<table>
<tr><td>Grade: 2

Unit 5--Time, Graphs, and Fractional Representations</td><td colspan="2">Subject: Math
Time Frame: 20 days
Domains: Operations in Algebraic Thinking, Number and Operations in Base Ten, Measurement and Data, Geometry</td></tr>
<tr><td>Standards</td><td>Content Standards:
2.OA.1, 2.OA.2, 2, 2.NBT.2, 2.NBT.4, 2.NBT.5, 2.NBT.6, 2.MD.7, 2.MD.10, 2.G.3
http://www.corestandards.org/wp-content/uploads/Math_Standards.pdf</td><td>Practice Standards:
MP 1, 2, 3, 4, 5, 6, 7, 8</td></tr>
<tr><td>Enduring Understandings</td><td colspan="2">1. Draw and use picture graphs.
2. Draw and use both horizontal and vertical bar graphs and relate the scale to a number line diagram.
3. Tell and write time from analog and digital clocks to the nearest five minutes using a.m. and p.m.</td></tr>
<tr><td>Essential Questions</td><td colspan="2">1. How can I tell and write time to the nearest five minutes using a.m. and p.m.?
2. How can I solve problems by using picture and bar graphs?
3. How can I analyze data using picture and bar graphs?</td></tr>
<tr><td>Vocabulary</td><td colspan="2">clock, analog clock, digital clock, hour hand, minute hand, a.m., p.m., equal shares, half, halves, picture graph, fewer, less, vertical, title, more, most, fewest, horizontal, bar graph, data, data table, horizontal bar graph, vertical bar graph, scale, sort, table, survey, data</td></tr>
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Priority and Supporting CCSS	Explanations and Examples*
2.OA.1. Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.	**2.OA.1.** Word problems that are connected to students' lives can be used to develop fluency with addition and subtraction. Table 1 (Appendix A) describes the four different addition and subtraction situations and their relationship to the position of the unknown. Examples: • Take-from example: David had 63 stickers. He gave 37 to Susan. How many stickers does David have now? 63 – 37 = __ • Add to example: David had $37. His grandpa gave him some money for his birthday. Now he has $63. How much money did David's grandpa give him? $37 +__ = $63 • Compare example: David has 63 stickers. Susan has 37 stickers. How many more stickers does David have than Susan? 63 – 37 = __ Even though the modeling of the two problems above is different, the equation, 63 - 37 =__, can represent both situations (How many more do I need to make 63?) • Take-from (Start Unknown) David had some stickers. He gave 37 to Susan. Now he has 26 stickers. How many stickers did David have before? __ - 37 = 26 It is important to attend to the difficulty level of the problem situations in relation to the position of the unknown. • Result Unknown problems are the least complex for students followed by Total Unknown and Difference Unknown • The next level of difficulty includes Change Unknown, Addend Unknown, followed by Bigger Unknown • The most difficult are Start Unknown, Both Addends Unknown, and Smaller Unknown Second grade students should work on ALL problem types regardless of the level of difficulty. Students can use interactive whiteboard or document camera to demonstrate and justify their thinking.

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

	This standard focuses on developing an algebraic representation of a word problem through addition and subtraction; the intent is not to introduce traditional algorithms or rules.

