

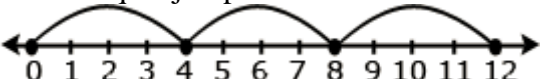
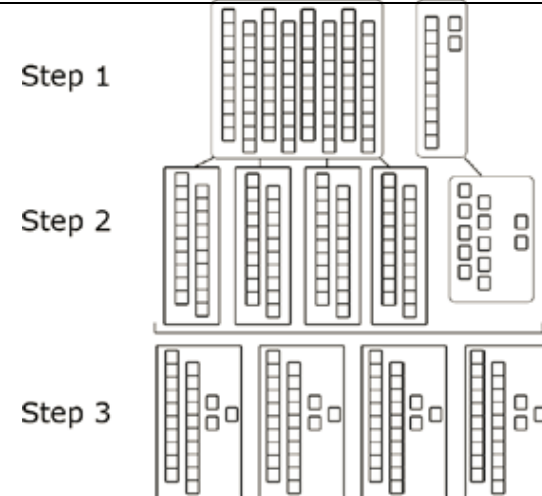


Seymour Public Schools Math Grade 3 Unit 4

<p><b>Grade: 3</b></p> <p><b>Unit 4—Learning Measurements and Graphs</b></p>	<p><b>Subject: Math</b></p> <ul style="list-style-type: none"> <li>• <b>Time Frame: 27 days</b></li> <li>• <b>Domains: Measurement and Data; Operations and Algebraic Thinking; Number and Operations in Base Ten</b></li> </ul>	
<p><b>Standards</b></p>	<p>Content Standards: 3.OA.3, 3.NBT.2, 3.MD.1, 3.MD.2, 3.MD.3, 3.MD.4</p> <p><a href="http://www.corestandards.org/wp-content/uploads/Math_Standards.pdf">http://www.corestandards.org/wp-content/uploads/Math_Standards.pdf</a></p>	<p>Practice Standards: MP 1, 2, 3, 4, 5, 6, 7, 8</p>
<p><b>Enduring Understandings</b></p>	<ol style="list-style-type: none"> <li>1. Measurement processes are used in everyday life to quantify the world.</li> <li>2. Data displays describe and represent data in alternative ways.</li> <li>3. Multiplication and division can be used to solve problems.</li> <li>4. Addition and subtraction of numbers can be done with place value and strategy understanding.</li> <li>5. Understanding place value can lead to number sense and efficient strategies for computing with numbers.</li> <li>6. Time can be expressed using different units that are related to each other.</li> </ol>	
<p><b>Essential Questions</b></p>	<ol style="list-style-type: none"> <li>1. How can different strategies be helpful when solving a problem?</li> <li>2. How can I add/subtract 2 numbers?</li> <li>3. How do we measure time?</li> <li>4. How do we use time to solve problems?</li> <li>5. Why does "what" we measure influence "how" we measure?</li> <li>6. Why display data in different ways?</li> </ol>	
<p><b>Vocabulary</b></p>	<p>inch (in.), foot (ft), ruler, line segment, cup (c), fluid ounce (fl oz), pint (pt), quart (qt), gallon (gal), liquid volume, liter (L), milliliter (mL), weight, pound (lb), ounce (oz), mass, gram (g), kilogram (kg), a.m., p.m., elapsed time, vertical axis, horizontal axis, vertical bar graph, horizontal bar graph, pictograph, axes, scale, key, bar graph, fluency table, line plot, tally chart</p>	

Priority and Supporting CCSS	Explanations and Examples*
<p><b>3.OA.3 Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.</b></p>	<p><b>3.OA.3.</b> Students use a variety of representations for creating and solving one-step word problems, i.e., numbers, words, pictures, physical objects, or equations. They use multiplication and division of whole numbers up to 10 x10. Students explain their thinking, show their work by using at least one representation, and verify that their answer is reasonable.</p> <p>Word problems may be represented in multiple ways:</p> <ul style="list-style-type: none"> <li>• Equations: <math>3 \times 4 = \_</math>, <math>4 \times 3 = \_</math>, <math>12 \div 4 = \_</math> and <math>12 \div 3 = \_</math></li> <li>• Array:           <div style="text-align: center;">  </div> </li> <li>• Equal groups           <div style="text-align: center;">  </div> </li> <li>• Repeated addition: <math>4 + 4 + 4</math> or repeated subtraction</li> <li>• Three equal jumps forward from 0 on the number line to 12 or three equal jumps backwards from 12 to 0</li> </ul> <div style="text-align: center;">  </div> <p>Examples of division problems:</p> <ul style="list-style-type: none"> <li>• Determining the number of objects in each share (partitive division, where the size of the groups is unknown):           <ul style="list-style-type: none"> <li>◦ The bag has 92 hair clips, and Laura and her three friends want to share them equally. How many hair clips will each person receive?</li> </ul> </li> </ul>

