

Bachelor of Education (Elementary)

Unit Plan Template

Unit Title: Making Math Fun: Number of 8 Time 4 Weeks
 Measurement Lessons

Name: Emma-Lea Marrelli Subject(s): Math Grade(s): 1-3

Rationale

This lesson teaches students some of the basics to measuring, including how to measure and estimate objects using non-standard units and with standard metric units, including centimeters and metres. Through various activities, students learn that doing math can be fun! These lessons help students develop skills for how to use measuring tools correctly, how to make an educated estimate about the size of an object using the correct standard unit of measurement, and to become familiar with the idea that mathematical language is used in everyday life on a regular basis; that math is all around us - even in our classroom! Students also learn how to work with others, learn with others, and check their work.

Overview:

This unit starts off with a read aloud of the story *How Long or How Wide: A Measuring Guide* by Brian P. Clearly to set the tone for the following lessons on measuring the length, width, or height of objects. First, students will review what the length, width, and height of an object is, and then put their understanding to practice by measuring various items within the classroom using non-standard units. Next, students learn what it means to make an estimated guess and how to do that with non-standard units by playing with playdough and looking at various sized snakes, and then measuring them to see how close their guesses were. Following this lesson, students use yoga blocks (or same-sized books) to explore various heights of students within the classroom, and how they can represent their results in a visual chart. In the next lesson, students learn how to use a ruler and practice measuring lengths in cm. To further their understanding of cm, students go on a class scavenger hunt to measure the length of various items in cm. Once they've found and measured all of the listed items, they cut out and sort their items into two different sections - one for items that were under 20cm long and one for items that were over 20cm long. Next, further their estimation and measuring skills by building "ice cream" stacks with a partner, estimating the height of their partner's ice cream stacks, and then measuring the stacks to find the actual height. After learning about cm, students are introduced to a metre stick and being able to determine whether an object is about a cm long, or about a metre long. Finally, as a fun way to wrap up the unit, students put all of their learned mathematical understandings and vocabulary about measurement by playing a BINGO game where they will need to listen to questions and cover the correct answer on their BINGO sheet.

CORE COMPETENCIES

Communication	Thinking	Personal & Social
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<ul style="list-style-type: none"> ● Students communicate on several occasions throughout the unit as a means of working respectfully with their peers to achieve a common goal. ● Students have opportunities to communicate their learning through oral sharing, through worksheets, and self-assessment. ● Students develop their mathematical communication skills by using math terminology throughout the unit. 	<p>Critical thinking</p> <ul style="list-style-type: none"> ● Students reflect on existing math ideas to help further develop their mathematical skills on measurement throughout the unit. ● Students make estimated guesses based on prior knowledge and their own reasoning. <p>Creative thinking</p> <ul style="list-style-type: none"> ● Students use imaginative thinking to picture how these skills could be used in the real world. 	<p>Personal awareness and responsibility</p> <ul style="list-style-type: none"> ● Students participate in a self-assessment of their own understanding of the mathematical concept at hand, being honest with themselves and allowing the teacher to provide extra support if needed and overall benefiting the student. ● Students are encouraged to check their work and correct their mistakes, knowing that it's ok to make mistakes, we just need to identify and fix them. <p>Positive personal and cultural identity</p> <ul style="list-style-type: none"> ● Students are welcomed into the classroom for who they are, and are supported by their peers during pair work on numerous occasions throughout the unit, challenging them to contribute to their classroom community as a positive figure. <p>Social responsibility</p> <ul style="list-style-type: none"> ● Students are expected to work with, communicate with, and solve problems with their peers with respect and kindness throughout the unit. ● Students are held to the standard of using measurement tools and classroom supplies during activities in a respectful manner, helping create a fun and safe learning environment for themselves and their peers.
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BIG IDEA

Math 1
Objects and shapes have attributes that can be described, measured, and compared.
Math 2
Objects and shapes have attributes that can be described, measured, and compared.
Math 3
Standard units are used to describe, measure, and compare attributes of objects' shapes.

LEARNING STANDARDS

Curricular Competencies	Content
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Math G1 CC - Develop and use multiple strategies to engage in problem solving.
Math G2 CC - Develop and use multiple strategies to engage in problem solving.
Math G3 CC - Develop and use multiple strategies to engage in problem solving.

Math G1 CC - Visualize to explore mathematical concepts.
Math G2 CC - Visualize to explore mathematical concepts.
Math G3 CC - Visualize to explore mathematical concepts.

Math G1 CC - Use mathematical vocabulary and language to contribute to mathematical discussions.
Math G2 CC - Use mathematical vocabulary and language to contribute to mathematical discussions.
Math G3 CC - Use mathematical vocabulary and language to contribute to mathematical discussions

Math G1 CC - Estimate reasonably.
Math G2 CC - Estimate reasonably; estimating by comparing to something familiar.
Math G3 CC - Estimate reasonably.

Math G1 CC - Communicate mathematical thinking in many ways.
Math G2 CC - Communicate mathematical thinking in many ways.
Math G3 CC - Communicate mathematical thinking in many ways.

Math G1 CC - Develop, demonstrate, and apply mathematical understanding through play, inquiry, and problem solving.
Math G2 CC - Develop, demonstrate, and apply mathematical understanding through play, inquiry, and problem solving.
Math G3 CC - Develop, demonstrate, and apply mathematical understanding through play, inquiry, and problem solving.

Math G1 C - Direct measurement: Non-uniform units are not consistent in size (e.g., children's hands, pencils); uniform units are consistent in size (e.g., interlocking cubes, standard paper clips). Understanding the importance of using a baseline for direct comparison in linear measurement.

