

**Big idea:** Students enter third grade with knowledge of place value through the hundreds and with experience adding and subtracting through 100 using a variety of strategies, concrete materials, and various representations. Third grade students continue adding and subtracting within 1000 and achieve fluency with strategies and algorithms that are based on place value, properties of operations, and the relationship between addition and subtraction (3.NBT.2). In Grade 3, students extend their understanding of their knowledge of place value to round numbers. Problem solving continues to provide a context for ongoing work with place value in rounding experiences as well as in adding and subtracting through 1000. As students extend their previous work with addition and subtraction, they use the structure of place value (composing and decomposing tens and hundreds) to develop efficient strategies to add and subtract. Regardless of the strategies students use for adding greater numbers, they need to be able to explain why the strategies work. Students should use place value language as they describe the procedures for adding multidigit numbers. Making sense of the strategies students use, whether they are based on the traditional algorithm or invented algorithms, will lead to procedural fluency.

3.NBT.A.1 requires rounding to be based on place value. Do not introduce rounding strategies that are purely procedural. Make sure that rounding strategies are always based on place value.

3.NBT.2 is introduced in Chapter 1 of the GO Math materials. Practice on this standard should be distributed throughout the year to ensure that fluency is attained and maintained. A few fluency activities are provided to reinforce place value concepts and mental computation. These can be repeated with different problems as needed. 3.NBT.2 requires that students use strategies and algorithms based on place value, so that should be emphasized throughout the chapter. Highlight the connection between the standard algorithm and place value.

Adapted from the Common Core Math Companion, pg. 65 and Go Math: Teaching for Depth (Gojak & Miles, 2015, pg. 3E).

**HMH Professional Development Videos:**

- Place Value Operations: Whole Numbers, Grades 3-6, Segment 2: [Add Whole Numbers](#)
- Place Value Operations: Whole Numbers, Grades 3-6, Segment 3: [Subtract Whole Numbers](#)

**Quarter 1 Fluency Resources:**

- [Building Fluency Through Word Problems](#)
  - [Building Fluency Through Number Talks](#)
  - [Addition and Subtraction - Relational Thinking](#)
- These resources address fluency standard 3.NBT.2 and standard 3.OA.8.*

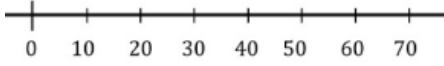
**Essential Question:** How can you add and subtract whole numbers and decide if the answer is reasonable?

**Standards:** 3.OA.9, 3.NBT.1, 3.NBT.2, 3.OA.8

**ELD Standards:**





- ELD.PI.3.1-Exchanging information/ideas via oral communication and conversations.
- ELD.PI.3.3-Offering opinions and negotiating with/persuading others.
- ELD.PI.3.5-Listening actively and asking/answering questions about what was heard.
- ELD.PI.3.9- Expressing information and ideas in oral presentations.
- ELD.PI.3.11- Supporting opinions or justifying arguments and evaluating others’ opinions or arguments.
- ELD.PI.3.12-Selecting and applying varied and precise vocabulary.

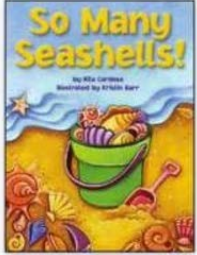
| Lesson |                           | Standards & Math Practices | Essential Question  | Math Content and Strategies  | Models/Tools<br><a href="#">Go Math! Teacher Resources G3</a>    | Connections<br>(ENGAGE prior knowledge)                                   | Vocabulary  | Academic Language Support  | Journal   |
|--------|---------------------------|----------------------------|---|--|--|---|---|--|---|
| 1.1    | Algebra • Number Patterns | 3.OA.9<br>MP.1, 2, 7       | How can you use properties to explain patterns on the addition table? | In this lesson, students shade rows, columns, and diagonals of the addition table in order to develop conceptual understanding of the Identity and Commutative Properties of Addition. They formalize their understanding of | <a href="#">Addition Table</a><br><br><a href="#">Math Board</a> | Solve the following:<br><br>12 + 15 = ?<br>15 + 12 = ?<br><br>28 + 27 = ? | Patterns, commutative Property of Addition, Identity Property of Addition, pattern, | <b>ELD Standards</b><br><a href="#">ELD Standards</a><br><a href="#">ELA/ELD Framework</a><br><a href="#">ELPD Framework</a> | Saul says that 8 + 9 is not equal to 9 + 8. Do you agree or disagree with Saul? Explain how you know. |

