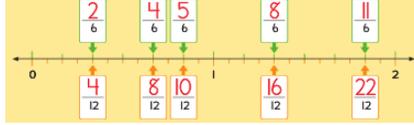
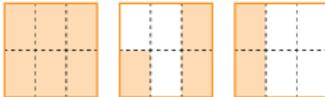
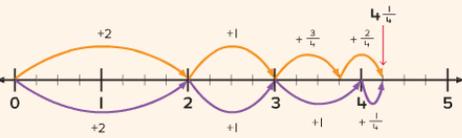
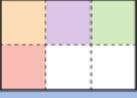
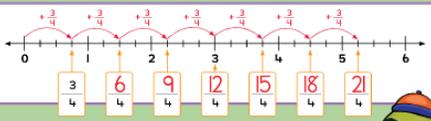
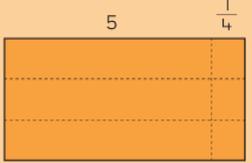


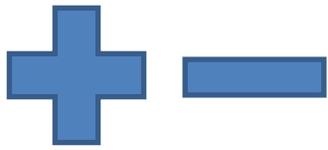
Snapshot of

4th Grade

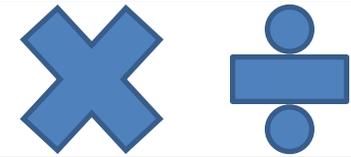
MATHEMATICS

BIG IDEA	TRIMESTER 1	TRIMESTER 2	TRIMESTER 3	GETTING READY FOR 5 th GRADE
<p>Use the four operations with whole numbers to solve problems. (4.OA.1-4.OA.3)</p>	<p>c. The total attendance for Game 1 and Game 2 was 32,045. The attendance at each game was more than 15,000. Write the possible attendance at each match.</p> <p>c. Alex buys 8 shirts for \$15 each. He uses a \$25 gift card to help pay for the shirts. How much more does he need to pay the total cost?</p>	<p>a. A toy car costs \$9. The train set costs 4 times as much. What is the cost of the train set?</p> <p>Car: 9 Train set: 9 9 9 9 36 $9 \times 4 = 36$</p> <p>a. Sweaters cost \$39 each. This is \$15 more than the price of a cap. Over the season, 725 caps were sold. What was the total sales from caps?</p>	<p>Kayla buys three 2-gallon bottles of water. She pours all the water equally into 12 pitchers. How much water is in each pitcher?</p>	<p>Students in 5th grade will be applying their knowledge of the four operations (adding, subtracting, multiplying, and dividing) to their work with decimals.</p>
<p>Generalize place value understanding for multi-digit whole numbers. (4.NBT.1-4.NBT.3)</p>	 <p>5,413 five thousand four hundred thirteen</p>	<p>c. 369284 032598 880349</p> <p>10,000 more miles: 379284 042598 890349</p> <p>a. 5 hundred thousands 2 hundreds</p> <p>500 200 five hundred thousand two hundred</p>		<p>Understanding whole number place value concepts will be important as 5th graders are introduced to decimal place value concepts.</p>
<p>Use place value understanding and properties of operations to perform multi-digit arithmetic. (4.NBT.4-4.NBT.5)</p>	<p>1 2 7 + 4 5 1 7 2</p> <p>J. $32 \times 5 = 160$ is the same as $16 \times 10 = 160$</p> <p>TTh Th H T O 4 9 13 2 5 - 7 4 1 5 4 2 9 1 0</p>	<p>10 6 100 60 50 30 $100 + 60 + 50 + 30 = 240$</p> <p>b. 7×534 $7 \times 500 = 3,500$ $7 \times 30 = 210$ $7 \times 4 = 28$ Total: 3,738</p>	<p>12 yd 10 yd Area is 120 yd²</p> <p>c. 40 yd 25 yd 15 yd 10 yd Area: 850 yd²</p>	<p>5th graders will be expected to add, subtract, multiply and divide decimals to the hundredths position. Having a firm understanding of place value and the properties of these operations will benefit 5th graders as they move into decimals.</p>
<p>Extend understanding of fraction equivalence and ordering. (4.NF.1-4.NF.2)</p>		<p>5 is the same as 10/2 6 is the same as 12/2</p> <p>$\frac{1}{6} + \frac{3}{6} = \frac{4}{6}$</p> <p>a. $\frac{2}{4}$ $\frac{4}{4}$ $\frac{7}{4}$ $\frac{9}{4}$ $1\frac{1}{4}$ $1\frac{3}{4}$ $2\frac{2}{4}$ $2\frac{3}{4}$</p>	<p>$\frac{4}{5} = \frac{80}{100}$</p> <p>b. Shade $\frac{4}{5}$ of each. $\frac{4}{5} = \frac{80}{100} = 0.80$</p>	<p>5th graders will build on their understanding of equivalent fractions when they begin working on fractions with unlike denominators.</p>