Math G2 C - Direct linear measurement: measuring and recording length.
Math G3 C - Measurement, using standard units, linear measurements, using standard units (e.g., centimetre, metre, kilometre).

Math G1 C - Concrete graphs: creating, describing, and comparing concrete graphs.
Math G2 C - Pictorial representation: collecting data, creating a concrete graph, and representing the graph, using a pictorial representation through grids, stamps, drawings.
Math G3 C - One-to-one correspondence: collecting data, creating a graph, and describing, comparing, and discussing the results

Math G1 C - Number concepts to 20.
Math G2 C - Number concepts to 100.

Math G1 CC - Use reasoning to explore and make connections.
Math G2 CC - Use reasoning to explore and make connections.
Math G3 CC - Use reasoning to explore and make connections.

Prerequisite Concepts and Skills:

- Students should have number recognition of basic numbers - at least 1 through 12.
- Students should be able to read and write simple single words and some short sentences.
- Students should have a basic understanding of shapes (i.e., square, rectangle, circle).
- Students should be able to respectfully work in pairs and small groups.
- Students should have some subtraction skills.

Teacher Preparation Required:

Lesson #	Teacher Preparation Required
Lesson 1	<ul style="list-style-type: none"> ● Have the hook book ready. ● Have “Length, Width, Height” posters ready prior to class. ● Have 1 rectangular object per every pair of students ready. ● Print copies of the measuring practice worksheet prior to class. ● Have non-standard unit items ready to use (i.e., paperclips, pompoms, etc.)
Lesson 2	<ul style="list-style-type: none"> ● Ensure to have enough Play-Dough prior to class (a handful each pair of students (**googly eyes optional)). ● Have enough for all students. ● Print copies of Snake Estimation & Measure Data Worksheet prior to class. ● Print copies of Sizing Snakes Worksheet prior to class. ● Have self-assessments cut out and ready for use prior to class.
Lesson 3	<ul style="list-style-type: none"> ● Gather enough yoga blocks or same-sized books (20 minimum) prior to class. ● Print copies of Recording Sheet prior to class. ● Print copies Group Heights Chart worksheet prior to class. ● Pre-cut construction paper pieces (3-4 different colours) and divide into different bags.
Lesson 4	<ul style="list-style-type: none"> ● Have a copy of the Measuring Tips Poster ready for use. ● Have enough rulers ready for use ● Print and cut-out “Length”, “Width”, “Height” labels prior to class. ● Print copies of the “Image Measuring Worksheets” prior to class. ● Print copies of the “Cm Line Measuring Worksheet” prior to class.
Lesson 5	<ul style="list-style-type: none"> ● Have two objects of different lengths for demo ready to show students. ● Print copies “Scavenger Hunt” worksheet prior to class. ● Print copies of “Comparing Lengths” worksheet prior to class. ● Have coloured construction paper out and ready for use. ● Have several various coloured pipe cleaners cut to different sizes.
Lesson 6	<ul style="list-style-type: none"> ● Ensure computer/speakers/screen are working prior to class. ● Have estimating prompts ready to use prior to class. ● Print copies of the Pair Estimating/Measuring Ice Cream Stacks worksheet prior to class. ● Print and cut out Ice cream cups cut-outs prior to class. ● Print copies of Estimating & Measure Worksheet prior to class. ● If possible, have bags of pompoms ready for each pair prior to class.

Lesson 7	<ul style="list-style-type: none"> ● Have a metre stick on hand. ● Make the “About a Metre” and “About a Centimeter” poster prior to class. ● Cut out the “About a Metre” and “About a Centimeter” column labels prior to class. ● Cut out the About a Metre/Centimeter items prior to class. ● Make copies of the Centimeters or metres Sorting Worksheet prior to class.
Lesson 8	<ul style="list-style-type: none"> ● Print copies of the BINGO sheet activity (5 different versions!!) prior to class. ● Pre-design & print BINGO questions (include the answer for quick checking ● Cut the BINGO questions and put them into a bag/bin to pull questions from prior to class.

Cross-Curricular Connections:

Although this unit is heavily focused on mathematics, students are also using skills that will help them in the future with ADST and science. Students are also developing ELA skills by learning new vocabulary words, recognizing text, and seeing how some English Language words are homonyms (i.e., a foot).

Indigenous Connections / First Peoples Principles of Learning:

Although this unit is primarily a mathematics unit, there are numerous components within the unit that require students to work together with their peers. One of the First Peoples Principles of Learning is that learning ultimately supports the well-being of the self, the family, the community, the land, the spirits, and the ancestors. I truly believe that this support comes from a strong foundation of communication and collaboration. This unit encourages students to work and learn together with respect and kindness, ultimately supporting the well-being of themselves and their community.

Universal Design for Learning (UDL):

MULTIPLE MEANS OF REPRESENTATION – I provide for multiple means of representation in this unit in the following ways:

- Lessons include both oral and visual explanations for students.
- Lessons within the unit include a variety of engaging representation tools, including the use of videos, songs, books, colourful images and worksheets with supporting and easy to follow written vocabulary words.
- Stories are read aloud orally, while students can also see the illustration and writing of the stories.

MULTIPLE MEANS OF ACTION AND EXPRESSION – I provide multiple means of action and expression in this unit in the following ways:

- Students have several opportunities for communicating and working together orally with their classmates.
- Students are often provided the chance to share their work or understandings at the end of class by orally sharing to the teacher and their peers.
- In most of the lessons, students are working hands-on with materials and can show their learning through participation in activities and writing out their mathematical findings.
- Students are provided with opportunities for self-assessment to express how they feel they are doing with the material.

