

## Operations & Algebraic Thinking

Standard	Basic: Conceptual "Understand"	Standard: Procedural "Doing"	Expanded: Application																				
<p>4. OA 1. Interpret a multiplication equation as a comparison, e.g., interpret <math>35 = 5 \times 7</math> as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations.</p>	<p>Complete the table.</p> <table border="1" data-bbox="384 407 915 850"> <thead> <tr> <th>Comparison Statement</th> <th>Multiplication Equation</th> </tr> </thead> <tbody> <tr> <td>54 popsicles is 6 times as many as 9 popsicles.</td> <td></td> </tr> <tr> <td></td> <td><math>24 = 6 \times 4</math></td> </tr> <tr> <td>48 books is 8 times as many as 6 books.</td> <td></td> </tr> </tbody> </table>	Comparison Statement	Multiplication Equation	54 popsicles is 6 times as many as 9 popsicles.			$24 = 6 \times 4$	48 books is 8 times as many as 6 books.		<p>The fourth grade classes had a book challenge. The chart represents the classes and the amount of books read in the challenge. Use the chart to complete the statement and equation sentences.</p> <table border="1" data-bbox="947 550 1478 945"> <thead> <tr> <th>Class</th> <th># of books</th> </tr> </thead> <tbody> <tr> <td>Brooks</td> <td>36</td> </tr> <tr> <td>Erwin</td> <td>24</td> </tr> <tr> <td>Taylor</td> <td>12</td> </tr> <tr> <td>Smith</td> <td>18</td> </tr> <tr> <td>Dobbs</td> <td>6</td> </tr> </tbody> </table> <p>_____ read 2 times as many books as Taylor's class. Multiplication equation _____</p> <p>Brook's class read 6 times as many books as _____ class Multiplication equation _____</p>	Class	# of books	Brooks	36	Erwin	24	Taylor	12	Smith	18	Dobbs	6	<p>Draw a model and write an equation for the following.</p> <p>60 is 6 times as many as 10.</p> <p>7 times as many as 5 is 35</p> <p>Draw models to represent <math>27 = 9 \times 3</math> and <math>27 = 3 \times 9</math>. How are the models alike? How are they different?</p> <p>Callie has 4 times as many pencils as Ben. Show three different amounts of pencils Callie and Ben could have.</p> <p><b>Possibility 1</b> Callie _____ pencils Ben _____ pencils</p> <p><b>Possibility 2</b> Callie _____ pencils Ben _____ pencils</p>
Comparison Statement	Multiplication Equation																						
54 popsicles is 6 times as many as 9 popsicles.																							
	$24 = 6 \times 4$																						
48 books is 8 times as many as 6 books.																							
Class	# of books																						
Brooks	36																						
Erwin	24																						
Taylor	12																						
Smith	18																						
Dobbs	6																						

*\* It may be appropriate to read some of the longer problems out loud especially with lower readers*

**Grade 4 Math Question Stem Bank: Common Core State Standards**  
**Standards for Mathematical Practice**

<p>4.OA 2.          Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison.</p>	<p>Cameron ate 30 strawberries. He ate 5 times as many as Avery. How many strawberries did Avery eat?</p> <p>Tessa’s playhouse was 4 times as tall as Steven’s playhouse. Circle all the possibilities that could describe the playhouse sizes.</p> <p>a. Tessa 30 ft    Steven 14 ft          b. Tessa 24 ft    Steven 6 ft          c. Tessa 12 ft    Steven 3 ft          d. Tessa 8 ft    Steven 4 ft          e. Tessa 40 ft    Steven 10 ft</p>	<p>A pack of 8 erasers costs 5 times as much as a single eraser. A single eraser costs 6 cents. How much does the pack of erasers cost?</p> <p>Carson and Karlee went fishing. Carson caught 18 fish. He caught 6 times as many fish as Karlee. How many fish did Karlee catch?</p>	<p>Write and solve a story problem, using the multiplicative comparison, for the equation <math>9 \times 3</math>.</p> <p>Read the clues below to complete the chart to show how many baskets each player made during the shoot out.</p> <table border="1" data-bbox="1501 519 1984 917"> <thead> <tr> <th>Player</th> <th>Baskets Made</th> </tr> </thead> <tbody> <tr> <td>Dalton</td> <td></td> </tr> <tr> <td>Blake</td> <td></td> </tr> <tr> <td>Cameron</td> <td></td> </tr> <tr> <td>Avery</td> <td></td> </tr> <tr> <td>Tristan</td> <td></td> </tr> </tbody> </table> <p>1. Cameron made 8 baskets.          2. Blake made 3 times as many more as Avery.          3. Tristan made 4 baskets.          4. Avery made 4 times as many as Tristan.          5. Dalton made 4 times as many as Cameron.</p>	Player	Baskets Made	Dalton		Blake		Cameron		Avery		Tristan	
Player	Baskets Made														
Dalton															
Blake															
Cameron															
Avery															
Tristan															