BIG IDEA	TRIMESTER 1	TRIMESTER 2	TRIMESTER 3	GETTING READY FOR 5 th GRADE
<p>Build fractions from unit fractions by applying and extending previous understanding of operations on whole numbers. (4.NF.3-4.NF.4)</p>		<p>$\frac{5}{6} + \frac{4}{6} = \frac{9}{6}$</p>  <p>c.</p>  <p>$\frac{6}{6} + \frac{3}{6} + \frac{2}{6} = 1\frac{5}{6}$</p> <p>$2\frac{3}{4} + 1\frac{2}{4}$</p> 	<p>c.</p>  <p>$4 \times \frac{1}{6} = \frac{4}{6}$</p>  <p>$7 \times \frac{3}{4} = \frac{21}{4}$</p>  <p>3 rows of 5 and 3 rows of $\frac{1}{4}$</p> <p>$(3 \times 5) + (3 \times \frac{1}{4}) = 15\frac{3}{4}$</p>	<p>In 5th Grade students will continue to build on this knowledge as they move to multiplying and dividing fractions. Understanding the unit fraction and the properties of multiplying and dividing will continue to be important.</p>
<p>Understand decimal notation for fractions and compare decimal fractions. (4.NF.5-4.NF.7)</p>			<p>c. one and three-tenths</p>  <p>1 ones 3 tenths</p> <p>b. sixty-three tenths</p> <p>$6\frac{3}{10}$ 6.3</p> <p>a.</p> 	<p>4th graders are introduced to decimals, and 5th graders will begin using them and applying their decimal knowledge to adding, subtracting, multiplying, and dividing.</p>
<p>END OF 4th GRADE FLUENCY EXPECTATIONS</p>	<p>Students are expected to know from memory their multiplication facts, turn around facts, and related division facts by the end of 3rd grade. Example: 3×4, 4×3, $12 \div 3$, and $12 \div 4$.</p>			

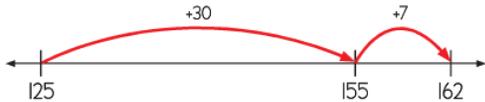


Student Expectations for Multi-Digit Arithmetic in 4th Grade



ADDITION: Using Place Value (4.NBT.4)

(Review from 3rd Grade)

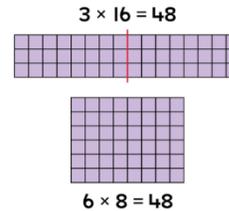


$$125 + 37 = \underline{\quad}$$

$$120 + 30 + 5 + 7$$



MULTIPLICATION: Double-and-Halve Strategy (4.NBT.5)



MULTIPLICATION: Using the Associative Property for Multiplication (4.NBT.5)

Use Factors

$$4 \times 15$$

$$2 \times 2 \times 15$$

$$2 \times 30$$

$$60$$

Use Factors

$$4 \times 15$$

$$4 \times 3 \times 5$$

$$3 \times 20$$

$$60$$


ADDITION: Standard Algorithm (4.NBT.4):