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|     |  |                       |   | the properties in order to use them making connections to the patterns that they observe.  |  | $27 + 28 = ?$   | even, odd, add, sum, diagonal                                       | <a href="#">ELL Math Instruction Framework</a><br><br><b>Access Strategies</b><br><a href="#">Organizing Learning for Student Access to Challenging Content</a><br><br><a href="#">Student Engagement Strategies</a><br><br><a href="#">Problem Solving Steps and Approaches</a><br><br><b>Equitable Talk</b><br><a href="#">Accountable Talk Simply Stated</a><br><br><a href="#">Equitable Talk Conversation Prompts</a><br><br><a href="#">Accountable Talk Posters</a><br><br><a href="#">Five Talk Moves Bookmark</a><br><br><a href="#">Effective Math Talks</a> |   |
| 1.2 | Round to the Nearest Ten or Hundred                        | 3.NBT.1 MP.5, 7, 8    | How can you round numbers?  | <p>A number line labeled with the appropriate multiples of 10 or 100 provides a good visual reference for students to see how a given number is located closer to one multiple than to another.</p> <p>Rounding is a way to figure out about how many. Using place value and a number line supports students in identifying if a number is closer to one number than another. Use this conceptual scaffold rather than relying on the procedure of 5 or more.</p> <p style="text-align: center;"><a href="#">Number chart 1-100</a></p> <p style="text-align: center;"><a href="#">Number chart 1-1000</a></p> | <a href="#">Number Line</a><br><br><a href="#">Math Board</a><br><br><a href="#">Rounding to nearest ten</a>                                 |  <p>Mrs. Johnson's pet snake is 44 centimeters long. What is its length rounded to the nearest ten centimeters?</p>  | Round, tens, hundreds, place value, between, rounded to the nearest | <a href="#">Equitable Talk Conversation Prompts</a><br><br><a href="#">Accountable Talk Posters</a><br><br><a href="#">Five Talk Moves Bookmark</a><br><br><a href="#">Effective Math Talks</a><br><br><b>Cooperative Learning</b><br><a href="#">Cooperative Learning Role Cards</a><br><br><a href="#">Collaborative Learning Table Mats</a><br><br><a href="#">Seating Chart Suggestions</a>  | Is 678 closer to 600 or 700? Explain how you know.                            |
| 1.3 | Estimate Sums  | 3.NBT.1 MP.1, 5, 6, 7 | How can you use compatible numbers and rounding to estimate sums? | <p>In this lesson, students estimate by rounding. This is an important skill for checking the reasonableness of an answer or finding an estimated sum. 3.NBT.1 requires using place value understanding round to the nearest 10 or 100.</p> <p>Focus on place value understanding for estimating and rounding. <b><i>It is not necessary to use the compatible number strategy.</i></b></p>  | <a href="#">Math Board</a><br><br><a href="#">Rounding to nearest ten</a><br><br><a href="#">Rounding to the nearest 10 - blank template</a> | <p>Use the rounding to tens template and ask students to round the following numbers to the nearest ten. Have students show this on a number line.</p> <p>26<br/>32<br/>48</p> <p>Have students use the same strategy to estimate and then add the following numbers:<br/>54<br/>28</p> | rounding, estimate, nearest, lowest                                 | <a href="#">Equitable Talk Conversation Prompts</a><br><br><a href="#">Accountable Talk Posters</a><br><br><a href="#">Five Talk Moves Bookmark</a><br><br><a href="#">Effective Math Talks</a><br><br><b>Cooperative Learning</b><br><a href="#">Cooperative Learning Role Cards</a><br><br><a href="#">Collaborative Learning Table Mats</a><br><br><a href="#">Seating Chart Suggestions</a>  | Explain how to estimate the following:<br>368 + 231.                          |
| 1.4 | Mental Math Strategies for Addition<br><br><b>OPTIONAL</b> | 3.NBT.2 MP.2, 7, 8    | What mental math strategies can you use to find sums?             | Students can develop a deeper understanding of the meaning of addition with 2 and 3 digit numbers by learning and using various strategies to add. The methods that students will learn in this lesson include counting by   | <a href="#">Number Line</a><br><br><a href="#">Math Board</a><br><br><a href="#">Rounding to nearest ten</a>                                 | <p>In the previous years, students have been exposed to various mental math strategies for addition and subtraction within 20.</p> <p>What mental math strategy will you use to add:</p>  | Sum, compatible numbers, addends, label                             | <b>Math Talk Frames:</b><br><br>Restate/Repeat<br>• I just heard you say _____   | Solve the following:<br>402 + 239 = ?<br><br>Explain how you got your answer. |

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|     |                                     |                    |  | tens and ones on a number line and estimating addends. The number line shows students how to break apart addends to make them easier to add.<br><br>Additional Fluency Resources:<br><a href="#">Building Fluency through Number Talks</a><br><br><a href="#">Building Fluency through Problem Solving</a>   | <a href="#">Rounding to the nearest 10 - blank template</a>  | 38 + 25? Why?<br>203 + 97? Why?<br><br>Show students how to represent this using a number line.  |   | <ul style="list-style-type: none"> <li>• Did you mean _____?</li> <li>• Let me see if I heard you correctly, you said _____.</li> <li>• If I understand you correctly, you believe _____.</li> <li>• It sounds like you think that _____.</li> </ul>  |  |
| 1.5 | Algebra • Use Properties to Add     | 3.NBT.2 MP.2, 7, 8 | How can you add more than two addends?                           | In this lesson, students will learn how to use the Associative Property of Addition to help them add more than two addends. When adding three addends, students learn that they can group addends in ways different ways to make it easier to solve the problem.<br><br>Remind students that the goal of using properties to add is to make adding easier.   | <a href="#">Math Board</a>   | Have students solve the following:<br>7 + 16 + 3<br>24 + 8 + 6<br>15 + 15 + 5<br><br>Have students discuss what strategy they used to solve each problem. Emphasize which addends students chose to add first and why. Make connections to the Associative Property of Addition. | Associative Property of Addition, addends, grouping, unknown number | <p>Agree/Disagree</p> <ul style="list-style-type: none"> <li>• I agree with (name), when he/she said that _____.</li> <li>• I agree with (name), and the reason is because _____.</li> <li>• If _____, then _____ must also be true.</li> <li>• I disagree with (name) because _____.</li> </ul>  | Add the following and explain how you solved it:<br>23 + 49 + 57   |
| 1.6 | Use the Break Apart Strategy to Add | 3.NBT.2 MP.2, 7, 8 | How can you use the break-apart strategy to add 3-digit numbers? | Having an understanding of the break apart strategy helps students develop fluency in using number representations and place value to help them compute. This in turn helps students compute efficiently. Knowing the break apart strategy allows students to understand the underlying process of adding in each place. For example, to add 465 and 327, students first write or draw each addend using the expanded form. Next, they add each place value: 400 + 300 = 700, 60 + 20 = 80, and 5 + 7 = 12. Then they add the partial sums, 700 + 80 + 12 = 792. | <a href="#">Place Value Chart</a><br><br><a href="#">Math Board</a><br><br>Base 10 Blocks<br><br><a href="#">Place Value Grid</a><br><br><a href="#">Digit Tiles</a> | Ask students why 374 + 226 is the same as 300 + 200 + 70 + 20 + 4 + 6<br>How many hundreds?<br>How many tens?<br>How many ones?<br>How many altogether?<br><br>Have students break apart the following numbers to add:<br><br>26 + 33 = ?<br>236 + 342 = ?                       | Break Apart Strategy, reasonable answer, sums, addends              | <p>Elaboration</p> <ul style="list-style-type: none"> <li>• Since _____ then _____.</li> <li>• An example might be _____.</li> <li>• I previously learned _____, and it supports _____.</li> <li>• If _____, then _____.</li> <li>• Another example of this is _____.</li> </ul> <p>Add-on</p> <ul style="list-style-type: none"> <li>• In addition to what has been stated, I think _____.</li> <li>• I would add that _____ based On _____ (evidence).</li> <li>• What I just heard makes me think of _____.</li> </ul> | Have students break apart the following numbers to add: 247 + 358.   |
| 1.7 | Use Place Value to Add              | 3.NBT.2 MP.2, 7, 8 | How can you use place value to add 3-digit numbers?              | Make the connection between lesson 1.6 and 1.7. Students need to develop the understanding that the algorithm in lesson 1.7 is based on place value. Students should use place-value language as they describe the procedures for adding multi-digit numbers.  | <a href="#">Place Value Chart</a><br><br><a href="#">Math Board</a><br><br>Base 10 Blocks<br><br><a href="#">Place Value Grid</a>                                    | What are the places of a 3-digit number?<br>How can you write 476 in expanded form?<br>What is the value of each digit in 476?<br>Use a place value chart to show your thinking.   | regroup, ones, tens, hundreds, place value, addends                 | <p>Add-on</p> <ul style="list-style-type: none"> <li>• In addition to what has been stated, I think _____.</li> <li>• I would add that _____ based On _____ (evidence).</li> <li>• What I just heard makes me think of _____.</li> </ul>  | Have students add the following:<br>234 + 345 = ?<br><br>Have students explain how they solved this using place value understanding. |