MULTIPLE MEANS OF ENGAGEMENT – I provide multiple means of engagement in this unit in the following ways:

- Lessons include a variety of engaging, creative, and fun activities, including pair work, visuals, building and exploring, and games.
- The unit includes different activities and hooks, making each lesson unique while still keeping it tied to the previous lesson.
- Inclusion of read alouds, video, and song to help explore mathematical concepts in different formats.

Differentiate Instruction (DI):

- Students who are at lower reading levels than others will be encouraged to work with a partner for many activities to help work through the math sheets, but there is purposefully not a lot of reading in this unit to support those learners.
- Encourage students to share their ideas and work together with their table partners when appropriate to spark ideas and shared understanding.
- If there is a CEA in the classroom at the time of the activity, make sure the instructions are explained well to the student and the CEA so everyone is on the same page, and understands what the expectations are for the activity.
- If a student misses any of the days, encourage them to start on the activity at hand. Help guide them in the steps they need, or pair them with a student who is capable and willing to help.
- Students who struggle with writing could use a pencil gripper to encourage independent writing.
- Students are encouraged to work at a respectful volume when working in groups so that students who may be overstimulated by noise can work without feeling overwhelmed, or students may use noise-cancelling headphones.
- Students who struggle to keep their hands to themselves during read alouds may use a squish ball or alternative seating.

Overview of Lessons:

***If there is space in the classroom, set up a Word Wall on measurement to use throughout.**

Lesson 1




Name & Time:	How Long or How Wide? Intro to Length, Width, & Height (35 mins) - Small Group
Learning Standards: Curricular Competencies	<p>Math G1 CC - Develop and use multiple strategies to engage in problem solving.</p> <p>Math G2 CC - Develop and use multiple strategies to engage in problem solving.</p> <p>Math G3 CC - Develop and use multiple strategies to engage in problem solving.</p> <p>Math G1 CC - Visualize to explore mathematical concepts.</p> <p>Math G2 CC - Visualize to explore mathematical concepts.</p> <p>Math G3 CC - Visualize to explore mathematical concepts.</p> <p>Math G1 CC - Use mathematical vocabulary and language to contribute to mathematical discussions.</p> <p>Math G2 CC - Use mathematical vocabulary and language to contribute to mathematical discussions.</p> <p>Math G3 CC - Use mathematical vocabulary and language to contribute to mathematical discussions.</p>
Learning Standards: Content	<p>Math G1 C - Direct measurement: Non-uniform units are not consistent in size (e.g., children’s hands, pencils); uniform units are consistent in size (e.g., interlocking cubes, standard paper clips). Understanding the importance of using a baseline for direct comparison in linear measurement.</p> <p>Math G2 C - Direct linear measurement: measuring and recording length.</p> <p>Math G3 C - Measurement, using standard units, linear measurements, using standard units (e.g., centimetre, metre, kilometre).</p>
Instructional Objectives	Student will be able to measure the length of an object by using non-standard units to count how many of the units it is long.
Assessment:	What: Measuring Activity Sheets How: Teacher Mark
Teaching Strategies:	Read aloud, discussion, explanation/demonstration, student measuring practice/worksheet.
Materials:	<ul style="list-style-type: none"> ● <i>How Long or How Wide?: A Measuring Guide</i> by Brian P. Cleary ● Length/Width/Height Pictures/Explanations ● 3D rectangular object - 1 per every pair of students ● Measuring Practice Worksheet - 1 x each student ● Various items in the class that are listed on the worksheet ● Non-standard unit items (i.e., paper clips, toothpicks, pompoms).

	<ul style="list-style-type: none"> • Pencils
Lesson Activities:	
Introduction/Hook:	<p>Read Aloud: <i>How Long or How Wide?: A Measuring Guide</i> by Brian P. Cleary</p> <p>Discussion: What was the story about? Can you think of a time where you may need to measure something? Has anyone measured anything before? What did you use?</p>
Body:	<p>Introducing Length/Width/Height: Using posters, show students the difference between length, width, and height.</p> <p>Show me the Length: Have students turn to a partner and provide each partner with a rectangular object that stays on the table or floor. Tell them they have 1 min. with their partner to try and determine where they would measure to determine the LENGTH of their object. After 1 min., ask the pairs to share their answer. Have students switch their item with another pair, and have them do the same thing. Ask students where they would measure to determine the LENGTH of their object.</p> <p>Non-Standard Unit Practice: Explain to students that one way we can measure length, is to use items of the SAME size, and count how many items it will take to cover the space. Provide each student with the measuring practice sheet, review how you would measure and record the first item's length (starting at a baseline - one end of the object). Students must use at least 3 different non-standard unit items at some point (i.e., paper clips, toothpicks, pompoms).</p>
Closure:	Put Worksheets Away: Ask students to please put their worksheets in their Math duotang.

Lesson 2

Name & Time:	Sizing Snakes: Estimating and Measuring Length (40 mins)
Learning Standards: Curricular Competencies	<p>Math G1 CC - Estimate reasonably. Math G2 CC - Estimate reasonably; estimating by comparing to something familiar. Math G3 CC - Estimate reasonably.</p> <p>Math G1 CC - Visualize to explore mathematical concepts. Math G2 CC - Visualize to explore mathematical concepts. Math G3 CC - Visualize to explore mathematical concepts.</p> <p>Math G1 CC - Use mathematical vocabulary and language to contribute to mathematical discussions.</p>