Step 1	Step 2	Step 3	Step 4																																																	
<table border="1"> <tr><td>H</td><td>T</td><td>O</td></tr> <tr><td>1</td><td>2</td><td>5</td></tr> <tr><td>+</td><td>6</td><td>7</td></tr> <tr><td></td><td></td><td></td></tr> </table>	H	T	O	1	2	5	+	6	7				<table border="1"> <tr><td>H</td><td>T</td><td>O</td></tr> <tr><td>1</td><td>2</td><td>5</td></tr> <tr><td>+</td><td>6</td><td>7</td></tr> <tr><td></td><td></td><td>2</td></tr> </table>	H	T	O	1	2	5	+	6	7			2	<table border="1"> <tr><td>H</td><td>T</td><td>O</td></tr> <tr><td>1</td><td>2</td><td>5</td></tr> <tr><td>+</td><td>6</td><td>7</td></tr> <tr><td></td><td>9</td><td>2</td></tr> </table>	H	T	O	1	2	5	+	6	7		9	2	<table border="1"> <tr><td>H</td><td>T</td><td>O</td></tr> <tr><td>1</td><td>2</td><td>5</td></tr> <tr><td>+</td><td>6</td><td>7</td></tr> <tr><td></td><td>1</td><td>9</td><td>2</td></tr> </table>	H	T	O	1	2	5	+	6	7		1	9	2
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4th graders are expected to be fluent with the standard addition algorithm by the end of the year.

MULTIPLICATION: Distributive Property/Partial Products (4.NBT.5)



a. 4×289

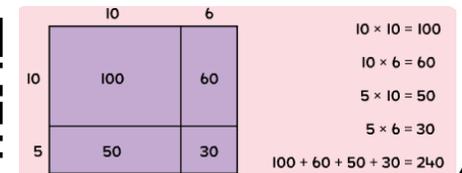
4	200	80	9	
				Total 1,156

$$4 \times 200 = 800$$

$$4 \times 80 = 320$$

$$4 \times 9 = 36$$

MULTIPLICATION: Distributive Property/Partial Products/Area Model (4.NBT.5)



DIVISION: Partial Quotients with Models (Area Model) (4.NBT.6)

Step 1	Step 2	Step 3													
<p>She drew a rectangle to show the problem. The length of one side becomes the unknown value.</p> <table border="1"> <tr><td>3</td><td>63</td></tr> <tr><td></td><td>?</td></tr> </table>	3	63		?	<p>She split the rectangle into two parts so that it was easier to divide by 3.</p> <table border="1"> <tr><td>3</td><td>60</td><td>3</td></tr> </table>	3	60	3	<p>She thought:</p> $3 \times 20 = 60$ $3 \times 1 = 3$ <p>then $20 + 1 = 21$</p> <table border="1"> <tr><td>3</td><td>60</td><td>3</td></tr> <tr><td></td><td>20</td><td>1</td></tr> </table>	3	60	3		20	1
3	63														
	?														
3	60	3													
3	60	3													
	20	1													

c. $484 \div 4 = \underline{121}$

4	400	80	4
	100	20	1

Students will not be introduced to the division bracket until 5th grade.

SUBTRACTION: Standard Algorithm (4.NBT.4)

Step 1	Step 2	Step 3	Step 4																																																								
<p>Look at the digits in each place. Can you subtract each place easily?</p> <table border="1"> <tr><td>H</td><td>T</td><td>O</td></tr> <tr><td>2</td><td>4</td><td>5</td></tr> <tr><td>-</td><td>1</td><td>3</td><td>9</td></tr> <tr><td></td><td></td><td></td><td></td></tr> </table>	H	T	O	2	4	5	-	1	3	9					<p>You need 1 ten to help subtract the ones. Cross out the 4 tens and write 3 tens.</p> <table border="1"> <tr><td>H</td><td>T</td><td>O</td></tr> <tr><td>2</td><td>3</td><td>15</td></tr> <tr><td>-</td><td>1</td><td>3</td><td>9</td></tr> <tr><td></td><td></td><td></td><td></td></tr> </table>	H	T	O	2	3	15	-	1	3	9					<p>Cross out the ones digit and write the new number. 245 is now written as 2 hundreds, 3 tens, and 15 ones.</p> <table border="1"> <tr><td>H</td><td>T</td><td>O</td></tr> <tr><td>2</td><td>3</td><td>15</td></tr> <tr><td>-</td><td>1</td><td>3</td><td>9</td></tr> <tr><td></td><td></td><td></td><td></td></tr> </table>	H	T	O	2	3	15	-	1	3	9					<p>Subtract the ones. Then subtract the hundreds.</p> <table border="1"> <tr><td>H</td><td>T</td><td>O</td></tr> <tr><td>2</td><td>3</td><td>15</td></tr> <tr><td>-</td><td>1</td><td>3</td><td>9</td></tr> <tr><td></td><td>1</td><td>0</td><td>6</td></tr> </table>	H	T	O	2	3	15	-	1	3	9		1	0	6
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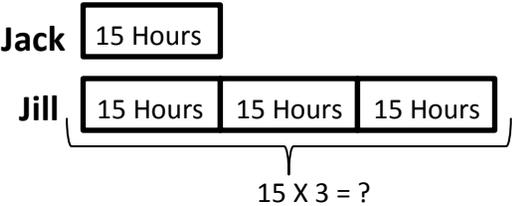
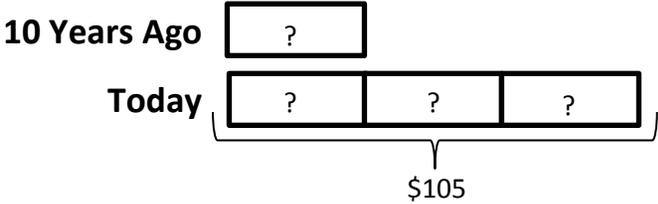
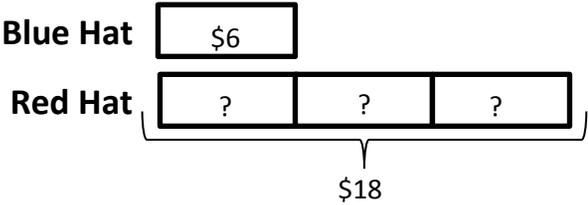


