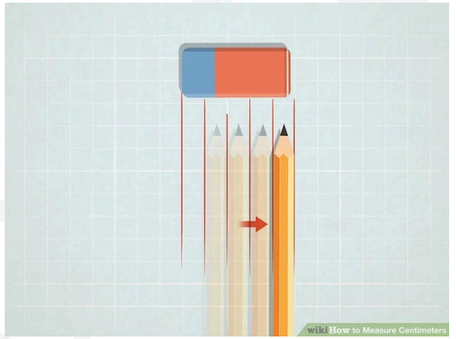
Learning Recovery

- Review math terms such as “estimate.”
- Review the difference between “standard” and “non-standard” units.

Enhancement

- Estimate and measure objects in the environment.
- Identify referents for a kilometre.
- Estimate distance in kilometres.
- Discuss situations in which estimation would be appropriate/ beneficial.

Learning Outcome	3M1.3 Students determine length using standard units.				
Knowledge	**Understanding**	**Skills & Procedures**	**Achievement Indicators**	**Illustrated Examples**	**Assessments (Explainer)**
A benchmark is a known length to which another length can be compared. Length can be estimated using a personal or familiar referent.	Length can be estimated when less accuracy is required.	Identify referents for a centimetre and a metre.	Select and justify referents for the centimetre and metre.	 Source: Measuring to the Nearest Centimeter (0:18)  Source: Slideshare - Lesson 2.2 Measuring Lengths  Source: The Mailbox.com	**3M1.3a - Finding and Using a Referent - Deep** **3M1.3a and 1.3b - Measurement Game - Deep** Source: Gov't of Manitoba

		Estimate length by comparing to a benchmark.	Demonstrate an understanding of centimetre and metre by estimating the length of a given object.	**Use familiar objects of varying lengths, including the perimeter of an object.**	
		Estimate length by visualising the iteration of a referent for a centimetre or metre.	Visualize the iteration of length using a referent for a centimetre or metre.	**Determine a referent**  **Visualize the iteration**  [Wiki How]	[3M1.3b and 1.3c - Line Segment Estimation Game] - **Deep**

Resources

Mathology

[ARPDC Math Little Books for Alberta Curriculum]
[Mathology Free Resources on New Learn Alberta]

Mathology Little Books
Mathology Little Book: [Measurements About YOU!]

Mathology Activities
Mathology Grade 3: Measurement Unit 1, Length and Perimeter: Activities 1, 7

Math UP

AB_Length
1 - Measuring Length Using Non-standard Units
2 - The Centimetre
3 - Estimating Length Using Standard Units
4 - Measuring Length Using Standard Units

Existing Texts

Math Focus 3 - Chapter 5
Math Focus 5 - Chapter 8
Math Makes Sense 3 - Unit 4
Math Makes Sense 5 - Unit 4

Websites/Other

How to Measure Centimetres Wiki How

Indigenous Lesson Plans and Resources

Infusing Indigenous KNowledge into Curriculum
Main Website
Grade 3 Math
Explore measurement using examples such as:
• Measure using arm's length/span compared to height
• Measure with the thumb
- li pus (to measure an inch)
• Use foot paces to measure net setting
• Measure tipi parts
• Plan activities that Integrate measurement, geometry and patterns so students can build and manipulate shapes and use measuring tools:
• Model tipi making
• Small moccasins
• Bracelets
• Quilts
• Integrate with Science unit on Testing and Building Materials.
Explore how measurements were made in the past: • Feet
• Arms
• Fingers
• Rope/string
• Use examples such as building a tipi to discuss how dimensions were estimated.

Small Number and the Big Tree, from Math Catcher, Simon Fraser University

NCETM (teacher guides and resources)

Core Knowledge - Measuring Length Student Book

Core Knowledge - Measuring Length Teachers Guide

Gizmos

New Learn Alberta (Teacher Login Required)
Cannonball Clowns

For access to additional resources login to Gizmos account. Request an account
alberta@explorelearning.com

Problem Solving

Tasks - Graham Fletcher
Tasks - MS CASTILLOSMATH

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KUSP 3M1.1	KUSP 3M1.2	KUSP 3M1.3

Literature Connections

Literature Connections

Title	Author	Format (Picture Book, Novel, Non-fiction, other)	Publisher	ISBN	Notes
How Long or How Wide?: A Measuring Guide	Brian Cleary	Picture Book	Millbrook Press; Illustrated edition (Aug. 1 2009)	1580138446, 978-1580138444	Measurement using the imperial system
How Big is a Foot?	Rolf Myller	Picture Book	Yearling; Illustrated edition (July 1 1991)	0440404959, 978-0440404958	Exploring the measurement of feet
Math Matters:Chickens On The Move	Pollack Pam/Belviso Meg	Picture Book	Lerner Publishing (Feb. 23 2007)	1575651130, 978-1575651132	Perimeter
Racing Around	Stuart J Murphy	Picture Book	HarperCollins; Illustrated edition (Dec 18 2001)	0064462447, 978-0064462440	Perimeter
Mouse Math:If the Shoe Fits: Nonstandard Units of Measurement	Jennifer Dussling	Picture Book	Lerner Publishing Group (Sept. 1 2015)	1575658011, 978-1575658018	Non standard units