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|      |   |                        |  |   | <a href="#">Digit Tiles</a>  |   |   | <ul style="list-style-type: none"> <li>Building on what I heard, I think _____.</li> </ul>   |   |
| 1.8  | Estimate Differences  | 3.NBT.1<br>MP.5, 7, 8  | How can you use compatible numbers and rounding to estimate differences? | Estimating differences is an important skill for checking the reasonableness of an answer or finding an estimated difference. In this lesson, students connect estimating a sum to estimating a difference.   | <a href="#">Math Board</a>   | Estimate to subtract the following:<br>$38 - 19 = ?$<br>Is 38 closer to 30 or 40?<br>Is 19 closer to 10 or 20?<br>The answer is about how many?   | difference, subtract, nearest ten, how much more                        | <ul style="list-style-type: none"> <li>Similarly to _____, I think _____.</li> <li>Both examples show _____.</li> <li>This is similar to _____.</li> <li>The first example shows _____, this is different than _____.</li> <li>In the same way, _____.</li> <li>_____ is like _____.</li> <li>I think that _____ is like _____.</li> </ul>                     | Estimate to solve the following:<br>$586 - 321 = ?$<br><br>Explain how you got your answer.                 |
| 1.9  | Mental Math Strategies for Subtraction<br><br><b>AC<br/>OPTIONAL<br/>LESSON</b> | 3.NBT.2<br>MP.2, 7, 8  | What mental math strategies can you use to find differences?             | In the previous years, students have been exposed to various mental math strategies for adding and subtracting within 20.<br><br>3.NBT.2 requires students to fluently add and subtract within 1000. Numbers in the lesson do not move students toward fluency with the size of numbers expected for Grade 3.<br><br><b>Use the fluency resources provided to provide daily practice to move students to the required fluency level.</b><br><br>Resources:<br><a href="#">Building Fluency through Number Talks</a><br><br><a href="#">Building Fluency through Problem Solving</a> | <a href="#">Math Board</a><br><br><a href="#">Number Line</a>  | A tuna fish weighs 255 pounds, the second one weighs 237 pounds. How would you round each number to the nearest 100?  | Break Apart Strategy, Add the Differences, difference, friendly numbers | <ul style="list-style-type: none"> <li>Call to Action</li> <li>Based on what we just learned, I think we should _____.</li> <li>What can we do about _____.</li> <li>I believe it is important for us to _____.</li> <li>Considering the evidence, we should _____.</li> </ul> <p><b>Vocabulary Strategies</b><br/><a href="#">Go Math Vocabulary Maps</a></p> | Use strategies to solve the following:<br>$432 - 351 = ?$<br><br>Explain how you got your answer.           |
| 1.10 | Use Place Value to Subtract   | 3.NBT.2<br>MP. 2, 7, 8 | How can you use place value to subtract 3-digit numbers?                 | In this lesson, students use the traditional place value strategy to subtract 3-digit numbers. To use this students need to understand when they should regroup and in which place values. It is important to model place value language for students when regrouping as well. For example, "I can regroup 7 tens 3 ones as 6 tens 13 ones."<br><br>Give students a variety of problem situations in which they add and subtract within 1000 using various strategies.  | <a href="#">Place Value Chart</a><br><br>Base 10 Blocks<br><br><a href="#">Place Value Grid</a><br><br><a href="#">Digit Tiles</a> | Use place value to solve the following:<br>$336 - 187 = ?$<br><br>Ask students to discuss the following:<br><br>Does it make more sense to round to the nearest 10 rather than the nearest 100? | Difference, Place Value, Compare, Estimate, unknown number              | <ul style="list-style-type: none"> <li>Considering the evidence, we should _____.</li> </ul>   | Solve the following:<br>$794 - 483 = ?$<br><br>Explain how you use place value to subtract 3-digit numbers. |
| 1.11 | Combine Place Values to Subtract  | 3.NBT.2<br>MP.2, 7, 8  | How can you use the combine place value strategy to                      | As students learn and apply the strategy of combining place values to subtract in this lesson, they develop   | <a href="#">Math Board</a>   | Solve: $38 - 29 = ?$<br><br>What is $338 - 129$ ?   | Combine place values, difference,                                       |  | Solve the following and explain the strategy you used.  |

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|      |   |                              | <p>subtract 3-digit numbers?</p>   | <p>fluency and understanding of how to use place values to help them compute mentally. The combine values strategy involves combining adjacent places to subtract when there are not enough within a given place value to subtract. Students can combine tens and ones, and then subtract the combined values mentally.</p>  <p><b>Students need more practice to reach the fluency requirements of 3.NBT.2 and application requirements of 3.OA.8</b></p> <p>Resources:<br/><a href="#">Building Fluency through Problem Solving</a></p>   | <p><a href="#">Place Value Chart</a></p> <p>Base 10 Blocks</p> <p><a href="#">Place Value Grid</a></p> <p><a href="#">Digit Tiles</a></p> | <p>How does the first problem help me solve the second problem?</p>  | <p>tens place, hundreds place</p> | <p><b>Activities</b><br/><b>Block It Out!</b></p>  <p>Students complete blue Activity Card 1 by representing numbers with base-10 blocks</p> <p><b>Games</b><br/><b>Addition Bingo</b></p>  | <p>223 – 119 = ?</p>  |
| 1.12 | <p>Problem Solving • Model Addition and Subtraction</p> | <p>3.OA.8<br/>MP.1, 4, 5</p> | <p>How can you use the strategy draw a diagram to solve One- and two-step addition and subtraction problems?</p> | <p>Use a bar model for part-part-whole situations; decomposing word problems: identifying the question, identify the needed information, and identify the operation needed. Have students identify the parts and the whole in the model, and identify which is unknown.</p> <p><b>Students need more practice to reach the fluency requirements of 3.NBT.2 and application requirements of 3.OA.8. Practice on these standards should be distributed throughout the year to ensure that fluency is attained and maintained.</b></p> <p>Practice with one- and two-step word problems involving addition and subtraction.</p> <p>Resources:<br/><a href="#">Building Fluency through Problem Solving</a></p> | <p>Bar Model</p> <p><a href="#">Math Board</a></p> <p>Concrete Model</p>  | <p>Solve the following:</p> <p>Brandon received 93 votes in the school election. Jose received 25 fewer votes than Brandon. How many students voted? Explain how you solved the problem using words, numbers and diagrams.</p> <p>Show students how to represent this problem using a bar model.</p> | <p>Bar Model</p>                  | <p>Students skip count on a hundred chart to practice place value.</p> <p><b>Literature</b><br/><b>Soccer Bash</b></p>  <p>Students read the book and use place value to determine if there's</p>  | <p>Solve the following and explain:</p> <p>Group A received 135 points on the first week of school. The second week of school they received 20 more points than the week before. How many points did they get for both weeks?</p> |