	<p>Math G2 CC - Use mathematical vocabulary and language to contribute to mathematical discussions.</p> <p>Math G3 CC - Use mathematical vocabulary and language to contribute to mathematical discussions</p>
Learning Standards: Content	<p>Math G1 C - Direct measurement: Non-uniform units are not consistent in size (e.g., children's hands, pencils); uniform units are consistent in size (e.g., interlocking cubes, standard paper clips). Understanding the importance of using a baseline for direct comparison in linear measurement.</p> <p>Math G2 C - Direct linear measurement: measuring and recording length.</p> <p>Math G3 C - Measurement, using standard units, linear measurements, using standard units (e.g., centimetre, metre, kilometre).</p>
Instructional Objectives	<p>Student will be able to estimate and measure the length of an object by looking at it and guessing how many non-standard units it is, and then measuring it out and recording the actual size.</p>
Assessment:	<p>What: Estimation and Measuring Data Sheet</p> <p>How: Complete/Incomplete</p>
Teaching Strategies:	<p>Question, teacher instruction, partner play, worksheet, hands-on measuring, student review, self-assessment.</p>
Materials:	<ul style="list-style-type: none"> ● Play-dough - handful each pair of students (**Googly eyes optional) ● Non-standard unit items (paperclips, pompoms, pennies, etc.) ● Snake Estimation & Measure Data Worksheet - 1 x each student ● Sizing Snakes Worksheet - 1 x per each student ● Self Assessment cut-out ● Pencils
Lesson Activities:	
Introduction/Hook:	<p>What Does it Mean to Estimate?: Ask students if they know what it means to estimate? Discuss that estimating is trying to make a close guess about the value of something. So for our purposes, we are going to be estimating how many inches we think certain things are today. Before we can try and estimate, we need to learn how we can make a good estimate about something.</p>
Body:	<p>How to Estimate: Review with students what they need to do to be able to make an estimated guess about something using the following steps:</p> <ol style="list-style-type: none"> 1. Think about the unit of measurement (paperclips, pompoms, etc.)... 2. Think about the size... 3. Predict... 4. Measure the actual length... <p>Once you've gone over the steps, ask students to paraphrase the steps in which they need to follow to make an estimation.</p> <p>Partner Play: Pair up students and provide each pair with some playdough (googly eyes optional) and ask one person in the pair to stand up. Tell the</p>

	<p>person who is standing up that they will be the snake-maker first, and then their partner will go after them (ask them to sit down). While demonstrating to the class, explain to students that the snake-maker will form a slithering snake out of playdough. Once done, their partner needs to estimate the length of their partner's snake in a non-standard unit of their choice and write it down, then measure it out and see how close you were.</p> <p>Sizing Snakes: Next, provide each student with an estimation/actual lengths data sheet, along with a sheet including various sizes of snakes. Students will work individually to estimate, record, and measure the size of each snake on their data sheet. <i>**For students who need an extra challenge, challenge them to figure out the different amount between their estimated guess and the actual size.</i></p>
<p>Closure:</p>	<p>Check Your Work: As they finish up, ask them to share their actual size measurements with their partner to see if they got the same measurement. If they didn't, encourage them to go and re-measure to see where they may have gone wrong or if they will stick with their answer.</p> <p>Self-Assessment - How Do You Feel? Once students are done, have them put their Sizing Snakes worksheet in their math duotang and then come grab a self-assessment sheet. Ask them to write their name and circle or colour in the face that they think matches how they feel about estimating and have them hand it in to you. This will help you to know whether or not students are ready to move onto measuring height.</p> <p style="text-align: center;">Name: _____</p> <div style="display: flex; justify-content: center; gap: 20px;"> <div style="text-align: center;">  I understand! </div> <div style="text-align: center;">  I understand a little! </div> <div style="text-align: center;">  I don't understand! </div> </div>

Lesson 3

<p>Name & Time:</p>	<p>How Many Blocks High?: Measuring Height (40 mins) - Small Groups (2 groups of 3 at a time)</p>
<p>Learning Standards: Curricular Competencies</p>	<p>Math G1 CC - Visualize to explore mathematical concepts. Math G2 CC - Visualize to explore mathematical concepts. Math G3 CC - Visualize to explore mathematical concepts.</p> <p>Math G1 CC - Use mathematical vocabulary and language to contribute to mathematical discussions. Math G2 CC - Use mathematical vocabulary and language to contribute to mathematical discussions. Math G3 CC - Use mathematical vocabulary and language to contribute to mathematical discussions</p>

Learning Standards: Content	<p>Math G1 C - Direct measurement: Non-uniform units are not consistent in size (e.g., children’s hands, pencils); uniform units are consistent in size (e.g., interlocking cubes, standard paper clips). Understanding the importance of using a baseline for direct comparison in linear measurement.</p> <p>Math G2 C - Direct linear measurement: measuring and recording length.</p> <p>Math G3 C - Measurement, using standard units, linear measurements, using standard units (e.g., centimetre, metre, kilometre).</p> <p>Math G1 C - Concrete graphs: creating, describing, and comparing concrete graphs.</p> <p>Math G2 C - Pictorial representation: collecting data, creating a concrete graph, and representing the graph, using a pictorial representation through grids, stamps, drawings.</p> <p>Math G3 C - One-to-one correspondence: collecting data, creating a graph, and describing, comparing, and discussing the results</p>
Instructional Objectives	<p>Student will be able to measure, record, and chart different heights by counting blocks, using a recording sheet, and representing the number of blocks using pieces of construction paper in a chart.</p>
Assessment:	<p>What: Small-group height chart How: Teacher mark</p>
Teaching Strategies:	<p>Review/questions, teacher instruction, small group work: measuring height activity, charting data, chart review.</p>
Materials:	<ul style="list-style-type: none"> ● “Height” poster for review. ● Yoga foam blocks - about 20 (could do this with books too, but they must be the same size) ● Pencils ● Recording Sheet ● Group chart worksheet ● Construction paper ● Glue sticks
Lesson Activities:	
Introduction/Hook:	<p>Review Height: Ask students who can remind you what height is? Students should respond with “how tall something is”. Ask students if they are all the same height? How do they know they are or aren’t? Students should respond with something like “I’m shorter than them” or “He’s taller than me”, etc. Explain to students that today we are going to be finding out our height using foam blocks, and comparing our heights with our classmates.</p>
Body:	<p>Height Activity: Explain to students that they will be doing this in groups of 3 and they will be helping each other measure one another’s height using foam blocks. Explain that this can be done standing up or laying down - one person will be getting measured, 1 person will be stacking the blocks to see how many blocks tall their group member is, and one person will record how many blocks tall the stacker counts out. They will all take turns doing this. Tell students that when they have completed this, they can come see you for the next part.</p>