4th graders are expected to be fluent with the standard subtraction algorithm by the end of the year.

DIVISION: Developing Partial Quotients (4.NBT.6)

In Stepping Stones students will not be introduced to the division bracket until 5th grade.

$4,000 \div 4 =$	<u>1,000</u>
$1,200 \div 4 =$	<u>300</u>
$36 \div 4 =$	<u>9</u>
$5,236 \div 4 =$	<u>1,309</u>

Examples of FOURTH GRADE word problems (4.OA.2-4.OA.3):	Equation:	Examples of Models:
<p>This summer Jack worked 15 hours mowing lawns. Jill worked three times as long babysitting during the summer. How many hours did Jill work this summer?</p>	$15 \times 3 = ?$	
<p>A study found that customers are paying 3 times as much for groceries today as they were 10 years ago. If you spend \$105 for groceries today, what might you have paid 10 years ago?</p>	$3 \times ? = \$105$ $\$105 \div 3 = ?$	
<p>A red hat costs \$18 and a blue hat costs \$6. How many times as much does the red hat cost as the blue hat?</p>	$? \times 6 = 18$ $18 \div 6 = ?$	
<p>Multi-Step Problem Example: Sheree buys a cell phone for \$486 and laptop for \$1350. She makes equal payments over 6 months. What amount does she pay each month?</p>	$\$486 + \$1350 = \$1836$ $\$1836 \div 6 = ?$	<p>Models may or may not be used depending of problem type and student's problem solving preferences.</p>
<p>Multi-Step Problem Example: Brady bought two 1-qt bottles of juice. Julia bought 10 bottles of juice that each held 8 fl oz. Who bought the greater amount of juice?</p>	<p>Brady: 1-qt = 32 fl oz 2 qt x 32 fl oz = 64 fl oz</p> <p>Julia: 10 x 8 fl oz = 80 fl oz</p> <p>Julia bought the greater amount.</p>	<p>Models may or may not be used depending of problem type and student's problem solving preferences.</p>

Mathematical Practice Standards

These practices describe the behaviors and habits of mind that are exhibited by students who are mathematically proficient.