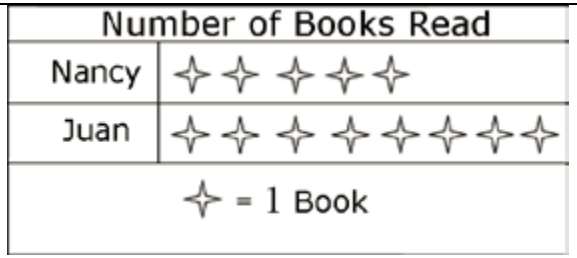
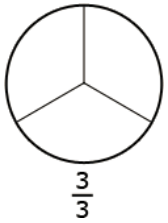
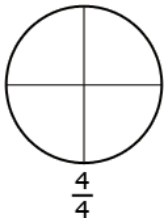
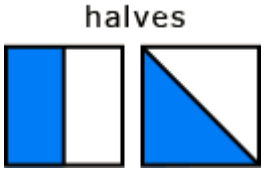
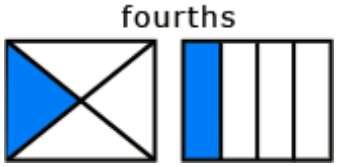
Priority and Supporting CCSS	Explanations and Examples*
2.OA.2. Fluently add and subtract within 20 using mental strategies. By end of Grade 2, know from memory all sums of two one-digit numbers.	**2.OA.2.** This standard is strongly connected to all the standards in this domain. It focuses on students being able to fluently add and subtract numbers to 20. 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. Mental strategies help students make sense of number relationships as they are adding and subtracting within 20. The ability to calculate mentally with efficiency is very important for all students. Mental strategies may include the following: • Counting on • Making tens (9 + 7 = 10 + 6) • Decomposing a number leading to a ten (14 – 6 = 14 – 4 – 2 = 10 – 2 = 8) • Fact families (8 + 5 = 13 is the same as 13 - 8 = 5) • Doubles • Doubles plus one (7 + 8 = 7 + 7 + 1) However, the use of objects, diagrams, or interactive whiteboards, and various strategies will help students develop fluency.

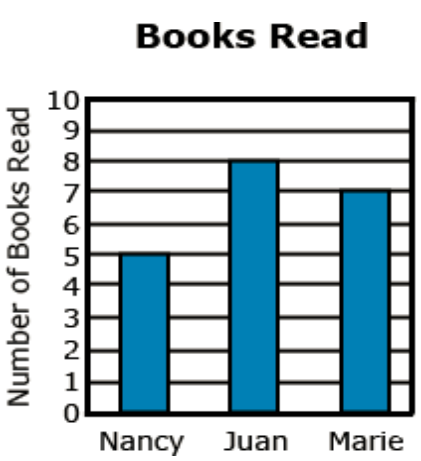
Priority and Supporting CCSS	Explanations and Examples*
2.NBT.2 Count within 1000; skip-count by 5s, 10s, and 100s.	**2.NBT.2** Students need many opportunities counting, up to 1000, from different starting points. They should also have many experiences skip counting by 5s, 10s, and 100s to develop the concept of place value. Examples: • The use of the 100s chart may be helpful for students to identify the counting patterns. • The use of money (nickels, dimes, dollars) or base ten blocks may be helpful visual cues. • The use of an interactive whiteboard may also be used to develop counting skills. The ultimate goal for second graders is to be able to count in multiple ways with no visual support.
2.NBT.4. Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using >, =, and < symbols to record the results of comparisons.	**2.NBT.4.** Students may use models, number lines, base ten blocks, interactive whiteboards, document cameras, written words, and/or spoken words that represent two three-digit numbers. To compare, students apply their understanding of place value. They first attend to the numeral in the hundreds place, then the numeral in tens place, then, if necessary, to the numeral in the ones place. Comparative language includes but is not limited to: more than, less than, greater than, most, greatest, least, same as, equal to and not equal to. Students use the appropriate symbols to record the comparisons.