\*Source – Connecticut Core Standards for Mathematics as adapted from the Arizona Academic Content Standards



- Determining the number of shares (measurement division, where the number of groups is unknown)
  - Max the monkey loves bananas. Molly, his trainer, has 24 bananas. If she gives Max 4 bananas each day, how many days will the bananas last?

Starting	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
24	$24-4=20$	$20-4=16$	$16-4=12$	$12-4=8$	$8-4=4$	$4-4=0$

Solution: The bananas will last for 6 days.

Students may use interactive whiteboards to show work and justify their thinking.

Priority and Supporting CCSS	Explanations and Examples*
<p><b>3.NBT.2. Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.*</b></p> <p>* A range of algorithms may be used.</p>	<p><b>3.NBT.2.</b> Problems should include both vertical and horizontal forms, including opportunities for students to apply the Commutative and Associative Properties. Adding and subtracting fluently refers to knowledge of procedures, knowledge of when and how to use them appropriately, and skill in performing them flexibly, accurately, and efficiently. Students explain their thinking and show their work by using strategies and algorithms, and verify that their answer is reasonable. An interactive whiteboard or document camera may be used to show and share student thinking.</p> <p>Example:</p> <ul style="list-style-type: none"> <li>• Mary read 573 pages during her summer reading challenge. She was only required to read 399 pages. How many extra pages did Mary read beyond the challenge requirements?</li> </ul> <p>Students may use several approaches to solve the problem including the traditional algorithm. Examples of other methods students may use are listed below:</p> <ul style="list-style-type: none"> <li>• <math>399 + 1 = 400</math>, <math>400 + 100 = 500</math>, <math>500 + 73 = 573</math>, therefore <math>1 + 100 + 73 = 174</math> pages (Adding up strategy)</li> <li>• <math>400 + 100</math> is 500; <math>500 + 73</math> is 573; <math>100 + 73</math> is 173 plus 1 (for 399, not 400) is 174 (Compensating strategy)</li> <li>• Take away 73 from 573 to get to 500, take away 100 to get to 400, and take away 1 to get to 399. Then <math>73 + 100 + 1 = 174</math> (Subtracting to count down strategy)</li> <li>• <math>399 + 1</math> is 400, 500 (that's 100 more). 510, 520, 530, 540, 550, 560, 570, (that's 70 more), 571, 572, 573 (that's 3 more) so the total is <math>1 + 100 + 70 + 3 = 174</math> (Adding by tens or hundreds strategy)</li> </ul>

**3.MD.1. Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram.**

**3.MD.1.** Students in second grade learned to tell time to the nearest five minutes. In third grade, they extend telling time and measure elapsed time both in and out of context using clocks and number lines.

Students may use an interactive whiteboard to demonstrate understanding and justify their thinking.

Priority and Supporting CCSS	Explanations and Examples*
<p><b>3.MD.2.Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l).* Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem.**</b></p> <p>* Excludes compound units such as <math>\text{cm}^3</math> and finding the geometric volume of a container.</p> <p>** Excludes multiplicative comparison problems (problems involving notions of “times as much”).</p>	<p><b>3.MD.2.</b> Students need multiple opportunities weighing classroom objects and filling containers to help them develop a basic understanding of the size and weight of a liter, a gram, and a kilogram. Milliliters may also be used to show amounts that are less than a liter.</p> <p>Example: Students identify 5 things that weigh about one gram. They record their findings with words and pictures. (Students can repeat this for 5 grams and 10 grams.) This activity helps develop gram benchmarks. One large paperclip weighs about one gram. A box of large paperclips (100 clips) weighs about 100 grams so 10 boxes would weigh one kilogram.</p>

