

Linear Measurement/Mass Unit Plan

Math

Ms. Dery

Spring 2022

Duration

January 10-February 1

Rationale

The goal of this unit is to have students practice measuring different lengths, heights and masses. There are ample opportunities for students to practice hands-on with different objects and non-standard units for measurement. The recording and order of their results produce higher-level thinking skills. The games are for students to have the opportunity to develop their skills while in collaboration with others. Length, height and mass are measured using multiple non-standard units. Students will practice estimating when measuring length, height and mass. Students will design and construct their own object to hold increasing masses until it sinks.

Inquiry/Essential/Key Questions

What is the length? Width? height?
How do we measure length? height?
How do we measure an object?
What is a non-standard unit?
How do we use measurement to compare objects?
How do we estimate an object?

What is mass?
How do we measure mass?
How do we choose what to measure mass with?
How can we estimate or compare masses?

GLOs and SLOs

SS. Use direct and indirect measurement to solve problems.

SS2. Relate the size of a unit of measure to the number of units (limited to non-standard units) used to measure length and mass.

SS3. Compare and order objects by length, height, the distance around and mass (weight)* using non-standard units, and making statements of comparison.

SS4. Measure length to the nearest non-standard unit by:

- using multiple copies of a unit
- using a single copy of a unit (iteration process)

SS5. Demonstrate that changing the orientation of an object does not alter the measurements of its attributes.

PR3. Demonstrate and explain the meaning of equality and inequality by using manipulatives and diagrams (0-100)

Differentiation/Inclusion

There are quite a few students that seem to excel in math. It might be useful to do some group work and have these students as leaders in the classroom if necessary. Mostly basic, proficient or not yet there observations. Make sure to take time introducing and make sure to check all students' understanding before moving on. Partner work might work in this situation if the students can work together without being distracted.

Vocabulary used will be put in a glossary by each student for reference, helpful for those who are unfamiliar with the terms or are not at a proficient level in ELA.

Some activities will allow for partners to encourage collaboration and will be beneficial to those who need the extra assistance.

Lesson Overviews/Timeline

Date	Lesson Title	Outcomes and Objectives	Length of Lesson	Lesson Procedure	Materials	Assessments
Jan. 10 (TC)	Lesson #1: Comparing Length and Width of Objects	SS3.	1 hr	<p>Look at pg. 32 of the student text for a picture of snakes.</p> <p>Have students model their own snake out of clay</p> <p>Use snake to compare measurements around the classroom (Activity</p>	<p>Small, M. (2008). <i>Math focus 2</i>. Nelson Education.</p> <p>Small, M. (2008). <i>Nelson Math Focus. Teacher's Resource</i>. Thomson/Nelson.</p>	FA→Activity 4.2: Comparing Lengths and Widths

				4.2) Record entries on glossary page (Activity 4.3)	Activity 4.2: Comparing Lengths and Widths (p.38) Activity 4.3: Glossary Words (p.39)	
Jan 11.	COVID DELAY					
Jan 12.	COVID DELAY					
Jan 17.	Literacy PD					
Jan 18.	Lesson #2: Measuring Different Objects	SS2. SS4.	1.5 hr	Measuring the Front Table Introducing different non-standard units Measuring different objects around the classroom (Activity 4.5)	Small, M. (2008). <i>Math focus 2.</i> Nelson Education. Small, M. (2008). <i>Nelson Math Focus. Teacher's Resource.</i> Thomson/Nelson. Activity 4.5: Measuring Things (p.41)	FA→Activity 4.5: Measuring Things
Jan 19.	Lesson #3: Measuring Heights using Non-Standard Units	SS2. SS3. SS4. SS5.	1 hr	Measuring Our Heights with receipt rolls Display variety of non-standard units Encourage students to estimate how many units their height would be Height Hunt Practice Activity (p. 31) Record definition of height on glossary page (Activity 4.4)	Small, M. (2008). <i>Math focus 2.</i> Nelson Education. Small, M. (2008). <i>Nelson Math Focus. Teacher's Resource.</i> Thomson/Nelson.	SA →Height Hunt: Students will search for and measure different objects height, using predetermined measurements cut into strings, receipt roll, ribbon. (15%) (SS2. SS4. SS5.)