2.NBT.5. Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.	**2.NBT.5.** 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 should have experiences solving problems written both horizontally and vertically. They need to communicate their thinking and be able to justify their strategies both verbally and with paper and pencil. Addition strategies based on place value for 48 + 37 may include: • Adding by place value: 40 + 30 = 70 and 8 + 7 = 15 and 70 + 15 = 85. • Incremental adding (breaking one number into tens and ones); 48 + 10 = 58, 58 + 10 = 68, 68 + 10 = 78, 78 + 7 = 85 • Compensation (making a friendly number): 48 + 2 = 50, 37 – 2 = 35, 50 + 35 = 85 Subtraction strategies based on place value for 81 - 37 may include: • Adding Up (from smaller number to larger number): 37 + 3 = 40, 40 + 40 = 80, 80 + 1 = 81, and 3 + 40 + 1 = 44. • Incremental subtracting: 81 -10 = 71, 71 – 10 = 61, 61 – 10 = 51, 51 – 7 = 44 • Subtracting by place value: 81 – 30 = 51, 51 – 7 = 44 Properties that students should know and use are: • Commutative Property of Addition (Example: 3 + 5 = 5 + 3) • Associative Property of Addition (Example: (2 + 7) + 3 = 2 + (7+3)) • Identity Property of 0 (Example: 8 + 0 = 8) Students in second grade need to communicate their understanding of why some properties work for some operations and not for others. • Commutative Property: In first grade, students investigated whether the Commutative Property works with subtraction. The intent was for students to recognize that taking 5 from 8 is not the same as taking 8 from 5. Students should also understand that they will be working with numbers in later grades that will allow them to subtract larger numbers from smaller numbers. This exploration of the Commutative Property continues in second grade.

	Associative Property: Recognizing that the Associative Property does not work for subtraction is difficult for students to consider at this grade level as it is challenging to determine all the possibilities.

Priority and Supporting CCSS	Explanations and Examples*
2.NTB.6. Add up to four two-digit numbers using strategies based on place value and properties of operations.	**2.NTB.6**. Students demonstrate addition strategies with up to four two-digit numbers either with or without regrouping. Problems may be written in a story problem format to help develop a stronger understanding of larger numbers and their values. Interactive whiteboards and document cameras may also be used to model and justify student thinking.
2.MD.7. Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.	2.MD.7**.** In first grade, students learned to tell time to the nearest hour and half-hour. Students build on this understanding in second grade by skip-counting by 5 to recognize 5-minute intervals on the clock. They need exposure to both digital and analog clocks. It is important that they can recognize time in both formats and communicate their understanding of time using both numbers and language. Common time phrases include the following: quarter till ___, quarter after ___, ten till ___, ten after ___, and half past ___. Students should understand that there are 2 cycles of 12 hours in a day - a.m. and p.m. Recording their daily actions in a journal would be helpful for making real-world connections and understanding the difference between these two cycles. An interactive whiteboard or document camera may be used to help students demonstrate their thinking.
2.MD.10. Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put together, take-apart, and compare problems4 using information presented in a bar graph.	2.MD.10. Students should draw both picture and bar graphs representing data that can be sorted up to four categories using single unit scales (e.g., scales should count by ones). The data should be used to solve put together, take-apart, and compare problems as listed in Table 1 (Appendix A). In second grade, picture graphs (pictographs) include symbols that represent single units. Pictographs should include a title, categories, category label, key, and data.

	 Second graders should draw both horizontal and vertical bar graphs. Bar graphs include a title, scale, scale label, categories, category label, and data.
2.G.3. Partition circles and rectangles into two, three, or four equal shares, describe the shares using the words *halves, thirds, half of, a third of,* etc., and describe the whole as two halves, three thirds, four fourths. Recognize that equal shares of identical wholes need not have the same shape.	**2.G.3** This standard introduces fractions in an area model. Students need experiences with different sizes, circles, and rectangles. For example, students should recognize that when they cut a circle into three equal pieces, each piece will equal one third of its original whole. In this case, students should describe the whole as three thirds. If a circle is cut into four equal pieces, each piece will equal one fourth of its original whole and the whole is described as four fourths.  $\frac{3}{3}$  $\frac{4}{4}$ Students should see circles and rectangles partitioned in multiple ways so they learn to recognize that equal shares can be different shapes within the same whole. An interactive whiteboard may be used to show partitions of shapes.  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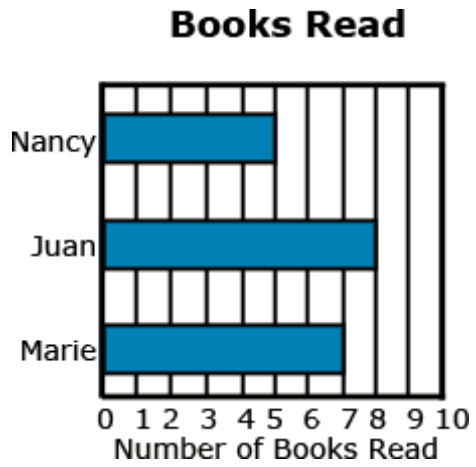
Juan
Marie