<p><u>Standard for Mathematical Practice 1:</u> Make sense of problems and persevere in solving them.</p>	<p>In fourth grade, students know that doing mathematics involves solving problems and discussing how they solved them. Students explain to themselves the meaning of a problem and look for ways to solve it. Fourth graders may use concrete objects or pictures to help them conceptualize and solve problems. They may check their thinking by asking themselves, —”Does this make sense?” They listen to the strategies of others and will try different approaches. They often will use another method to check their answers.</p>
<p><u>Standard for Mathematical Practice 2:</u> Reason abstractly and quantitatively.</p>	<p>Fourth graders should recognize that a number represents a specific quantity. They connect the quantity to written symbols and create a logical representation of the problem at hand, considering both the appropriate units involved and the meaning of quantities. They extend this understanding from whole numbers to their work with fractions and decimals. Students write simple expressions, record calculations with numbers, and represent or round numbers using place value concepts.</p>
<p><u>Standard for Mathematical Practice 3:</u> Construct viable arguments and critique the reasoning of others.</p>	<p>In fourth grade, students may construct arguments using concrete referents, such as objects, pictures, and drawings. They explain their thinking and make connections between models and equations. They refine their mathematical communication skills as they participate in mathematical discussions involving questions like —”How did you get that?” and —”Why is that true?” They explain their thinking to others and respond to others’ thinking.</p>
<p><u>Standard for Mathematical Practice 4:</u> Model with mathematics.</p>	<p>Students experiment with representing problem situations in multiple ways including numbers, words (mathematical language), drawing pictures, using objects, making a chart, list, or graph, creating equations, etc. Students need opportunities to connect the different representations and explain the connections. They should be able to use all of these representations as needed. Fourth graders should evaluate their results in the context of the situation and reflect on whether the results make sense.</p>
<p><u>Standard for Mathematical Practice 5:</u> Use appropriate tools strategically.</p>	<p>Fourth graders consider the available tools (including estimation) when solving a mathematical problem and decide when certain tools might be helpful. For instance, they may use graph paper or a number line to represent and compare decimals and protractors to measure angles. They use other measurement tools to understand the relative size of units within a system and express measurements given in larger units in terms of smaller units.</p>
<p><u>Standard for Mathematical Practice 6:</u> Attend to precision.</p>	<p>As fourth graders develop their mathematical communication skills, they try to use clear and precise language in their discussions with others and in their own reasoning. They are careful about specifying units of measure and state the meaning of the symbols they choose. For instance, they use appropriate labels when creating a line plot.</p>
<p><u>Standard for Mathematical Practice 7:</u> Look for and make use of structure.</p>	<p>In fourth grade, students look closely to discover a pattern or structure. For instance, students use properties of operations to explain calculations (partial products model). They relate representations of counting problems such as tree diagrams and arrays to the multiplication principal of counting. They generate number or shape patterns that follow a given rule.</p>
<p><u>Standard for Mathematical Practice 8:</u> Look for and express regularity in repeated reasoning.</p>	<p>Students in fourth grade should notice repetitive actions in computation to make generalizations Students use models to explain calculations and understand how algorithms work. They also use models to examine patterns and generate their own algorithms. For example, students use visual fraction models to write equivalent fractions.</p>

Source: Common Core State Standards for Mathematical Practices Progression through Grade Levels (<https://www.k12.wa.us/Corestandards/pubdocs/MPbyGradeLevel.pdf>)