	<p>Height Comparison Chart: Once all 3 group members have been measured, students in the group will be given one height comparison chart and they will each receive a handful of cutout construction paper squares - each a different colour. Explain to students that each of their construction paper pieces represents one foam block that you were measured with and they are going to write their name in one of the “name” spots on the sheet and glue the same number of construction paper pieces in a stack above their name to show how many blocks they were measured. Check for clarification by saying, “so if I was 5 blocks tall, how many construction pieces would I glue on top of each other?” (Students should respond with 5). Students will continue to work on these in their groups.</p>
Closure:	<p>Chart Review: Ask students what our chart shows us? (students should respond with “each of our heights in blocks” or “how many blocks tall we each are compared to one another”).</p>

Lesson 4

Name & Time:	All About Centimetres: Measuring Lengths (45 mins) - Small Groups
Learning Standards: Curricular Competencies	<p>Math G1 CC - Use mathematical vocabulary and language to contribute to mathematical discussions. Math G2 CC - Use mathematical vocabulary and language to contribute to mathematical discussions. Math G3 CC - Use mathematical vocabulary and language to contribute to mathematical discussions</p> <p>Math G1 CC - Visualize to explore mathematical concepts. Math G2 CC - Visualize to explore mathematical concepts. Math G3 CC - Visualize to explore mathematical concepts.</p>
Learning Standards: Content	<p>Math G1 C - Number concepts to 20. Math G2 C - Number concepts to 100.</p> <p>Math G1 C - Direct measurement. Math G2 C - Direct linear measurement: measuring and recording length. Math G3 C - Measurement, using standard units, linear measurements, using standard units (e.g., centimetre, metre, kilometre).</p>
Instructional Objectives	Student will be able to measure the length of an object in centimeters by using a ruler to measure items on a worksheet.
Assessment:	<p>What: Student Image Measuring Worksheet How: Teacher Mark</p>
Teaching Strategies:	Exploring tools, teacher demonstration, how-to discussion, visual labeling, student measuring worksheets.

Materials:	<ul style="list-style-type: none"> ● Measuring Tips Poster ● Rulers - 1 x each student ● Chart paper or whiteboard/pen ● Length, Width, Height label - 1 label for each word with sticky tack or tape ● Image Measuring Worksheet - 1 x each student ● Cm Line Measuring Worksheet - 1 x each student ● Pencil crayons
Lesson Activities:	
Introduction/Hook:	<p>Introduce Centimeters on the Ruler: Have students grab a ruler and return to the carpet. Ask students what they think the smaller tick lines are? Discuss that these are called centimeters, and that each tick represents another centimeter. Explain that many things are measured by using centimeters, and today we are going to learn and practice how to do that!</p>
Body:	<p>Ruler Demonstration: Demonstrate to students how you would measure using the centimeters side of your ruler. Next, ask students to show you on their ruler where 1 cm is. Then, ask them where 5 cm is to check for understanding.</p> <p>How to Properly Measure: Gather students at the carpet and review the 3 steps of measuring using the Measuring Tips poster:</p> <ol style="list-style-type: none"> 1. Use the correct side (centimeters) 2. Lining up the object with the end of the ruler on 0. 3. Determine where the object stops and look at the nearest number to find the nearest centimeter. <p>Review Length Width Height: Explain to students that today we are going to be using our ruler to measure the LENGTH of an object in centimeters. Before we do that, let's review what length is. Ask students if anyone can tell you what the length of something is? (student should say how long something is - if they don't remind them). Have a 3D image drawn on chart paper or the whiteboard with arrows representing the length, width, and height of the object. Have 3 labels with sticky tack on them, one reading "width", one "length", and one "height". Ask for 3 volunteers to come and place the label on the correct spot on the image. Point to the length, and confirm that today we will be measuring different lengths in cm.</p> <p>Student Image Measuring: Provide each student with their measuring lengths images worksheets (3 each), and explain that they are to use their ruler to measure each of the image lengths in cm and to write their answer inside the images box.</p> <p>Measuring out Cm Lines Worksheet: If students finish the first activity, explain the second activity to them. Provide students with their "Measuring Cm Lines Worksheet" where they will look at how many cm each row on the sheet is asking them to draw, and a different coloured pencil crayon to draw out the length of each line using their ruler.</p>

Closure:	<p>Check Understanding: Tell students that you are thinking of one of the images they had to measure on their first sheets. Provide the length of the image and ask students if anyone can tell you what image you are thinking of!</p> <p>Put Worksheets Away: Ask students to please put their worksheets in their Math duotang.</p>
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Lesson 5