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|  |  |  |  | <a href="#">Building Fluency through Number Talks</a><br><a href="#">Addition and Subtraction - Relational Thinking</a> |  |  |  | <p>enough money for the team's soccer party.</p> <p><b>Literature</b></p>  <p>Students read about how to use addition to find the number of seashells collected.</p> |  |
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**Assessments:**  
[Go Math Prerequisite Skills Inventory](#)  
[Go Math Chapter 1 Test](#)  
 Go Math Chapter 1 Performance Task: [Alberto's Collection](#)  
[Portfolio Assessment](#)

**Big idea:** Graphing can be used as an efficient way of explaining and comparing results, trends, and the frequency of occurrences. In grade three, the most important development in data representation for categorical data is that students now draw picture graphs in which each picture represents more than one object, and they draw bar graphs in which the scale uses multiples so the height of a given bar in tick marks must be multiplied by the scale factor in order to yield the number of objects in the given category. These developments connect with the emphasis on multiplication in this grade. There are two stages in working with data. The first stage focuses on the data –what to collect and how to collect it. The second stage is representation –how to best represent the data collected.

- Picture graphs offer a way to connect the actual objects being counted to recording the data.
- Bar graphs are faster to construct than picture graphs and are useful when comparing the data.
- Line plots provide a quick way to get a sense of the “shape” of the data. Because the number line is used as a way to organize the data, it is possible to see the “outliers.”

Third graders will not only construct, read, and interpret bar graphs and picture graphs, but will solve one- and two-step word problems using information presented in the bar graphs. Students will also learn to generate measurement data and show it on a line plot marked with halves and fourths of an inch.

Adapted from Progressions K-5 MD, data part 2011 and Go Math: Teaching for Depth, pg. 61E.

**HMH Professional Development Videos:**

Problem Solving, Grades k-6, Segment 6: [Organize and Analyze Data](#)

**Essential Question:** How can you represent and interpret data?

**Standards:** 3.MD.3, & 3.MD.4

**ELD Standards:**

ELD.PI.3.1-Exchanging information/ideas via oral communication and conversations.

ELD.PI.3.3-Offering opinions and negotiating with/persuading others.

ELD.PI.3.5-Listening actively and asking/answering questions about what was heard.

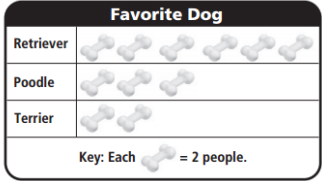
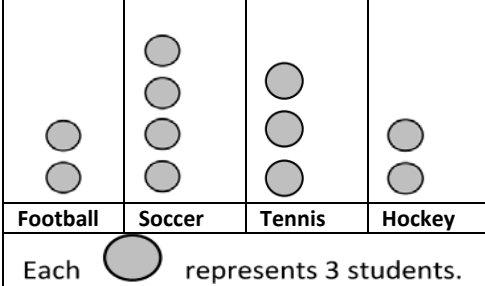
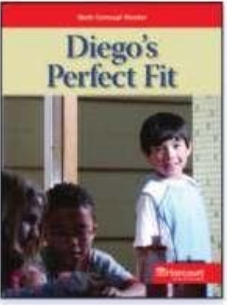
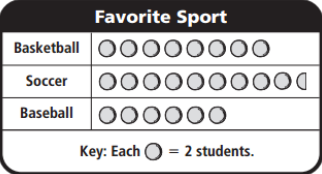
ELD.PI.3.9- Expressing information and ideas in oral presentations.

ELD.PI.3.11- Supporting opinions or justifying arguments and evaluating others’ opinions or arguments.

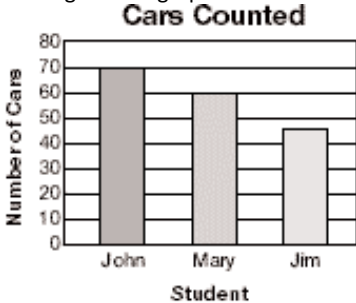

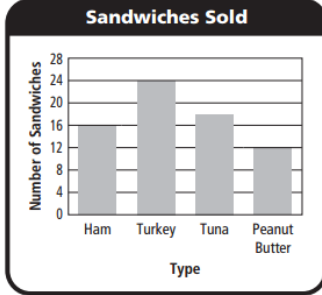


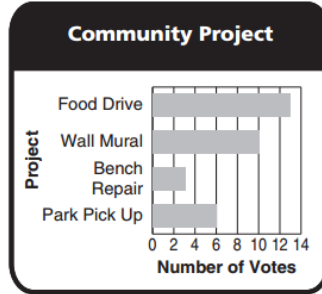
ELD.PI.3.12-Selecting and applying varied and precise vocabulary.