Priority and Supporting CCSS	Explanations and Examples*																				
<p><b>3.MD.3.</b> Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step “how many more” and “how many less” problems using information presented in scaled bar graphs. <i>For example, draw a bar graph in which each square in the bar graph might represent 5 pets.</i></p>	<p><b>3.MD.3.</b> Students should have opportunities reading and solving problems using scaled graphs before being asked to draw one. The following graphs all use five as the scale interval, but students should experience different intervals to further develop their understanding of scale graphs and number facts.</p> <ul style="list-style-type: none"> <li>• Pictographs: Scaled pictographs include symbols that represent multiple units. Below is an example of a pictograph with symbols that represent multiple units. Graphs should include a title, categories, category label, key, and data.</li> </ul> <table border="1" data-bbox="1094 654 1526 846"> <thead> <tr> <th colspan="2">Number of Books Read</th> </tr> </thead> <tbody> <tr> <td>Nancy</td> <td>✧ ✧ ✧ ✧ ✧</td> </tr> <tr> <td>Juan</td> <td>✧ ✧ ✧ ✧ ✧ ✧ ✧ ✧</td> </tr> <tr> <td colspan="2">✧ = 5 Books</td> </tr> </tbody> </table> <p>How many more books did Juan read than Nancy?</p> <ul style="list-style-type: none"> <li>• Single Bar Graphs: Students use both horizontal and vertical bar graphs. Bar graphs include a title, scale, scale label, categories, category label, and data.</li> </ul> <div style="display: flex; justify-content: space-around;"> <div data-bbox="978 1045 1304 1320"> <p><b>Books Read</b></p> <table border="1"> <thead> <tr> <th>Person</th> <th>Number of Books Read</th> </tr> </thead> <tbody> <tr> <td>Nancy</td> <td>25</td> </tr> <tr> <td>Juan</td> <td>40</td> </tr> </tbody> </table> </div> <div data-bbox="1346 1073 2007 1304"> <p><b>Books Read</b></p> <table border="1"> <thead> <tr> <th>Person</th> <th>Number of Books Read</th> </tr> </thead> <tbody> <tr> <td>Nancy</td> <td>25</td> </tr> <tr> <td>Juan</td> <td>40</td> </tr> </tbody> </table> </div> </div>	Number of Books Read		Nancy	✧ ✧ ✧ ✧ ✧	Juan	✧ ✧ ✧ ✧ ✧ ✧ ✧ ✧	✧ = 5 Books		Person	Number of Books Read	Nancy	25	Juan	40	Person	Number of Books Read	Nancy	25	Juan	40
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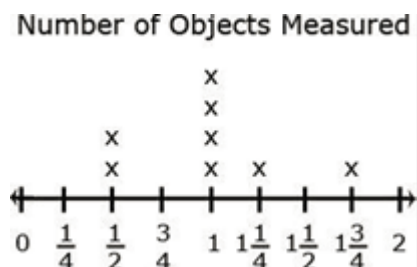
**3.MD.4 Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units— whole numbers, halves, or quarters.**

**3.MD.4.** Students in second grade measured length in whole units using both metric and U.S. customary systems. It’s important to review with students how to read and use a standard ruler including details about halves and quarter marks on the ruler. Students should connect their understanding of fractions to measuring to one-half and one-quarter inch. Third graders need many opportunities measuring the length of various objects in their environment.

Some important ideas related to measuring with a ruler are:

- The starting point of where one places a ruler to begin measuring
- Measuring is approximate. Items that student’s measure will not always measure exactly  $\frac{1}{4}$ ,  $\frac{1}{2}$  or one whole inch. Students will need to decide on an appropriate estimate length.
- Making paper rulers and folding to find the half and quarter marks will help students develop a stronger understanding of measuring length

Students generate data by measuring and create a line plot to display their findings. An example of a line plot is shown below:





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**Resources**

Math Expressions – Unit 4, Lessons 1-15  
Soar to Success Math Intervention  
Mega Math  
Common Core Mathematics-Newmark Learning- Units – 18-22  
Xtramath.org

**Unit Assessments**

Unit Test  
Quick Quizzes  
Formative Assessments  
Performance Task

Technology: Videos, Websites, Links

<https://grade3commoncoremath.wikispaces.hcpss.org/home>

[www.learnzillion.com](http://www.learnzillion.com)

[www.thinkcentral.com](http://www.thinkcentral.com)

<http://mathworksheetsland.com/3/>