*\* It may be appropriate to read some of the longer problems out loud especially with lower readers*

**Grade 4 Math Question Stem Bank: Common Core State Standards  
Standards for Mathematical Practice**

<p>4.OA.3. Solve multistep word problems posed with whole numbers and having whole number answers using the four operations, including problems in which remainders must be interpreted.</p>		<p>Jim had 122 baseball cards. He kept 12 cards for himself. Jim shared the rest evenly among his 5 friends. How many cards did each friend get?</p>	<p>On a Saturday evening a pizza shop had orders for 6 pepperoni, 95 sausage, and 335 cheese pizzas. If the 4 cooks each made an equal number of pizzas, how many pizzas did each cook make?</p> <p>The six 4th grade classes were planning their trans</p>
<p>4. OA 4. Find all factor pairs for a whole number in the range 1-100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1-100 is a multiple of a given one-digit number. Determine whether a given whole number in the range 1-100 is prime or composite.</p>	<p>Circle the prime numbers.</p> <p>2      3      6      9      11      13</p> <p>15      17</p> <p>State whether the number is prime or composite.</p> <p>37 _____      19 _____</p> <p>55 _____      79 _____</p> <p>24 _____      12 _____</p>	<p>Using prime numbers, make this statement true.</p> <p>_____ + _____ &gt; 17</p>	<p>If you add two prime numbers, you will always get a composite number. Is this statement true? Explain using numbers, words and examples to prove why or why not.</p>
<p>4.OA.5</p>	<p>What will the 12th step in this pattern be?</p>	<p>Cameron began reading his book. Use</p>	<p>Jacob said if you start with the</p>

*\* It may be appropriate to read some of the longer problems out loud especially with lower readers*

**Grade 4 Math Question Stem Bank: Common Core State Standards**  
**Standards for Mathematical Practice**

<p>Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. Explain informally why the numbers will continue to alternate in this way.</p>		<p>the information below to help you to determine how many pages he read on day 9.</p> <p>Day 1 = 2 pages          Day 2 = 4 pages          Day 3 = 6 pages          Day 4 = 8 pages</p> <p>Cameron read _____ pages on day 9.</p>	<p>number 6 and follow the rule <math>n + 3</math> then every other number will be even. Is Jacob correct? Complete the chart below and explain.</p> <table border="1" data-bbox="1512 357 1984 430"> <tr> <td>6</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>	6					
6									

**Color boxes indicate question complexity focus range for CCSS**

*\* It may be appropriate to read some of the longer problems out loud especially with lower readers*

## Numbers and Operations in Base Ten

Standard	Basic: Conceptual "Understand"	Standard: Procedural "Doing"	Expanded: Application									
<p>4. NBT.1 Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right. For example, recognize that <math>700 \div 70 = 10</math> by applying concepts of place value and division.</p>	<p>Andy's Number 2 3 <u>  </u> <u>  </u> 7 <u>  </u>                      Erin's Number <u>  </u> 2 3 , 7 <u>  </u> <u>  </u></p> <p>Which of the digits in Andy's number has the value that is 10 times the value of the same digit in Erin's number?</p> <p align="center">2            3            7</p> <p>Sam wrote the number 36,462. How many times greater is the 6 in the thousands place, than the 6 in the tens place?</p>	<p>Lilly wrote the number 26,4<u>5</u>9.                      Joey wrote the number 73,<u>5</u>36.</p> <p>How many times greater is the 5 in Joey's number than the 5 in Lilly's number? Use pictures, numbers, or words to explain your thinking.</p>	<p>Write two different numbers with the digit 4 in the ten thousands place and the hundreds place. How does the value of the 4 in the ten thousands place compare to the value of the 4 in the hundreds place?</p> <p>Why does 8,326 have a different value than 8,236? Explain how you know your answer is correct.</p>									
<p>4.NBT.2 Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using <math>&gt;</math>, <math>=</math>, and <math>&lt;</math> symbols to record the results</p>	<p>Complete the table.</p> <table border="1" data-bbox="331 886 856 1118"> <thead> <tr> <th>Numeral</th> <th>Word Form</th> <th>Expanded Form</th> </tr> </thead> <tbody> <tr> <td>42,762</td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td>5,000+700+40+6</td> </tr> </tbody> </table> <p>6<u>9</u>,742</p> <p>The value of the underlined digit is _____.</p> <p>The place value of the underlined digit is _____.</p>	Numeral	Word Form	Expanded Form	42,762					5,000+700+40+6	<p><math>921,382 &lt; 921,832</math> Is the statement true? Explain why or why not.</p>	<p>Use the following six digits to create the largest number possible. Explain why the number you created is the largest.</p> <p align="center">5    2    9    7    1    4</p>
Numeral	Word Form	Expanded Form										
42,762												
		5,000+700+40+6										

*\* It may be appropriate to read some of the longer problems out loud especially with lower readers*