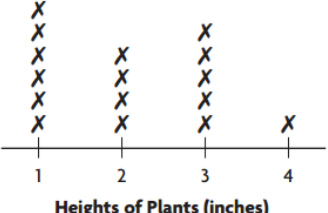
| Lesson              |                                 | Standards & Math Practices | Essential Question  | Math Content/Strategies   | Models/Tools<br><a href="#">Go Math! Teacher Resources G3</a>                    | Connections   | Vocabulary | Academic Language Support | Journal |  |  |  |   |  |   |                     |  |       |       |          |  |        |  |            |  |          |  |
|---------------------|---------------------------------|----------------------------|---|---|--|---|------------|---------------------------|---------|--|--|--|---|--|---|---------------------|--|-------|-------|----------|--|--------|--|------------|--|----------|--|
| 2.1                 | Problem Solving • Organize Data | 3.MD.3<br>MP.1, 5, 6       | How can you use the strategy <i>make a table</i> to organize data and solve problems? | In this lesson students are expected to: <ul style="list-style-type: none"> <li>• Solve problems using a table to organize data</li> <li>• Make a frequency table using information recorded in a tally table</li> <li>• Conduct surveys and experiments Use data to perform addition and subtraction</li> </ul> Have students conduct surveys and experiments based on relevant questions and make connections between the tools | Table<br>Graphic Organizer<br><br><a href="#">Go Math Data &amp; Graph Tools</a> | A student watched a stop signal for five hours. She looked for three specific makes of vehicles and tallied them as she saw them. <table border="1" style="margin: 10px auto;"> <tr> <td>BMW</td> <td>Jeep</td> <td>Fiat</td> </tr> <tr> <td>     </td> <td>     </td> <td>     </td> </tr> </table> 1. What is the total number of BMWs and Fiats that she saw?<br>2. How many more BMWs than Fiats were seen? | BMW        | Jeep                      | Fiat    |  |  |  | frequency table, data, tally table, more, fewer | Key Terms for Word Bank:<br>Graph<br>Bar graph<br>Line plot<br>Scale interval<br><br>Academic Conversation Support ex:<br>Conversation Placemat:<br>Can you explain the relationship between...? | <table border="1" style="width: 100%;"> <thead> <tr> <th colspan="2">Kyle’s Sports Cards</th> </tr> <tr> <th>Sport</th> <th>Tally</th> </tr> </thead> <tbody> <tr> <td>Baseball</td> <td>     </td> </tr> <tr> <td>Hockey</td> <td>    </td> </tr> <tr> <td>Basketball</td> <td>   </td> </tr> <tr> <td>Football</td> <td>     </td> </tr> </tbody> </table> Have students make a frequency table for the following information.<br>Ask students: | Kyle’s Sports Cards |  | Sport | Tally | Baseball |  | Hockey |  | Basketball |  | Football |  |
| BMW                 | Jeep                            | Fiat                       |   |   |  |   |            |                           |         |  |  |  |   |  |   |                     |  |       |       |          |  |        |  |            |  |          |  |
|                     |                                 |                            |   |   |  |   |            |                           |         |  |  |  |   |  |   |                     |  |       |       |          |  |        |  |            |  |          |  |
| Kyle’s Sports Cards |                                 |                            |   |   |  |   |            |                           |         |  |  |  |   |  |   |                     |  |       |       |          |  |        |  |            |  |          |  |
| Sport               | Tally                           |                            |   |   |  |   |            |                           |         |  |  |  |   |  |   |                     |  |       |       |          |  |        |  |            |  |          |  |
| Baseball            |                                 |                            |   |   |  |   |            |                           |         |  |  |  |   |  |   |                     |  |       |       |          |  |        |  |            |  |          |  |
| Hockey              |                                 |                            |   |   |  |   |            |                           |         |  |  |  |   |  |   |                     |  |       |       |          |  |        |  |            |  |          |  |
| Basketball          |                                 |                            |   |   |  |   |            |                           |         |  |  |  |   |  |   |                     |  |       |       |          |  |        |  |            |  |          |  |
| Football            |                                 |                            |   |   |  |   |            |                           |         |  |  |  |   |  |   |                     |  |       |       |          |  |        |  |            |  |          |  |



|     |                     |                         |   |   |   |  |   |   |   |
|-----|---------------------|-------------------------|---|---|---|--|---|---|---|
|     |                     |                         |   | and their facility in representing information.<br>Activity:<br><a href="#">Tally Time</a>  |   |  |   |   |   |
| 2.2 | Use Picture Graphs  | 3.MD.3<br>MP.1, 2, 4, 8 | How can you read and interpret data in a picture graph?   | A picture graph is a good way to display data visually for the purpose of comparing data that can be counted and are multiples of a number. In earlier grades, picture graphs use a one-to-one correspondence between the number of pictures and items. Graphs at this grade level are considered scaled picture graphs because a picture may represent more than 1. Multiplication may be used for interpreting scaled picture graphs.               | Picture Graph<br><br><a href="#">Go Math Data &amp; Graph Tools</a> | Survey questions are a great way to collect data. Give an example of a survey question you could ask your friends.<br><br>Examples:<br>What is your favorite food?<br>What is your favorite subject?<br>What is your favorite sport?<br>What is your favorite movie?<br>What is your favorite cartoon?   | key, picture graph, scale, compare, how many more | <u>Linguistic Patterns</u><br>There are many types of _____, including _____, _____, etc. OR<br>There are many _____. One example is _____.<br>Another example is _____.<br>_____ is made up of _____, which are made up of_...   | How many more baseball cards does Kyle have than basketball cards?<br>How many cards does Kyle have altogether?<br><br><br>Have students answer the following:<br>How many people chose a Retriever?<br>How many fewer people chose a terrier than a retriever?<br>What can you tell by comparing the pictures in the graph? |
| 2.3 | Make Picture Graphs | 3.MD.3<br>MP.2, 4, 6    | How can you draw a picture graph to show data in a table? | Students apply what they have learned about picture graphs in the previous lesson to making the graphs in this lesson. Discuss with students why using a key of 1 might not always be sensible. Students should see that when they have larger amounts using a key greater than 1 will make it easier to represent the information. Understanding the key in a picture graph is important in making, reading, understanding, and analyzing the graph. | Picture Graph<br><br><a href="#">Go Math Data &amp; Graph Tools</a> | The picture below shows data from a survey of students' favorite sports.<br><br>a. The same number of students picked __ and __ as their favorite sport.<br>b. How many more students picked soccer than tennis? Use a number sentence to show your thinking.<br>c. How many students were surveyed?<br><a href="#">Favorite Sport</a><br><br>Students may also want to make picture graphs for the survey data they collected the day before. | experiment, survey, how many more than, combined  | <b>Literature</b><br><br><i>Diego's Perfect Fit</i><br>From the <i>Grab-and-Go Differentiated Centers Kit</i> –<br>Students read about collecting, organizing, and representing numbers in a table and in a picture graph. | <br>How many students chose Soccer?<br>How many more students chose soccer than baseball?<br><br>Describe why it might not be a good idea to always use a key where each symbol stands for 1 in a picture graph.  |