Name & Time:	Measure and Compare: Comparing Lengths in Cm (45 mins) - Small Groups
Learning Standards: Curricular Competencies	<p>Math G1 CC - Visualize to explore mathematical concepts. Math G2 CC - Visualize to explore mathematical concepts. Math G3 CC - Visualize to explore mathematical concepts.</p> <p>Math G1 CC - Communicate mathematical thinking in many ways. Math G2 CC - Communicate mathematical thinking in many ways. Math G3 CC - Communicate mathematical thinking in many ways.</p>
Learning Standards: Content	<p>Math G2 C - Number concepts to 20. Math G2 C - Number concepts to 100.</p> <p>Math G1 C - Direct measurement. Math G2 C - Direct linear measurement: measuring and recording length. Math G3 C - Measurement, using standard units, linear measurements, using standard units (e.g., centimetre, metre, kilometre).</p> <p><i>**Math G2 C - Addition and subtraction to 100.</i></p>
Instructional Objectives	Student will be able to compare the lengths of different sized objects by measuring various items in centimeters and sorting them between longer or shorter than 20 centimeters.
Assessment:	<p>What: Length Sorting Activity How: Teacher Mark</p>
Teaching Strategies:	Demonstration/class discussion, scavenger hunt/measuring activity, sorting, comparing lengths worksheet, worksheet review.
Materials:	<ul style="list-style-type: none"> ● Two objects of different lengths (for demo) ● “Scavenger Hunt” worksheet - 1 x each student ● Coloured construction paper - 1 x each student ● Rulers - 1 x each student ● Scissor - 1 x each student ● Glue sticks - 1 x each student ● Pencils ● <i>**Various coloured pipe cleaners cut to different sizes</i> ● <i>***“Comparing Lengths” worksheet - 1 x each student</i>

	<ul style="list-style-type: none"> ● **Singular Montessori beads
Lesson Activities:	
Introduction/Hook:	<p>Which is longer?: Gather students on the carpet and hold two different items. Ask students which of the items is longer? It will be obvious, but ask them how they know? Ask students if they can think of a word that we can use when looking at the differences between two different things? (COMPARE!) Sample the language: “Object A is LONGER than object B” and “Object B object is SHORTER than Object A. Then ask students, if I wanted to know for sure that Object A is longer than Object B, what would I need to do? (MEASURE!)</p>
Body:	<p>Classroom Scavenger Hunt: Longer or Shorter Than 20cm: Tell students that today they are to go on a scavenger hunt in the classroom to find all the items on their list, and measure them. Encourage students to work with a partner if they want to, but to make sure both partners are participating - everyone needs to be measuring and recording.</p> <p>Length Sorting: Once they are done measuring out and writing out all of their items’ lengths on their sheet, they will come grab a piece of coloured construction paper. They will then cut out all the sections on their worksheet and sort the items into two columns on their paper - one for SHORTER than 20cm inches and one for LONGER than 20cm.</p> <p>**For students who finish the first task quickly - Pipe Cleaner Activity: <i>Explain to students that next they are going to be comparing the length of various pipe cleaners. Provide these students with a “Comparing Lengths” worksheet, where they will take 2 pipe cleaners and measure both of them using their ruler and writing each length down. Next, they will compare the difference of the two by subtracting one length from the other - students can use Montessori beads to represent 1cm per bead.</i></p> <p>Clean Up - Ask students to please throw out their scraps and clean up their table space, and return to their seats when they’re done.</p>
Closure:	<p>Worksheet Review - Review the “Scavenger Hunt” sorting activity with students.</p> <p>Put Worksheets Away: Ask students to please put their worksheets in their Math duotang.</p>

Lesson 6

Name & Time:	Centimeters, Cones, and Cream: Height in Centimetres (45 mins) - Whole Class (or just remove hook brain break)
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Learning Standards: Curricular Competencies	<p>Math G1 CC - Estimate reasonably. Math G2 CC - Estimate reasonably. Math G3 CC - Estimate reasonably.</p> <p>Math G1 CC - Develop, demonstrate, and apply mathematical understanding through play, inquiry, and problem solving. Math G2 CC - Develop, demonstrate, and apply mathematical understanding through play, inquiry, and problem solving. Math G3 CC - Develop, demonstrate, and apply mathematical understanding through play, inquiry, and problem solving.</p> <p>Math G1 CC - Visualize to explore mathematical concepts. Math G2 CC - Visualize to explore mathematical concepts. Math G3 CC - Visualize to explore mathematical concepts.</p>
Learning Standards: Content	<p>Math G1 C - Number concepts to 20. Math G2 C - Number concepts to 100. Math G3 C - Number concepts to 1000.</p> <p>Math G1 C - Direct measurement. Math G2 C - Direct linear measurement: measuring and recording length. Math G3 C - Measurement, using standard units, linear measurements, using standard units (e.g., centimetre, metre, kilometre).</p> <p><i>**Math G3 C - One-step addition and subtraction equations. (Only for students who get through the first activity easily and need further challenge).</i></p>
Instructional Objectives	<p>Student will be able to estimate and measure the height of an object in centimeters.</p>
Assessment:	<p>What: Pair Estimating/Measuring Ice Cream Stacks worksheet How: Complete/Incomplete</p>
Teaching Strategies:	<p>Ice cream talk, brain break dance, review, pair activity and worksheet, class comparison.</p>
Materials:	<ul style="list-style-type: none"> ● Double Scoop Dance - https://www.youtube.com/watch?v=aElpC4e2aBY ● Computer/projector/screen/speakers ● Estimating prompts ● Pair Estimating/Measuring Ice Cream Stacks worksheet - 1 x each pair of students. ● Ice cream cups cut-out - 1 x each pair of students. ● Pompoms - a big handful for each pair of students. ● Rulers - 1 per student ● Pencils ● <i>**Estimating & Measure Worksheet - 1 x each student</i>
Lesson Activities:	