**Grade 4 Math Question Stem Bank: Common Core State Standards**  
**Standards for Mathematical Practice**

<p>4.NBT.3 Use place value understanding to round multi-digit whole numbers to any place.</p>	<p>Round to the nearest thousands.</p> <p>4,681 _____ 21,843 _____</p> <p>Round to the nearest hundreds.</p> <p>56,842 _____ 3,692 _____</p>	<p>Avery drew the numbers 8 ,3, 7 and 4 out of a bag. He had to arrange the numbers to make a number that would round to 8,400. Avery said 8,374 rounded to 8,400. Cameron used the same digits and said 8,437 rounds to 8,400. Are they both correct? Explain.</p>	<p>Max rolled four numbers to create a number that would round to 4,700 when rounded to the nearest thousand. What is the smallest number Max can create out of his four numbers that would round to 4,700.</p>
<p>4.NBT.4 Fluently add and subtract multi-digit whole numbers using the standard algorithm.</p>	<p>Solve.</p> <p>647+259= 2,581-1,672=</p>	<p>The school book fair was open for 3 days. They were planning to sell 1762 books by the end of the book fair. On day 1, they sold 851 books, on day 2 they sold 493 and day 3 they sold 520 books. Did they reach their goal of 1762 books total? Explain.</p>	<p>AJ subtracted the problem 21,152-403 and said the difference was 20,649. Max subtracted the same problem and said the difference is 20,749. Who is correct and why?</p>
<p>4.NBT.5 Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations.</p>	<p>Find the product.</p> <p>4721            26 <u>x 5</u>            <u>x56</u></p> <p>2671            85 <u>x 4</u>            <u>x17</u></p>	<p>Which multiplication problem has the greatest product and why?</p> <p>52 x 6 or 56 x 2</p> <p>Solve 6 x 184 two different ways.</p>	<p>Use the digits 1, 3, 5, and 6 to write a two-digit by two-digit multiplication problem that will result in the greatest product.</p>

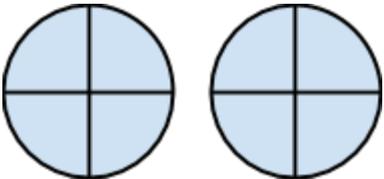
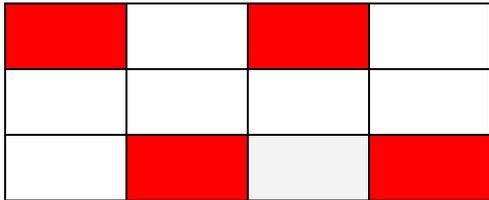
*\* It may be appropriate to read some of the longer problems out loud especially with lower readers*

**Grade 4 Math Question Stem Bank: Common Core State Standards**  
**Standards for Mathematical Practice**

<p>6.NBT.6 Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models</p>	<p>Solve. (Students can solve using algorithm, rectangular array or area model.)</p> <p><math>54 \div 9 =</math></p> <p><math>162 \div 6 =</math></p>	<p>Mrs. Smith bought a bag of 240 lollipops. There are eight second grade classes. How many lollipops will each class get?</p>	<p>Write a division problem using a 3-digit dividend and a 1-digit divisor that results in</p> <ol style="list-style-type: none"><li>1) an even quotient.</li><li>2) a quotient with a remainder.</li></ol>
---	---	--	---

*\* It may be appropriate to read some of the longer problems out loud especially with lower readers*

## Number & Operations—Fractions

Standard	Basic: Conceptual "Understand"	Standard: Procedural "Doing"	Expanded: Application
<p>4.NF.A.1 Explain why a fraction <math>a/b</math> is equivalent to a fraction <math>(n \times a)/(n \times b)</math> by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions.</p>	<p>Divide the parts of the second model to make an equivalent fraction.</p>  <p align="center"><math>\frac{2}{4} =</math></p>	<p>Max says that <math>\frac{1}{4}</math> of the rectangle below is shaded. Do you think he is correct? Explain why or why not using the picture.</p> 	<p>Draw a rectangle with a length 1 with 3 parts shaded. Then draw another rectangle of the same length but with 9 parts shaded. Could they be equal?</p> <p align="center"><math>\frac{1}{2} \times = \frac{3}{6}</math></p>
<p>4.NF.A.2 Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction.</p>	<p>Compare the fractions below.</p> <p><math>\frac{3}{9}</math>  <math>\frac{5}{15}</math></p> <p><math>\frac{2}{6}</math>  <math>\frac{2}{4}</math></p>	<p>Karlee used an 8x8 grid to represent 1 and Carson used a 12x12 grid to represent 1. Each of them shaded in <math>\frac{1}{4}</math>. How many squares did Karlee shade in? How many squares did Carson shade in? Why did they shade in a different amount?</p>	<p>Create and use a number line to compare <math>\frac{3}{4}</math> and <math>\frac{2}{3}</math>. Explain how using a number line can help you get your answer.</p>