| 2.4     | Use Bar Graphs            | 3.MD.3<br>MP.1, 6, 7 | How can you read and interpret data in a bar graph?                    | In this lesson, students analyze both vertical and horizontal bar graphs. You may want to review these words in context before you begin the lesson. It is important for students to be able to analyze a bar graph with a scale that has an interval greater than one. Have students analyze and interpret graphs and ask open ended questions about the data and representation in the graph. | Bar Graph<br><br><a href="#">Go Math Data &amp; Graph Tools</a> | <p>Show the students a bar graph and ask them to write three questions that could be answered by reading the bar graph.</p>    | bar graph, horizontal bar graph, scale, vertical bar graph | <p><b>Activities</b><br/><i>And the Survey Says...</i></p>  <p>Students complete orange activity Card 2 collecting, organizing, recording, and displaying data in picture graphs.</p>                 |  <p>Which sandwich was the most popular?<br/>How many more tuna sandwiches than peanut butter sandwiches were sold?</p> |    |      |    |       |    |      |    |   |  |  |
|---------|---------------------------|----------------------|--|---|---|---|--|--|--|----|------|----|-------|----|------|----|---|--|--|
| 2.5     | Make Bar Graphs           | 3.MD.3<br>MP.2, 4, 5 | How can you draw a bar graph to show data in a table or picture graph? | Students apply what they learned about bar graphs in the previous lesson to constructing the graphs in this lesson. Provide students with opportunities to both create bar graphs and solve one and two-step “how many more” and “how many less” problems using the information in the graphs.  | Bar Graph<br><br><a href="#">Go Math Data &amp; Graph Tools</a> | <p>How do tables, bar graphs, and pictographs make it easier to see information? Why are headings and tables useful in displaying information?</p> <p>Have students conduct a survey based on student interest. Examples: How many books have you read this school year? What is your favorite movie? How much time do you spend watching TV in a week?</p> <p>Have students create a bar graph representing the information from their survey.</p>   | Greatest to least, fewer, more, most, halfway between      | <p><b>Activities</b><br/><i>Life Span Pictographs</i></p>  <p>Students complete purple activity card 2 by organizing, recording and displaying data about animal life spans using picture graphs.</p> | Have students use the data on page 82 and explain how to draw a bar for a player named Eric who scored 20 points.  |    |      |    |       |    |      |    |   |  |  |
| 2.6     | Solve Problems Using Data | 3.MD.3<br>MP.1, 3, 7 | How can you solve problems using data represented in bar graphs?       | <p>Students will use what they learned in the previous two lessons to answer one and two-step problems.</p> <p>Example: How many more students chose ___ than ___ and ___ combined?</p>   | Bar Graph<br><br><a href="#">Go Math Data &amp; Graph Tools</a> | <table border="1" data-bbox="1290 925 1733 1144"> <thead> <tr> <th>Student</th> <th>Number of Books Read</th> </tr> </thead> <tbody> <tr> <td>Bob</td> <td>15</td> </tr> <tr> <td>Lisa</td> <td>50</td> </tr> <tr> <td>Nancy</td> <td>25</td> </tr> <tr> <td>Juan</td> <td>40</td> </tr> </tbody> </table> <p>Have students write questions for the information in the table. Have students make a bar graph to show the information.</p> <p>Ask students to answer the following:<br/>How many more books did Lisa read than Bob?<br/>How many more books did Lisa read than Bob and Nancy combined?</p> | Student  | Number of Books Read   | Bob  | 15 | Lisa | 50 | Nancy | 25 | Juan | 40 | skip count, how many fewer times, how many more times, combined | <p><b>Literature</b><br/><i>Diego's Perfect Fit</i></p>  <p>Students read about collecting, organizing, and representing data in a table and in a picture graph.</p> |  <p>How many more votes were there for the Food Drive than for the Bench Repair and the Park Pick Up combined?</p> |
| Student | Number of Books Read      |                      |  |   |   |   |  |  |  |    |      |    |       |    |      |    |   |  |  |
| Bob     | 15                        |                      |  |   |   |   |  |  |  |    |      |    |       |    |      |    |   |  |  |
| Lisa    | 50                        |                      |  |   |   |   |  |  |  |    |      |    |       |    |      |    |   |  |  |
| Nancy   | 25                        |                      |  |   |   |   |  |  |  |    |      |    |       |    |      |    |   |  |  |
| Juan    | 40                        |                      |  |   |   |   |  |  |  |    |      |    |       |    |      |    |   |  |  |

|                 |                         |        |  |  |           | How many more books would Bob need to read to catch up to Juan?   |   |   |         |         |           |          |          |          |      |      |                 |                     |   |
|-----------------|-------------------------|--------|--|--|-----------|---|---|---|---------|---------|-----------|----------|----------|----------|------|------|-----------------|---------------------|---|
| 2.7             | Use and Make Line Plots | 3.MD.4 | How can you read and interpret data in a line plot and use data to make a line plot? | In this lesson students learn how to interpret and make line plots.<br><br><i><b>Prior to:</b> Students have had extensive work with rulers and measurement. Separately, students have analyzed graphs representing specific data sets and have created their own graphs. Students understand the concept of fourths and quarters as the same terminology representing the same amount. Go to 2.MD.D.9 to see previous skills in this progression.</i> | Line Plot | <p>Make a line plot.</p> <p>Collect data: Ask your students “How many books did you read over the summer?”</p> <p>Draw a line on the board with the numbers across the bottom accounting for the fewest and greatest number of books read. Have students place a post it on the number that corresponds to their response.</p> <p>Ask students questions about the data on the line plot. Have students discuss how the line plot helps them answer questions about the survey.</p> | line plot, appears most often, appears least often, from left to right, inference | <p><b>Linguistic Note</b></p> <p>Cognates are a powerful tool for English Learners who speak a language that shares Latin roots with English. Cognates have the same root and are recognizable across both languages.</p> <table border="1"> <thead> <tr> <th>English</th> <th>Spanish</th> </tr> </thead> <tbody> <tr> <td>essential</td> <td>esencial</td> </tr> <tr> <td>organize</td> <td>organiza</td> </tr> <tr> <td>data</td> <td>dato</td> </tr> <tr> <td>frequency table</td> <td>tabla de frecuencia</td> </tr> </tbody> </table> | English | Spanish | essential | esencial | organize | organiza | data | dato | frequency table | tabla de frecuencia |  <p>How many plants are greater than one inch?</p> |
| English         | Spanish                 |        |  |  |           |   |   |   |         |         |           |          |          |          |      |      |                 |                     |   |
| essential       | esencial                |        |  |  |           |   |   |   |         |         |           |          |          |          |      |      |                 |                     |   |
| organize        | organiza                |        |  |  |           |   |   |   |         |         |           |          |          |          |      |      |                 |                     |   |
| data            | dato                    |        |  |  |           |   |   |   |         |         |           |          |          |          |      |      |                 |                     |   |
| frequency table | tabla de frecuencia     |        |  |  |           |   |   |   |         |         |           |          |          |          |      |      |                 |                     |   |