Introduction/Hook:	<p>Favourite Ice Cream: Gather students at the carpet and ask each student what their favourite ice cream flavour is. Then ask students to show you with their fingers the number 1 if they like 1 scoop or show you a 2 if they like a double scoop!</p> <p>Double Scoop Brain Break: Tell students that today we are going to use ice cream scoop heights to practice estimating and measuring, but before we do.. we need a little body break! Ask students to stand up and dance or sing along to the Double Scoop Dance-a-Long video: https://www.youtube.com/watch?v=aEIpC4e2aBY (3 mins)</p>
Body:	<p>Review Estimating: Review with students what they need to do to be able to make an estimated guess about something using the following steps:</p> <ol style="list-style-type: none"> 1. Think about the unit of measurement (cm)... 2. Think about the size... 3. Predict... 4. Measure the actual length... <p>Once you've gone over the steps, ask students to paraphrase the steps in which they need to follow to make an estimation</p> <p>Quickly Review Height: Before introducing the activity, tell students that today we are going to be estimating and measuring the HEIGHT of ice cream cones that we are going to make. Ask students that if you're measuring height, which direction are you measuring - side to side or top to bottom? (students will hopefully respond with top to bottom!)</p> <p>Pair Estimating/Measuring Ice Cream Stacks: Have students get into a pair with someone they haven't worked with during our measurement unit yet. Have one person in the pair come and grab 1 ice cream cup cut-out and 1 worksheets and the other pair to come grab a big handful or baggie full of pompoms and return to their work space. Have students write BOTH of their names on the top of the worksheet. Explain to students that their partner will build an ice cream stack using the pompoms, and their partner will estimate how many cm the stack's HEIGHT is and write it down on their sheet. Then, they will use their ruler to measure the stack and write down the actual height of the stack. Students will take turns doing this - each building a stack 3 times, and each estimating/measuring their partner's stack 3 times.</p> <p><i>**Estimating & Measure Worksheet: If students get through their pair work quickly, they can come and individually grab a pre-stacked ice cream estimating and measuring sheet where they will do the same thing but on their own and using the worksheet stacks, rather than the pompom stacks.</i></p>
Closure:	<p>Who Had the Biggest Ice Cream Stack?: Ask students to meet up with their partner again and look at their Pair Ice Cream Stacks worksheet and determine who made the tallest ice cream stack based off of the cm.</p>

Lesson 7

Name & Time:	All About metres (35 mins) - Small Groups
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Learning Standards: Curricular Competencies	<p>Math G1 CC - Estimate reasonably. Math G2 CC - Estimate reasonably. Math G3 CC - Estimate reasonably.</p> <p>Math G1 CC - Use mathematical vocabulary and language to contribute to mathematical discussions. Math G2 CC - Use mathematical vocabulary and language to contribute to mathematical discussions. Math G3 CC - Use mathematical vocabulary and language to contribute to mathematical discussions.</p> <p>Math G1 CC - Visualize to explore mathematical concepts. Math G2 CC - Visualize to explore mathematical concepts. Math G3 CC - Visualize to explore mathematical concepts.</p>
Learning Standards: Content	<p>Math G1 C - Number concepts to 20. Math G2 C - Number concepts to 100.</p> <p>Math G1 C - Direct measurement. Math G2 C - Direct linear measurement: measuring and recording length. Math G3 C - Measurement, using standard units, linear measurements, using standard units (e.g., centimetre, metre, kilometre).</p>
Instructional Objectives	<p>Student will be able to determine the appropriate metric to use when measuring different objects by looking at various pictures of objects and sorting them into cm or metres.</p>
Assessment:	<p>What: Student Sorting Activity How: Teacher Mark</p>
Teaching Strategies:	<p>Item Discussion, examples/student thinking, activity explanation, student sorting activity, review.</p>
Materials:	<ul style="list-style-type: none"> ● Metre stick ● Poster paper ● “About a Metre” and “About a Centimeter” column labels cut out ● About a Metre/Centimeter items cut out ● Sticky tack ● Centimeters or Metres Sorting Worksheet - 1 x each student ● Construction paper - 1 x each student ● Gluesticks - 1 x each student ● Scissors - 1 x each student
Lesson Activities:	
Introduction/Hook:	<p>Metre Stick: Gather students on the carpet and show them a metre stick. Ask students if anyone knows what this is called? Explain to students that it is a metre stick. Discuss how we have been talking about centimetres and there are a certain number of centimeters in a metre. Ask students if anyone has a guess</p>

	<p>about how many centimeters are in a metre stick. 100! Show students how there are 100 cm ticks on the metre stick, making up 1 metre.</p> <p>Take a Look Around: If you look around the room, is there anything you can see that might be about a metre in length, height, or width?</p>
Body:	<p>About a Centimeter or Metre?: Using chart paper, have one column for items “About a metre” and one column for “About a Centimeter”. Ask students to think about the following items you show them, and have them respond with whether they think the item would be “about a centimeter” or “about a metre”. Sticky tack or tape each item under the correct column.</p> <p>Centimeters/Metres Sorting Sheet: Have students return to their workspace and provide each student with a Metres or Centimeters worksheet. Instruct students to grab a piece of coloured construction paper, a glue stick, and scissors. Tell students to cut out the items from their worksheet and glue the “Metres” at top of one side of their construction paper and the “Centimeters” on the other side of the paper. Next, students are to sort the 12 items by gluing them under “Metres” if they think we would measure the item using metres or under “Centimeters” if they think we would measure the item using centimeters. Remind students that if they are unsure of what an item from their sheet is, they can ask a partner or ask for help from you to sound out the words.</p>
Closure:	<p>Check our Work: Go over the metres and centimeters columns with the students.</p>