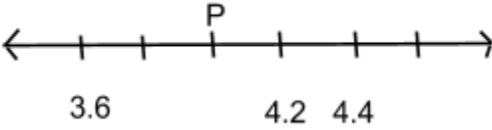
*\* It may be appropriate to read some of the longer problems out loud especially with lower readers*

**Grade 4 Math Question Stem Bank: Common Core State Standards**  
**Standards for Mathematical Practice**

<p>4.NF.B.3          Understand a fraction <math>a/b</math> with <math>a &gt; 1</math> as a sum of fractions <math>1/b</math>. A.          Understand addition and subtraction of fractions as joining and separating parts referring to the same whole.</p>	<p>Decompose each fraction two different ways.</p> $\frac{5}{6} =$ $\frac{5}{6} =$	<p>Gavin collected honey from his 4 beehives. The first two hives he collected <math>\frac{2}{3}</math> gallon of honey. Then he collected <math>\frac{1}{4}</math> out of his third hive and <math>\frac{1}{3}</math> from his last hive. How much honey did Gavin collect in all?</p>	<p>Avery had 4 cups of milk. He used <math>\frac{3}{5}</math> of a cup in his cereal, he used <math>\frac{1}{5}</math> of a cup in his pancake mix and he drank <math>\frac{4}{5}</math> of a cup. Avery still wants to make pudding which requires <math>\frac{2}{3}</math> of a cup of milk. Will Avery have enough milk left? Explain using numbers and words.</p> <p>Draw a model of <math>3\frac{5}{16}</math>.</p>
<p>4.NF.4          Apply and extend previous understandings of multiplication to multiply a fraction by a whole number. a.          Understand a fraction <math>a/b</math> as a multiple of <math>1/b</math>. b. Understand a multiple of <math>a/b</math> as a multiple of <math>1/b</math>, and use this understanding to multiply a fraction by a whole number. c. Solve word problems involving multiplication of a fraction by a whole number</p>	<p>Solve.</p> $6 \times \frac{1}{2} =$ $24 \times \frac{1}{8} =$	<p>There are 12 kids at the pizza party. If each kid eats <math>\frac{1}{3}</math> of a pizza then how many will they need to order?</p> <p>Ally ate <math>\frac{2}{3}</math> of the 12 donuts. How many donuts did she eat?</p>	<p>Multiply and solve <math>4 \times \frac{1}{4} = \underline{\quad}</math>          Then represent the solution as:</p> <ul style="list-style-type: none"> <li>• an area model</li> <li>• on a number line</li> <li>• an equation</li> </ul>

*\* It may be appropriate to read some of the longer problems out loud especially with lower readers*

**Grade 4 Math Question Stem Bank: Common Core State Standards**  
**Standards for Mathematical Practice**

<p>4.NF.5 Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100. For example, express <math>\frac{3}{10}</math> as <math>\frac{30}{100}</math>, and add <math>\frac{3}{10} + \frac{4}{100} = \frac{34}{100}</math></p>	<p>Solve.  <math>\frac{7}{10} - \frac{18}{100} =</math>  <math>\frac{70}{100} + \frac{2}{10} =</math></p>	<p>Is <math>\frac{9}{10}</math> equivalent to <math>\frac{4}{5}</math>? Explain why or why not using a model.</p>	<p>A dime is <math>\frac{1}{10}</math> of a dollar and a penny is <math>\frac{1}{100}</math> of a dollar. what fraction of a dollar is 5 dimes and 2 pennies? Use a model to show your thinking. Write your answer in both fraction and decimal form.</p>										
<p>4.NF.6 Use decimal notation for fractions with denominators 10 or 100. For example, rewrite 0.62 as <math>\frac{62}{100}</math>; describe a length of 0.62 meters; locate 0.62 on a number line diagram</p>	<p><math>\frac{8}{10} + \frac{2}{100} =</math>  <math>0.50 + 0.2 =</math>  <math>\frac{60}{100} =</math></p>	<p align="center">  </p> <p>What is the value of P? _____</p> <p>Explain how you found your answer.</p>	<p>Create a design and label below.</p> <table border="1" data-bbox="1543 625 1984 755"> <tr> <td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td></td><td></td><td></td><td></td><td></td> </tr> </table> <p>_____ shaded boxes out of 10</p> <p>_____ decimal fraction</p> <p>_____ decimal</p> <p>(You could do this with 100)</p>										

*\* It may be appropriate to read some of the longer problems out loud especially with lower readers*