Jan 20.	Lesson #8: Measuring my Personal Best	SS2. SS3. SS4.	1 hour	<p>Connection to sports with distance Long jump, shot-put, bar jump, pole vault</p> <p>Activity 4.8; My Personal Bests (longest step, longest hop, and longest distance to flick a cotton ball) Students will pick a unit for measurement 2 attempts to each action, circling their best. Recording on page.</p> <p>Measure my longest step before students go work with a partner. One to measure the other</p>	<p>Small, M. (2008). <i>Math focus 2.</i> Nelson Education.</p> <p>Small, M. (2008). <i>Nelson Math Focus. Teacher's Resource.</i> Thomson/Nelson</p> <p>Cotton balls</p> <p>Non-standard units for measurement</p> <p>Activity 4.8: My Personal Bests (p.44)</p>	<p>Measuring my Personal Best (SA)-->Students will use non-standard units to measure their personal bests; longest step, longest hop, longest distance to flick a cotton ball. They will record their answers and submit. (20%) (SS2. SS3. SS4.)</p> <p>Use Assessment Rubric 4.1 (pg. 54) to evaluate Activity 4.8.</p>
Jan 24.	Lesson #9: Comparing Masses	SS3.	1 hour	<p>"The Guessing Game" (intro book) Order heaviest to lightest items</p> <p>Introduce Pan Balance</p> <p>Demonstrate pan balance with items in front of class.</p> <p>Record definitions for mass on glossary page (Activity 10.2)</p> <p>Introduce Mystery Bags pg. 86-87 Student Book</p> <p>Have students measure in groups their own mystery bags and order from heaviest to lightest</p>	<p>"The Guessing Game" Nelson Teacher Resource literature</p> <p>Small, M. (2008). <i>Math focus 2.</i> Nelson Education.</p> <p>Small, M. (2008). <i>Nelson Math Focus. Teacher's Resource.</i> Thomson/Nelson</p> <p>Pan Balances</p>	<p>FA→ Pan Balancing observations: as students practice with the different masses and pan balances, their reactions, their insights.</p>

					3 Paper Bags (with different masses) (1 for each group)	
Jan 25.	Lesson #10: Measuring Mass with Non-Standard Units & Choosing Units to Measure Mass	SS2.	1 hour	<p>Pan Balance Review with granola bar (items that are heavier or lighter)</p> <p>Estimate weight with pennies</p> <p>Provide groups with a pan balance, object, and 3 methods of non-standard units for measuring mass (Activity 10.3: Estimating and Measuring Mass)</p> <p>Activity 10.4: Measuring Mass. Have students choose an object, estimate, measure and record the mass. Then order from heaviest to lightest.</p>	<p>Pan Balance Granola Bar</p> <p>Non-standard units for measurement Pennies or dimes</p> <p>Various objects (for different groups)</p> <p>Small, M. (2008). <i>Math focus 2.</i> Nelson Education.</p> <p>Small, M. (2008). <i>Nelson Math Focus. Teacher's Resource.</i> Thomson/Nelson</p>	<p>Measuring Mass (SA)-->Students will choose a variety of objects and choose a unit for measuring. They will estimate the mass of each object and then measure the object and record their results. (15%) (SS2.)</p>
*Jan 26.	Lesson #11: Estimating and Comparing Masses & Ordering	SS3.	1 hour	<p>Measure two similar objects (made from modelling clay) with similar masses (with pan balance)</p> <p>Ask students to make a ball of clay that has the same mass as a small object (shell, token, pencil).</p> <p>Have other students estimate on which of the clay balls is most similar in mass</p> <p>Measure to check with pan balance</p> <p>How Many Cubes? game</p>	<p>Small, M. (2008). <i>Math focus 2.</i> Nelson Education.</p> <p>Small, M. (2008). <i>Nelson Math Focus. Teacher's Resource.</i> Thomson/Nelson</p> <p>Snap Cubes</p> <p>How Many Cubes? Game instructions (p. 43)</p>	<p>Comparing Masses (SA)-->Students will search and compare different objects and record/order the masses into their appropriate weighting area. (15%) (SS3.)</p> <p>FA→Activity</p>

				Have students choose an object and record the mass, compare this mass with other objects and their mass and record (Activity 10.5: Comparing Masses)		10.5: Comparing Masses
Jan 27.	Literary Day (activities planned from literacy team)					
Jan 31.	Staff Planning Day					

- **TC**→Tannis completed while I was away from school.
- * 17th is Literacy PD, no school for students
- * Sub plans needed for Jan 26. (Attending seminar)
- * 31th Staff Planning Day, no school for students

Assessment

Height Hunt (SA)-->Students will search for and measure different objects height, using predetermined measurements cut into strings, receipt roll, ribbon. **(15%) (SS2. SS4. SS5.)**

Measuring my Personal Best (SA)-->Students will use non-standard units to measure their personal bests; longest step, longest hop, longest distance to flick a cotton ball. They will record their answers and submit. **(20%) (SS2. SS3. SS4.)**

Chapter 4 Checklist (FA and SA)--> Will be used to monitor progress in skills and understandings throughout the unit. **(20%) (SS2. SS3. SS4. SS5.)**