Lesson 8

Name & Time:	Measurement Bingo (40 mins) - Whole class
Learning Standards: Curricular Competencies	<p>Math G1 CC - Use reasoning to explore and make connections. Math G2 CC - Use reasoning to explore and make connections. Math G3 CC - Use reasoning to explore and make connections.</p> <p>Math G1 CC - Use mathematical vocabulary and language to contribute to mathematical discussions. Math G2 CC - Use mathematical vocabulary and language to contribute to mathematical discussions. Math G3 CC - Use mathematical vocabulary and language to contribute to mathematical discussions.</p> <p>Math G1 CC - Develop, demonstrate, and apply mathematical understanding through play, inquiry, and problem solving. Math G2 CC - Develop, demonstrate, and apply mathematical understanding through play, inquiry, and problem solving. Math G3 CC - Develop, demonstrate, and apply mathematical understanding through play, inquiry, and problem solving.</p>

Learning Standards: Content	Math G1 C - Direct measurement. Math G2 C - Direct linear measurement: measuring and recording length. Math G3 C - Measurement, using standard units, linear measurements, using standard units (e.g., centimetre, metre, kilometre).
Instructional Objectives	Student will be able to identify answers to basic measurement questions by playing a game of bingo.
Assessment:	What: Student Participation How: Teacher Observation
Teaching Strategies:	Brainstorm web, teacher explanation, class game, game review.
Materials:	<ul style="list-style-type: none"> ● Chart paper ● Coloured Markers (for teacher use) ● BINGO sheet activity (5 different versions!!) ● Bingo game chips or bingo dabbers ● Pre-designed BINGO questions (include the answer for quick checking) ● Bag/bin to pull questions from
Lesson Activities:	
Introduction/Hook:	<p>Brainstorm Web: Gather students at the carpet, and using chart paper draw a brainstorm web with the words “Measurement Unit” inside the cloud. Explain to students that today we are coming to an end of our math measurement unit. Ask students to think of anything related to math or measurement that we’ve talked or learned about during our unit and raise their hand if they’d like to share. As students share, add their ideas to the brainstorm web using fun-coloured markers. (i.e., length, width, height, rulers, cm, metre sticks, metres, shorter, longer, estimate, about, actual size, compare, subtract, etc.).</p> <p>Think about the Web: Explain to students that we are going to play a fun game of BINGO to wrap up our unit. So think about all of the things we just mentioned that we have talked about and learned about during our measurement unit to help answer the bingo questions correctly.</p>
Body:	<p>Game Explanation: Have students grab a BINGO sheet and a handful of game chips and return to their seats (you will need 4-5 different organizations for the BINGO sheets). Ask students if anyone can tell the class how to play BINGO. Explain to students that they will be listening to several questions or clues, and it’s their job to put a game chip over the correct answer to the question, so they’re going to have to listen REALLY well. Let them know it’s okay if they don’t know the answer to a question, they can skip and listen to the next question. Explain to students that their goal is to get TWO lines that can go up and down, side to side, or across the sheet. Ask students if they have any questions.</p> <p>BINGO Time: Pull pre-made questions from a bag or bin, reading them aloud to the students slowly and clearly, e-read the question to ensure all students</p>

	<p>have had a chance to hear and think about the answer to the question. Put aside the questions you have asked, as you will use them to check students' game boards after. Go through until a student has two straight lines. If they do, ask them to read out the spaces that they have covered to ensure they have the correct answers based on the questions you asked. <i>**You could give out prizes for the first 3 to get two lines (i.e., a fun new ruler that they get to keep), but Montessori doesn't give students prizes.</i> Encourage students who have their two lines to keep playing anyways to see if they can cover their whole sheet.</p>
Closure:	Wrap Up: Once all the questions have been asked, review the questions and answers with students and thank them for their participation in the unit.

Resources:

Books:

- *How Long or How Wide?: A Measuring Guide* by Brian P. Cleary (lesson 1)

Videos/Online Resources:

- Ice Cream Dance-a-Long - <https://www.youtube.com/watch?v=aEIpC4e2aBY> (lesson 6)

Worksheets:

- "Measuring Practice" Worksheet - 1 x each student (lesson 1)
- "Snake Estimation & Measure" Data Worksheet - 1 x each student (lesson 2)
- "Sizing Snakes" Worksheet - 1 x per each student (lesson 2)
- Self-Assessment Cut-Out - 1 x each student (lesson 2)
- Recording Sheet - 1 x each group of students (lesson 3)
- Group Heights Chart worksheet - 1 x each group of students (lesson 3)
- Image Measuring Worksheet - 1 x each student (lesson 4)
- Cm Line Measuring Worksheet - 1 x each student (lesson 4)
- "Scavenger Hunt" Worksheet - 1 x each student (lesson 5)
- "Comparing Lengths" Worksheet - 1 x each student (lesson 5)
- Pair Estimating/Measuring Ice Cream Stacks worksheet (lesson 6)
- Ice cream cups cut-out - 1 x each pair of students (lesson 6)
- Estimating & Measure Worksheet (lesson 6)
- "About a Metre" and "About a Centimeter" column labels (lesson 7)
- Centimeters or Metres Sorting Worksheet - 1 x each student (lesson 7)
- BINGO Sheet Activity (5 different versions!!) (lesson 8)
- Pre-Designed BINGO questions (include the answer for quick checking) (lesson 8)

Teacher Resource:

- Length/Width/Height Posters/Explanations (lesson 1)
- Estimating prompts (lesson 2 & 6)
- Centimeter & metres Teacher Video to watch BEFORE teaching the lesson <https://www.youtube.com/watch?v=k4KaIYRDc0k> (before teaching the unit)

Extensions to Unit:

This unit could be extended by having students move into working on measuring area or measuring weight and introducing new standard metric units.