**Grade 4 Math Question Stem Bank: Common Core State Standards**  
**Standards for Mathematical Practice**

<p>4.NF.7 Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols <math>&gt;</math>, <math>=</math>, or <math>&lt;</math>, and justify the conclusions,</p>	<p>Compare the decimals below. (<math>&lt;</math>, <math>&gt;</math>, or <math>=</math>)</p> <p><math>0.35</math> ○ <math>0.71</math></p> <p><math>0.57</math> ○ <math>0.7</math></p> <p>Which of the statements are true?</p> <ul style="list-style-type: none"><li>A. <math>0.45 &gt; 0.54</math></li><li>B. <math>0.23 &lt; 0.38</math></li><li>C. <math>0.4 &gt; 0.25</math></li><li>D. <math>0.6 = 0.06</math></li></ul>	<p>In a school survey of favorite lunch, 0.23 students voted for tacos, 0.3 voted for hamburgers, and 0.47 voted for chicken nuggets. Which lunch had the least votes?</p>	<p>Molly loved her new book. She read for 2.25 hours on Friday. On Saturday she read for 2.75 hours. Then on Sunday she read less than she did on Saturday more than she did on Friday. What could the possible amount of time she read on Sunday be?</p> <p>Using a number line, place two numbers on the line that are between 40.0 and 41.0. Compare those two numbers using <math>&lt;</math>, <math>&gt;</math> or <math>=</math>.</p>
---	---	--	---

*\* It may be appropriate to read some of the longer problems out loud especially with lower readers*

## Measurement & Data

Standard	Basic: Conceptual "Understand"	Standard: Procedural "Doing"	Expanded: Application
<p>4.MD.1 1 Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb., oz.; l. ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table.</p>	<p>Complete the conversions.</p> <p>6 feet= ____ inches</p> <p>3m= ____ centimeters</p> <p>3kg= ____ grams</p> <p>4 pounds= _____ ounces</p> <p>8 quarts= _____ gallons</p>	<p>Blake was packing up some books to send to his cousin. The box cannot hold more than 3kg. If each book has a mass of 200g, what is the maximum number of books he can send?</p> <p>Kim ran on a track that was labeled in meters and kilometers. She began running and stopped after 3000 meters. After a short rest she ran 2 more kilometers. About how many miles did she run all together?</p>	<p>Cameron's dog, Jake, weighs 8 times as much as his their new puppy, Ally. Jake weighs 72 pounds. How much does Ally weigh in ounces?</p>

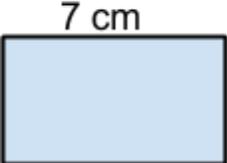
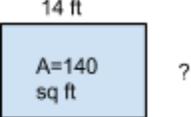
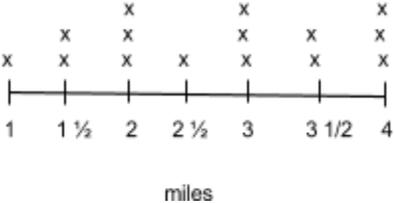
*\* It may be appropriate to read some of the longer problems out loud especially with lower readers*

**Grade 4 Math Question Stem Bank: Common Core State Standards**  
**Standards for Mathematical Practice**

<p>4.MD.2 2 Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurement quantities using diagrams such as number line diagrams that feature a measurement scale.</p>	<p>Cam began reading his book at 12:30. It took him <math>3\frac{1}{4}</math> hours to complete the book. What time did he finish reading his book?</p>	<p>Carter swam 4 laps in the pool. Each lap took him 45 seconds. Jake also swam 4 laps and it took him 120 seconds all together. How much faster was Jake?</p> <p>Steven took his kids to the doctor for their check up. Tessa was <math>3\frac{1}{2}</math> feet tall, Tristan was 2 meters tall and Callie was 22 inches tall. Put the kids in order from shortest to tallest.</p>	<p>Toby needs to purchase tickets to the circus for his family. He has \$220.00 and each tickets costs \$22.00. Does he have enough to buy tickets for his family of 9? Explain how you found your answer.</p>
---	---	--	--

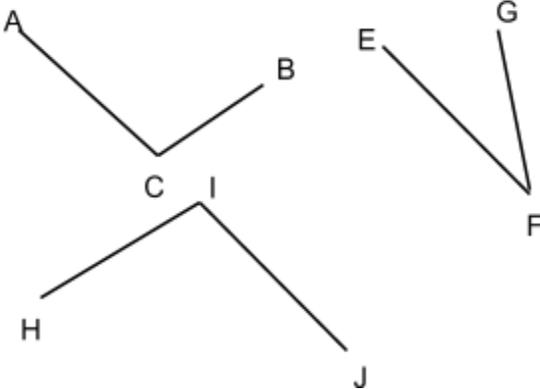
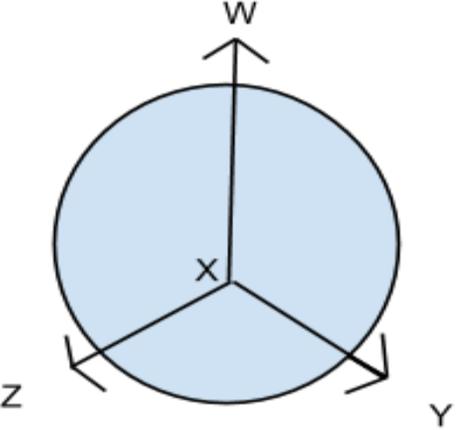
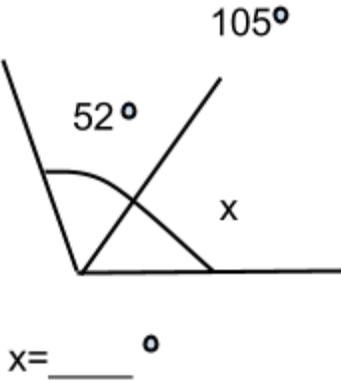
*\* It may be appropriate to read some of the longer problems out loud especially with lower readers*