**Assessments:**

[Go Math Chapter 2 Test](#)

[Go Math Chapter 2 Performance Task: Our Favorite Things](#)

**Big idea:** A critical area of instruction is to develop student understanding of the meanings of multiplication and division of whole numbers through activities and problems involving equal-sized groups, arrays, and area models. (CCSS 2010, Grade 3). Multiplication and division are new concepts in grade three. Initially students need opportunities to develop, discuss, and use efficient, accurate, and generalizable methods to compute. The relationship between multiplication and division helps students understand that when dividing, they are finding the number of groups (missing factor) when they know the total count (product) and the number of items in a group (factor). Problem solving situations and activities that include a variety of representations showing equal-sized groups, arrays, and area models lay the foundation for multiplication and division of whole numbers.

Models are useful in making sense of multiplication. Modeling multiplication by using groups of objects illustrates how each factor has a specific meaning in multiplication. It is important for students to understand the meaning of multiplication and division (3.OA.1 and 3.OA.2) through problem solving situations (3.OA.3). As students demonstrate understanding they begin to relate models to symbolic notation (3.OA.4).

Adapted from Go Math: Teaching for Depth, pg. 99E.

**HMH Professional Development Videos:**

- Multiplication and Division: Strategies and Facts, Grade 3-6, Segment 1: [Models and Visuals for Multiplication](#)
- Multiplication and Division: Strategies and Facts, Grade 3-6, Segment 2: [Models and Visuals for Division](#)
- Multiplication and Division: Strategies and Facts, Grade 3-6, Segment 5: [Effective Drill and Practice](#)


**Essential Question:** How can you use multiplication to find how many in all?

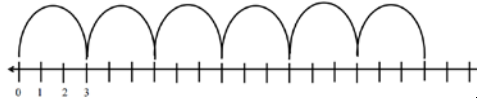



**Standards:** 3.OA.1, 3.OA.3, 3.OA.8, 3.OA.5

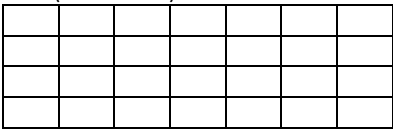

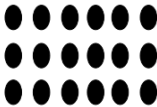
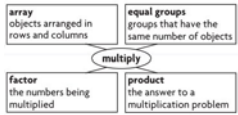
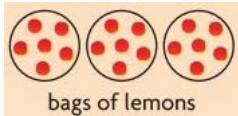

**ELD Standards:**

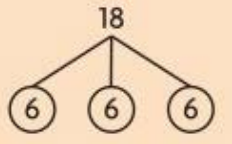

- ELD.PI.3.1-Exchanging information/ideas via oral communication and conversations.
- ELD.PI.3.3-Offering opinions and negotiating with/persuading others.
- ELD.PI.3.5-Listening actively and asking/answering questions about what was heard.

- ELD.PI.3.9- Expressing information and ideas in oral presentations.
- ELD.PI.3.11- Supporting opinions or justifying arguments and evaluating others’ opinions or arguments.
- ELD.PI.3.12-Selecting and applying varied and precise vocabulary.

| Lesson |                    | Standards & Math Practices | Essential Question                                    | Math Content/Strategies   | Models/Tools<br><a href="#">Go Math! Teacher Resources G3</a>   | Connections   | Vocabulary                                 | Academic Language Support  | Journal   |
|--------|--------------------|----------------------------|---|---|---|---|--|--|---|
| 3.1    | Count Equal Groups | 3.OA.1<br>MP.2, 4, 5       | How can you use equal groups to find how many in all? | Understanding equal groups and how they can be represented builds a foundation for understanding multiplication. The focus of this lesson is on modeling and drawing equal groups to find how many in all. Equal groups are presented in context, and students use the models to represent and solve word problems.<br><br><i>It important to notice that the standard says interpret, rather than memorize, the products of whole numbers.</i> | Rows & Columns,<br>Circles with Dots<br><br><a href="#">Multiplication Recording Sheet</a><br><br><a href="#">Multiplication People</a> | <br>Look at the picture above. How many groups? How many dots are in each group? Write a word problem to show your thinking. | equal groups,<br>count by,<br>_groups of _ | <u>Key Terms for Word Bank:</u><br>• Factor<br>• Product<br>• Base 10<br><br><u>Academic Conversation Support ex:</u><br><br><u>Conversation Placemat:</u><br>What is the relationship between...? | Luz has a sticker book with 5 pages. She puts 4 stickers on each page. How many stickers does she put in her book?<br><br>Have students solve using pictures, numbers, and words. Make connections between answers that use addition to answers that use multiplication.<br><br>Have students write their own word problem for 5 x 4. |