Books Read
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Number of Books Read

Resources
Math Expressions – Unit 5 Lessons 1-10 Soar to Success Math Intervention Mega Math Destination Math Common Core Mathematics-Newmark Learning- Xtramath.org Learnzillion.com Think Central

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https://grade2commoncoremath.wikispaces.hcpss.org/2.OA.2
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https://grade2commoncoremath.wikispaces.hcpss.org/2.G.3

APPENDIX A—TABLE 1

TABLE 1. Common addition and subtraction situations.[6]

	Result Unknown	Change Unknown	Start Unknown
Add to	Two bunnies sat on the grass. Three more bunnies hopped there. How many bunnies are on the grass now? 2 + 3 = ?	Two bunnies were sitting on the grass. Some more bunnies hopped there. Then there were five bunnies. How many bunnies hopped over to the first two? 2 + ? = 5	Some bunnies were sitting on the grass. Three more bunnies hopped there. Then there were five bunnies. How many bunnies were on the grass before? ? + 3 = 5
Take from	Five apples were on the table. I ate two apples. How many apples are on the table now? 5 – 2 = ?	Five apples were on the table. I ate some apples. Then there were three apples. How many apples did I eat? 5 – ? = 3	Some apples were on the table. I ate two apples. Then there were three apples. How many apples were on the table before? ? – 2 = 3

	Total Unknown	Addend Unknown	Both Addends Unknown[1]
Put Together/ Take Apart[2]	Three red apples and two green apples are on the table. How many apples are on the table? 3 + 2 = ?	Five apples are on the table. Three are red and the rest are green. How many apples are green? 3 + ? = 5, 5 – 3 = ?	Grandma has five flowers. How many can she put in her red vase and how many in her blue vase? 5 = 0 + 5, 5 = 5 + 0 5 = 1 + 4, 5 = 4 + 1 5 = 2 + 3, 5 = 3 + 2

	Difference Unknown	Bigger Unknown	Smaller Unknown
Compare[3]	("How many more?" version): Lucy has two apples. Julie has five apples. How many more apples does Julie have than Lucy? ("How many fewer?" version): Lucy has two apples. Julie has five apples. How many fewer apples does Lucy have than Julie? 2 + ? = 5, 5 – 2 = ?	(Version with "more"): Julie has three more apples than Lucy. Lucy has two apples. How many apples does Julie have? (Version with "fewer"): Lucy has 3 fewer apples than Julie. Lucy has two apples. How many apples does Julie have? 2 + 3 = ?, 3 + 2 = ?	(Version with "more"): Julie has three more apples than Lucy. Julie has five apples. How many apples does Lucy have? (Version with "fewer"): Lucy has 3 fewer apples than Julie. Julie has five apples. How many apples does Lucy have? 5 – 3 = ?, ? + 3 = 5

[1]These take apart situations can be used to show all the decompositions of a given number. The associated equations, which have the total on the left of the equal sign, help children understand that the = sign does not always mean makes or results in but always does mean is the same number as.
[2]Either addend can be unknown, so there are three variations of these problem situations. Both Addends Unknown is a productive extension of this basic situation, especially for small numbers less than or equal to 10.
[3]For the Bigger Unknown or Smaller Unknown situations, one version directs the correct operation (the version using more for the bigger unknown and using less for the smaller unknown). The other versions are more difficult.

Seymour Public Schools Math Grade 2 Unit 5