**Grade 4 Math Question Stem Bank: Common Core State Standards**  
**Standards for Mathematical Practice**

<p>4.MD.3 Apply the area and perimeter formulas for rectangles in real world and mathematical problems. For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor.</p>	<p>Determine the area. (or perimeter)</p>  	<p>The library added a new non-fiction section that measured 13 ft by 12 ft. What is the area of the new non-fiction section?</p>	<p>The rectangular boat dock at Avery's house is 20 square feet. The longer side measures 5 ft. The boat dock at the lake is twice as long and twice as wide.</p> <ol style="list-style-type: none"> <li>1. Draw and label Avery's boat dock. What is the perimeter?</li> <li>2. Draw and label the boat dock at the lake. What is the perimeter?</li> </ol>
<p>4.MD.4 Make a line plot to display a data set of measurements in fractions of a unit (<math>\frac{1}{2}</math>, <math>\frac{1}{4}</math>, <math>\frac{1}{8}</math>). Solve problems involving addition and subtraction of fractions by using information presented in line plots. For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection.</p>	<p>The line plot below represents how many miles the bike riders rode. How many bike riders rode 2 to <math>3\frac{1}{2}</math> miles?</p> 	<p>What is the total distance the bike rider rode all together?</p> 	<p>Students are given a bag of crayons. Students measure the crayons and record their data using a line plot.</p> <p>Joe's pencil shortens each day by <math>\frac{1}{8}</math> of an inch. His pencil is currently 6 inches. How many days can he use his pencil until it is 2 inches.</p>

*\* It may be appropriate to read some of the longer problems out loud especially with lower readers*

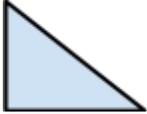
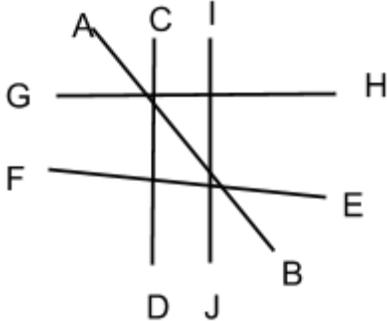
**Grade 4 Math Question Stem Bank: Common Core State Standards**  
**Standards for Mathematical Practice**

<p>4.MD.5 Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement:</p> <p>4.MD.6 Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure.</p>	<p>Measure the angles.</p> 	<p>Describe the angles below.</p> 	<p>How many 60 degree angles are in a circle? Draw a larger circle and divide into the same sections as first circle. Does the size of the circle affect the measure of the angles? Explain.</p>
<p>4.MD.7 Recognize angle measure as additive. When an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts. Solve addition and subtraction problems to find unknown angles on a diagram in real world and mathematical problems.</p>		<p>I turned my knob on my stove 55 degrees from the start position. If I continue to rotate the knob how many degrees will it rotate back to the start position?</p> <p>The ferris wheel rotates 30 degrees and then stops. How many more times does it need to rotate to make a full rotation?</p>	<p>Draw 5 angles that measure 120 degrees and label the angles ABC.</p>

*\* It may be appropriate to read some of the longer problems out loud especially with lower readers*