4th GRADE Visual Dictionary

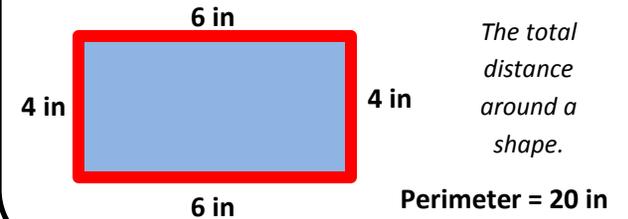
Associative Property of Multiplication

a. $5 \times (9 \times 2) = 90$
 is the same as
 $(5 \times 9) \times 2 = 90$

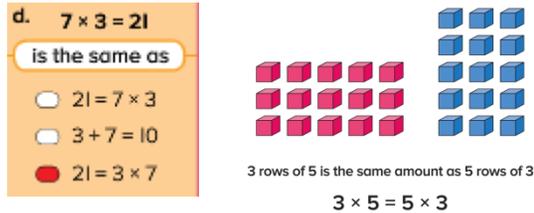
Numerator



Perimeter



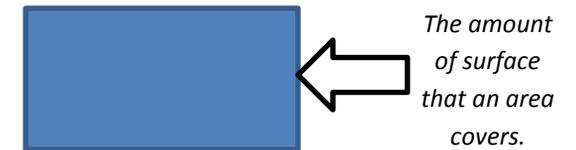
Commutative Property of Multiplication



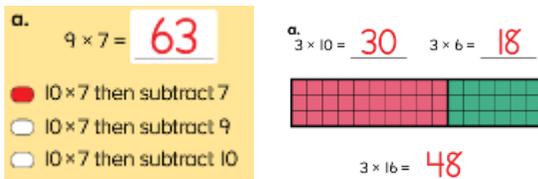
Denominator



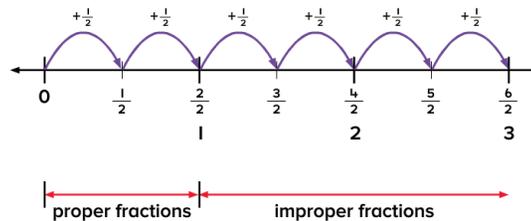
Area



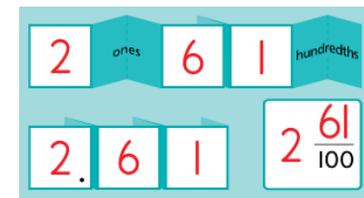
Distributive Property



Improper Fraction



Decimal Fraction

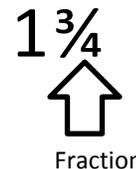


Open Number Line

Any number can be inserted on an Open Number Line, and can be a useful tool when adding, subtracting, multiplying, and dividing.

Mixed Number

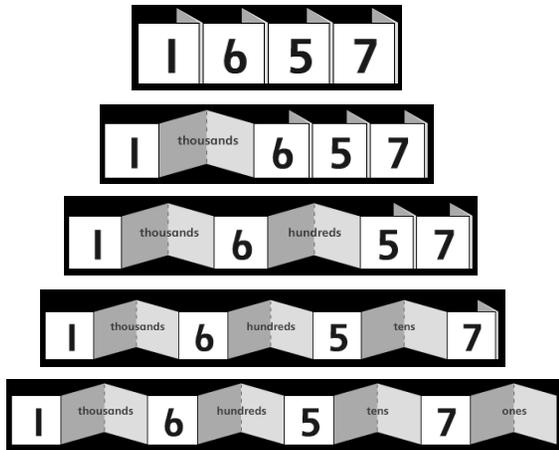
Whole Number followed by a fraction.



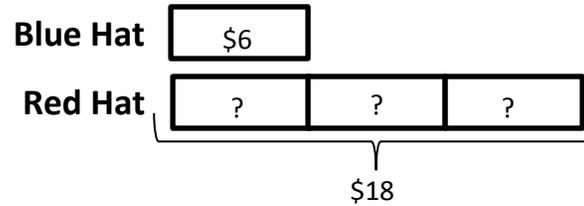
Fractions with a denominator of 10, 100 or 1000; these are usually written using decimal points.

Created by Jessica Jacobson;
 School District of Grafton - 2014

Numerals Expander

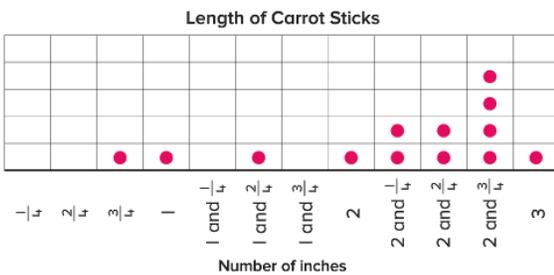


Bar Model/Tape Diagram

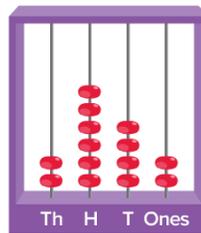


Tape Diagrams can be helpful when solving word problems, especially Multiplicative Comparison (first introduced in 4th Grade)

Line Plot



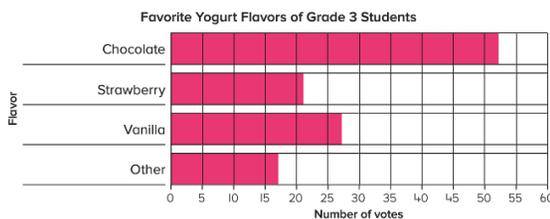
Abacus



2 thousands
6 hundreds
4 tens
2 ones

2,642

Bar Graph



Area Model