|     |   |                       |  |   |  |  |   |   |  |
|-----|---|-----------------------|--|---|--|--|---|---|--|
|     |   |                       |  | Although there is a definite need for third grade students to know the products of whole numbers from memory (3.OA.7).  | <a href="#">Circles for Groups</a>   |  |   | Linguistic Patterns<br>There are many _____, most notable/useful are _____ and _____ because _____.<br>When _____, _____." Or "_____ causes _____.<br>The _____ is to _____ as (just like) _____ is to _____. |  |
| 3.2 | Algebra •<br>Relate Addition and Multiplication | 3.OA.1<br>MP.1, 4, 7  | How is multiplication like addition? How is it different?                        | Multiplication is a way of combining equal groups. The first factor tells the number of groups and the second factor tells the number in a group.<br>Example:<br>2 x 3 (two groups of 3)<br><br>When equal groups are added multiple times, a multiplication expression shows the number of groups and the number in each group to represent the repeated addition in a more concise way. | <a href="#">Circles with Dots</a><br><br><a href="#">Multiplication Recording Sheet</a><br><br><a href="#">Multiplication People</a><br><br><a href="#">Circles for Groups</a> | A bookcase has 6 shelves. Each shelf can hold 3 books. How many books are in the bookcase?<br>Draw counters to model the problem and write an addition sentence.<br>How is multiplication like addition?   | factor, multiply, product, sum, addition, addend, multiplication sentence, addition sentence, related sentences |   | Which has more sides, 5 squares or 6 triangles?<br><br>Have students solve using pictures, numbers, and words. Make connections between answers that use addition to answers that use multiplication.  |
| 3.3 | Skip Count on a Number Line                     | 3.OA.3<br>MP.1, 4, 7  | How can you use a number line to skip count and find how many in all?            | In this lesson students combine equal groups by skip counting using a number line.<br><br><i>A number line can be a useful tool to help students combine groups by skip counting.</i>   | <a href="#">Number Line</a><br><br><a href="#">Large Number Line</a><br><br><a href="#">Student Number Line</a>  | Emma walks her dog the same number of times every day. Emma decided to calculate the total number of times she walked her dog for the past six days. She used a number line to find the total.<br>What is the total number of times Emma walked her dog during the past 6 days?<br> | Equal Groups, product, number line, jumps on the number line, multiplication sentence                           | <br><i>Collections Times Four</i><br>From the Grab-and-Go Differentiated Centers Kit –                                     | Jaime walks 3 blocks to get to school and back each day. If he walks to school four days a week. How many blocks does he walk in one week?<br>How can you show your answer using a number line?<br><br>Write a problem that can be solved by skip counting on a number line. |
| 3.4 | Problem Solving •<br>Model Multiplication       | 3.OA.8<br>MP.1,4, 5,6 | How can you use the strategy draw a diagram to solve one- and two-step problems? | In this lesson students use a bar model to decontextualize word problems and represent them symbolically.<br><br><i>Using a bar model helps students visualize the operations needed to solve the problem as they determine what is missing in the model.</i>   | <a href="#">Bar Model</a>  | Four groups of students are going on a field trip. There are 3 students in each group. Draw a diagram and solve the problem.   | <a href="#">Bar Model</a>   | Students read the book and determine how to use multiplication to find the total number of objects in each collection.  | Mara drew three rows with stars and five rows with hearts. If each row has 4 shapes, how many more hearts are there than stars?<br><br>Solve the problem using pictures, numbers, and words.   |
| 3.5 | Model with Arrays                               | 3.OA.3<br>MP.1,2,4,6  | How can you use arrays to model multiplication and find factors?                 | In this lesson students use arrays to model multiplication. It is important for student to understand the array model for multiplication because it has many applications throughout mathematics. To reinforce this concept, demonstrate to students that arrays are made of equal groups.  | <a href="#">Arrays</a><br><br><a href="#">Grid Paper</a><br><br><a href="#">Model Arrays</a>   | <br><br>Write an addition and a multiplication sentence for the array.  | Arrays, multiplication sentence, product  | <b>Activities</b><br><i>Hurray for Arrays!</i><br>   | Tom was counting pumpkins. He noticed that there were six rows of pumpkins with five pumpkins in each row. How many pumpkins does he count?<br><br>Solve the problem using pictures, numbers, and words.   |

|          |  |                   |   |  |                           |   |   |  |  |          |          |          |         |          |   |
|----------|--|-------------------|---|--|---------------------------|---|---|--|--|----------|----------|----------|---------|----------|---|
|          |  |                   |   | <p>Example:<br/>4 x 7 (4 rows of 7)</p>  <p>This standard references various problem solving contexts and strategies that students are expected to use while solving word problems involving multiplication &amp; division.</p> <p><a href="#">Common Multiplication and Division Situations</a></p> |                           |   | <p>Students complete blue Activity Card 15 by using arrays to model multiplication facts.</p> <p><b>Games</b><br/><b>Multiplication Bingo</b></p>  <p>Students practice multiplication facts through 10.</p> | <p>Have students discuss how this can be solved using an array.</p>  |  |          |          |          |         |          |   |
| 3.6      | Algebra • Commutative Property of Multiplication | 3.OA.5 MP.2,4,7,8 | <p>How can you use the Commutative Property of Multiplication to find products?</p> | <p>In this lesson students use the Commutative Property to make multiplication flexible, easy, and fast.</p> <p><i>The goal of this lesson is for students to learn another strategy to make multiplication flexible, easy, and fast.</i></p>  | Arrays, Circles with Dots | <p>Below is an array that shows <math>6 \times 3 = 18</math>. Look at the array below. Design your own array that would depict the problem <math>3 \times 4</math>.</p> <p style="text-align: center;"><math>6 \times 3 = 18</math></p>  | Commutative Property of Multiplication, equal rows, arrange   | <p><b>Linguistic Note</b></p> <p>When searching for the opposite to a key term, English Learners may simply reply by negating the word (positive/not positive) Begin a list of key words with opposite meanings for every lesson</p> <table border="1"> <tr> <td>positive</td> <td>negative</td> </tr> <tr> <td>increase</td> <td>decrease</td> </tr> <tr> <td>forward</td> <td>backward</td> </tr> </table> | positive   | negative | increase | decrease | forward | backward | <p>How is <math>5 \times 4</math> similar to <math>4 \times 5</math>? Explain how you know using pictures, numbers and words.</p> |
| positive | negative   |                   |   |  |                           |   |   |  |  |          |          |          |         |          |   |
| increase | decrease   |                   |   |  |                           |   |   |  |  |          |          |          |         |          |   |
| forward  | backward   |                   |   |  |                           |   |   |  |  |          |          |          |         |          |   |
| 3.7      | Algebra • Multiply with 1 and 0                  | 3.OA.5 MP.2,3,7,8 | <p>What happens when you multiply a number by 0 or 1?</p>                           | <p>In this lesson students use the Identity Property of Multiplication to solve multiplication problems.</p> <p><a href="#">Strategies for Learning Multiplication Facts</a></p>   |                           | <p>Zero Facts Story Problem:<br/>If I have 3 bags with no candy in any of the bags, how many pieces of candy did I have?</p> <p>Write a zero facts word problem of your own.</p>  | <p>Identity Property of Multiplication, Zero Property of Multiplication, factor, product, multiplication sentence</p>   | <p><b>Vocabulary Strategy:</b><br/><b>Graphic Organizer</b></p>  <p><b>Draw It</b></p>    |  <p>One group has 5 people, and each person has 1 granola bar. Another group has 5 people, and each person has 0 granola bars. Which group has more granola bars? Explain.</p> |          |          |          |         |          |   |

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|  |  |  |  |  |  |  |  |  <p>Write It</p>  <p>Write a word problem that can be solved using the model displayed.</p> |  |
|--|--|--|--|--|--|--|--|--|--|

Assessments:

[Go Math Chapter 3 Test](#)

\*\*Common Assignment Go Math Chapter 3 Performance Task: [Tile Designs](#) (Understand Multiplication 3.OA.1, 3.OA.3, 3.OA.5, 3.OA.8)