**Grade 4 Math Question Stem Bank: Common Core State Standards  
Standards for Mathematical Practice**

## Geometry

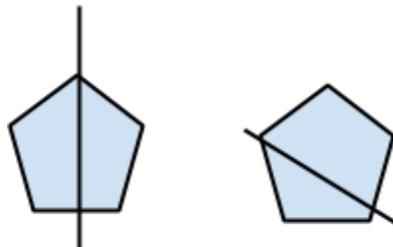
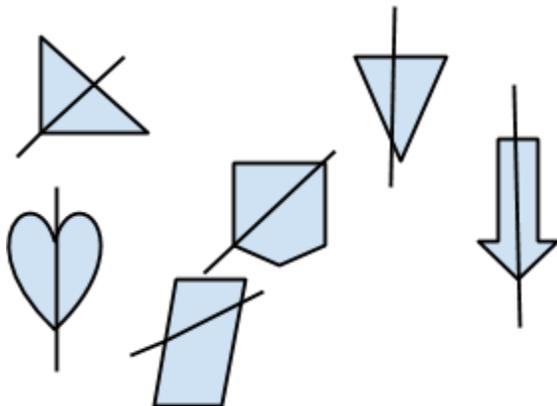
Standard	Basic: Conceptual "Understand"	Standard: Procedural "Doing"	Expanded: Application
<p>4.G.A.1 Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.</p>	<p>Students can identify right, obtuse, or acute angles.</p> <p>Circle all the shapes that have right angles.(acute or obtuse)</p> <p>Identify the lines whether they are a line segment or ray.</p>	<p>Jacob said the below triangle is an acute triangle. Is he correct? Explain.</p>   <p>What two lines are parallel? _____ What line is perpendicular to line CD?</p>	<p>Draw two line segments that intersect to create an obtuse angle. (or acute angle)</p>
<p>4.G.A.2 Classify two-dimensional figures based on parallel or perpendicular lines, or the angles. Recognize right triangles</p>	<p>Provide students with different shapes which they can classify shapes into groups. Some examples might be classify shapes with obtuse, acute or right angles. Another option could be to classify based on parallel or perpendicular lines.</p>	<p>Provide students with 7 different triangles for them to classify into two or more groups. Then describe the groups and why each triangle belongs with the group.</p> <p>Do two triangles always make a quadrilateral?</p>	<p>Illustrate and label shapes that contain parallel lines and perpendicular lines.</p>

*\* It may be appropriate to read some of the longer problems out loud especially with lower readers*

**Grade 4 Math Question Stem Bank: Common Core State Standards**  
**Standards for Mathematical Practice**

4.G.A.3  
 Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry.

Circle the shapes that have a line of symmetry.



Alex

Ben

Who drew the correct line of symmetry and how do you know?

Draw all the lines of symmetry on the quadrilaterals below.



Do all quadrilaterals have the same number of lines of symmetry? Give another example of a quadrilateral with different number of lines of symmetry.

*\* It may be appropriate to read some of the longer problems out loud especially with lower readers*

# Grade 4 Math Common Core State Standards

## Operations & Algebraic Thinking

### Use the four operations with whole numbers to solve problems.

**CCSS.MATH.CONTENT.4.OA.A.1** Interpret a multiplication equation as a comparison, e.g., interpret  $35 = 5 \times 7$  as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations.

**CCSS.MATH.CONTENT.4.OA.A.2** Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison.1

**CCSS.MATH.CONTENT.4.OA.A.3** Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.

### Gain familiarity with factors and multiples.

**CCSS.MATH.CONTENT.4.OA.B.4** Find all factor pairs for a whole number in the range 1-100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1-100 is a multiple of a given one-digit number. Determine whether a given whole number in the range 1-100 is prime or composite.

### Generate and analyze patterns.

**CCSS.MATH.CONTENT.4.OA.C.5** Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. *For example, given the rule "Add 3" and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers. Explain informally why the numbers will continue to alternate in this way.*

---

## Number & Operations in Base Ten

### Generalize place value understanding for multi-digit whole numbers.

**CCSS.MATH.CONTENT.4.NBT.A.1** Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right. *For example, recognize that  $700 \div 70 = 10$  by applying concepts of place value and division.*

*\* It may be appropriate to read some of the longer problems out loud especially with lower readers*

## Grade 4 Math Question Stem Bank: Common Core State Standards Standards for Mathematical Practice

**CCSS.MATH.CONTENT.4.NBT.A.2** Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using  $>$ ,  $=$ , and  $<$  symbols to record the results of comparisons.

**CCSS.MATH.CONTENT.4.NBT.A.3** Use place value understanding to round multi-digit whole numbers to any place.

### Use place value understanding and properties of operations to perform multi-digit arithmetic.

**CCSS.MATH.CONTENT.4.NBT.B.4** Fluently add and subtract multi-digit whole numbers using the standard algorithm.

**CCSS.MATH.CONTENT.4.NBT.B.5** Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

**CCSS.MATH.CONTENT.4.NBT.B.6** Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

---

## Measurement & Data

### Solve problems involving measurement and conversion of measurements.

**CCSS.MATH.CONTENT.4.NBT.B.6** Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

**CCSS.MATH.CONTENT.4.MD.A.2** Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.

**CCSS.MATH.CONTENT.4.MD.A.3** Apply the area and perimeter formulas for rectangles in real world and mathematical problems. *For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor.*

### Represent and interpret data

**CCSS.MATH.CONTENT.4.MD.B.4** Make a line plot to display a data set of measurements in fractions of a unit ( $\frac{1}{2}$ ,  $\frac{1}{4}$ ,  $\frac{1}{8}$ ). Solve problems involving addition and subtraction of fractions by using information presented in line plots. *For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection.*

*\* It may be appropriate to read some of the longer problems out loud especially with lower readers*

# Grade 4 Math Question Stem Bank: Common Core State Standards

## Standards for Mathematical Practice

### Geometric measurement: understand concepts of angle and measure angles.

**CCSS.MATH.CONTENT.4.MD.C.5** Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement:

**CCSS.MATH.CONTENT.4.MD.C.5.A** An angle is measured with reference to a circle with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle. An angle that turns through  $1/360$  of a circle is called a "one-degree angle," and can be used to measure angles.