Measuring Mass (SA)-->Students will choose a variety of objects and choose a unit for measuring. They will estimate the mass of each object and then measure the object and record their results. **(15%) (SS2.)**

Comparing Masses (SA)-->Students will search and compare different objects and record/order the masses into their appropriate weighting area. **(15%) (SS3.)**

Chapter 10 Checklist (FA and SA)-->Will be used to monitor progress in skills and understandings throughout the unit. **(20%) (SS2. SS3.)**

Resources

- Small, M. (2008). *Math focus 2*. Nelson Education.
- Small, M. (2008). *Nelson Math Focus. Teacher's Resource*. Thomson/Nelson.
- Thomson Nelson. (2008). *Math focus 2. teacher's resource kit*.
- *Mathematics (K–6) : program of studies*. Government of Alberta. (n.d.). Retrieved January 2, 2022, from <https://education.alberta.ca/mathematics-k-6/program-of-studies/>
- Allen, P. (2018). *Who sank the boat?* Vision Australia Personal Support.

- Jones, S. (2020, July 15). *Nonstandard measurement activities for first grade* - Susan Jones Teachi. Susan Jones Teaching . Retrieved January 2, 2022, from <https://susanjonesteaching.com/nonstandard-measurement/>
- Jones, S.

EXTRA LESSONS

Lesson #4: Review/Math	SS2. SS3.	1 hour	Car races Students will measure the	Jones, S. (2020, July 15).	FA→Observations from Car
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Games	SS4. SS5.		distance of a car using a non-standard unit of their choice.	<p><i>Nonstandard measurement activities for first grade - Susan Jones Teachi.</i> Susan Jones Teaching . Retrieved January 2, 2022, from https://susanjonesteaching.com/nonstandard-measurement/</p> <p>Need clipboards Need toy cars</p>	Races, selection of non-standard units, accuracy in measuring.
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Lesson #6: Measuring Around Objects	SS3.	1.5 hour	<p>Estimating how much ribbon can go around a gift box</p> <p>Have students enter definition for distance on glossary page (Activity 4.4)</p> <p>Measuring the distance around containers (Activity 4.7: How Far Around)</p> <p>“Your Choice” Activity: Measuring Using our Body and String</p>	<p>Small, M. (2008). <i>Math focus 2.</i> Nelson Education.</p> <p>Small, M. (2008). <i>Nelson Math Focus. Teacher's Resource.</i> Thomson/Nelson</p>	<p>FA→Activity 4.7: How Far Around.</p> <p>FA→Observe students measuring in “Your choice” textbook activity.</p>
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Lesson #7: Estimating Length using Non-Standard Units; including	SS2. SS4.	1 hour	<p>How Long is the Boa? Question/Suggestions/ Measure</p> <p>Page 38-39 of Student</p>	<p>Small, M. (2008). <i>Math focus 2.</i> Nelson Education.</p>	<p>FA→Observe what choices and suggestions students make</p>
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paths that are not straight			<p>Text (picture of snakes)</p> <p>Students will make snakes out of clay, string or ribbon. Straighten them out and measure their model with their choice of measurement units, compare units used</p> <p>Have students play a guessing game of how long a snake is that is curved or coiled. Students should estimate and then measure each snake.</p>	<p>Small, M. (2008). <i>Nelson Math Focus. Teacher's Resource.</i> Thomson/Nelson. Thomson Nelson. (2008). <i>Math focus 2. teacher's resource kit.</i></p> <p>Modelling clay, ribbon, or string.</p>	<p>for measurement</p> <p>FA→Ask each pair how they decided to measure a coiled/curved snake.</p>
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Lesson #12: Keeping Numbers in Balance	SS3. PR3.	.5 hour	<p>Read "Who Sank the Boat"-Pamela Allen</p> <p>Students will create their own foil boats</p> <p>Test boats with different non-standard mass units it takes before their boat sinks</p>	<p>Allen, P. (2018). <i>Who sank the boat?</i> Vision Australia Personal Support.</p> <p>Small, M. (2008). <i>Nelson Math Focus. Teacher's Resource.</i> Thomson/Nelson.</p>	<p>FA→Observe their estimations of how much can sit in their boat before sinking.</p>
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Review/Math Game			<p>Curious Curves Activity (in partners)</p> <p>Ant on the Move Board Game (3 players per group)</p>	<p>Small, M. (2008). <i>Nelson Math Focus. Teacher's Resource.</i> Thomson/Nelson.</p> <p>Curious Curves More Practice Activity (p. 51)</p>	<p>FA→Make observations from students' gameplay and ask each student to orally explain how they measured to find out which curve was the</p>
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				Ant on the Move Game (pg. 48) Centimeter cubes	longest.
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