**CCSS.MATH.CONTENT.4.MD.C.5.B** An angle that turns through  $n$  one-degree angles is said to have an angle measure of  $n$  degrees.

**CCSS.MATH.CONTENT.4.MD.C.6** Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure.

**CCSS.MATH.CONTENT.4.MD.C.7** Recognize angle measure as additive. When an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts. Solve addition and subtraction problems to find unknown angles on a diagram in real world and mathematical problems, e.g., by using an equation with a symbol for the unknown angle measure.

---

## Geometry

### Draw and identify lines and angles, and classify shapes by properties of their lines and angles.

**CCSS.MATH.CONTENT.4.G.A.1** Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.

**CCSS.MATH.CONTENT.4.G.A.2** Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size. Recognize right triangles as a category, and identify right triangles.

**CCSS.MATH.CONTENT.4.G.A.3** Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry.

## Number & Operations—Fractions<sup>1</sup>

### Extend understanding of fraction equivalence and ordering.

**CCSS.MATH.CONTENT.4.NF.A.1** Explain why a fraction  $a/b$  is equivalent to a fraction  $(n \times a)/(n \times b)$  by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions.

**CCSS.MATH.CONTENT.4.NF.A.2** Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as  $1/2$ . Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols  $>$ ,  $=$ , or  $<$ , and justify the conclusions, e.g., by using a visual fraction model.

*\* It may be appropriate to read some of the longer problems out loud especially with lower readers*

# Grade 4 Math Question Stem Bank: Common Core State Standards

## Standards for Mathematical Practice

### Build fractions from unit fractions.

**CCSS.MATH.CONTENT.4.NF.B.3** Understand a fraction  $a/b$  with  $a > 1$  as a sum of fractions  $1/b$ .

**CCSS.MATH.CONTENT.4.NF.B.3.A** Understand addition and subtraction of fractions as joining and separating parts referring to the same whole.

**CCSS.MATH.CONTENT.4.NF.B.3.B** Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decompositions, e.g., by using a visual fraction model. *Examples:*  $3/8 = 1/8 + 1/8 + 1/8$ ;  $3/8 = 1/8 + 2/8$ ;  $2\ 1/8 = 1 + 1 + 1/8 = 8/8 + 8/8 + 1/8$ .

**CCSS.MATH.CONTENT.4.NF.B.3.C** Add and subtract mixed numbers with like denominators, e.g., by replacing each mixed number with an equivalent fraction, and/or by using properties of operations and the relationship between addition and subtraction.

**CCSS.MATH.CONTENT.4.NF.B.3.D** Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem.

**CCSS.MATH.CONTENT.4.NF.B.4** Apply and extend previous understandings of multiplication to multiply a fraction by a whole number.

**CCSS.MATH.CONTENT.4.NF.B.4.A** Understand a fraction  $a/b$  as a multiple of  $1/b$ . *For example, use a visual fraction model to represent  $5/4$  as the product  $5 \times (1/4)$ , recording the conclusion by the equation  $5/4 = 5 \times (1/4)$ .*

**CCSS.MATH.CONTENT.4.NF.B.4.B** Understand a multiple of  $a/b$  as a multiple of  $1/b$ , and use this understanding to multiply a fraction by a whole number. *For example, use a visual fraction model to express  $3 \times (2/5)$  as  $6 \times (1/5)$ , recognizing this product as  $6/5$ . (In general,  $n \times (a/b) = (n \times a)/b$ .)*

**CCSS.MATH.CONTENT.4.NF.B.4.C** Solve word problems involving multiplication of a fraction by a whole number, e.g., by using visual fraction models and equations to represent the problem. *For example, if each person at a party will eat  $3/8$  of a pound of roast beef, and there will be 5 people at the party, how many pounds of roast beef will be needed? Between what two whole numbers does your answer lie?*

### Understand decimal notation for fractions, and compare decimal fractions.

**CCSS.MATH.CONTENT.4.NF.C.5** Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100. *For example, express  $3/10$  as  $30/100$ , and add  $3/10 + 4/100 = 34/100$ .*

**CCSS.MATH.CONTENT.4.NF.C.6** Use decimal notation for fractions with denominators 10 or 100. *For example, rewrite  $0.62$  as  $62/100$ ; describe a length as  $0.62$  meters; locate  $0.62$  on a number line diagram.*

**CCSS.MATH.CONTENT.4.NF.C.7** Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols  $>$ ,  $=$ , or  $<$ , and justify the conclusions, e.g., by using a visual model.

*\* It may be appropriate to read some of the longer problems out loud especially with lower readers*