# ALPHA BORO PUBLIC SCHOOL

| CONTENT AREA: Mathematics | GRADE: 4 | UNIT: # 1 | UNIT NAME: Use the Four Operations with Whole Numbers to Solve Problems |
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| # | STUDENT LEARNING OBJECTIVES | CORRESPONDING CCSS |
|---|---|---|
| 1 | Explain the quantitative relationship between places of a multi-digit whole number up to one million when moving from right to left. | 4.NBT.1 |
| 2 | Compare numbers using >, =, and < for two multi-digit whole numbers up to one million (presented as base ten numerals, number names, or expanded form). | 4.NBT.2 |
| 3 | Round multi-digit whole numbers up to one million to any place. | 4.NBT.3 |
| 4 | Write multiplication equations from multiplicative comparisons given in words (example, 35 is 5 times as many as 7 and 7 times as many as 5) and describe a multiplication equation in words. | 4.OA.1 |
| 5 | Multiply or divide to solve word problems involving multiplicative comparisons. | 4.OA.2 |
| 6 | Write an equation to identify the arithmetic operation written in a word problem (without solving). | 4.OA.2 |
| 7 | **Fluently add and subtract multi-digit whole numbers using the standard algorithm.** | 4.NBT.4 |

Major Supporting Additional (Identified by PARCC Model Content Frameworks).

*Bold type indicates grade level fluency requirements.* (Identified by PARCC Model Content Frameworks).

# ALPHA BORO PUBLIC SCHOOL

| CONTENT AREA: Mathematics | GRADE: 4 | UNIT: # 1 | UNIT NAME: Use the Four Operations with Whole Numbers to Solve Problems |
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## Selected Opportunities for Connection to Mathematical Practices

1. **Make sense of problems and persevere in solving them.**

   SLO #5 Multiply or divide to solve word problem scenarios.

2. **Reason abstractly and quantitatively.**

   SLO #4 Rewrite verbal multiplicative statements as mathematical expressions.

   SLO #5 Use symbols for the unknown [e.g., *n*, ?, *x*] to solve word problems.

3. Construct viable arguments and critique the reason of others.

4. Model with mathematics.

5. **Use appropriate tools strategically.**

   SLO #6 Add and subtract multi-digit whole numbers using the standard algorithm.

6. **Attend to precision.**

   SLO #3 Understand the "cut-off" digit for rounding whole numbers.

7. **Look for and make use of structure.**

   SLO #1 For multi-digit whole numbers, any place value is 10 times the value of the place to the right.

   SLO #2 Write the value of a whole number as the sum of the values that each digit represents.

   SLO #7 Look for and discern patterns when using the standard algorithm to add and subtract multi-digit whole numbers.

8. **Look for and express regularity in repeated reasoning.**

   SLO #1 For multi-digit whole numbers, any place value is 100 times that of two places to the right.

*Bold type identifies possible starting points for connections to the SLOs in this unit.*

# ALPHA BORO PUBLIC SCHOOL

| CONTENT AREA: Mathematics | GRADE: 4 | UNIT: # 1 | UNIT NAME: Use the Four Operations with Whole<br>Numbers to Solve Problems |
|---|---|---|---|

| Code # | Common Core State Standards |
|---|---|
| 4.OA.1 | Interpret a multiplication equation as a comparison, e.g., interpret 35 = 5 × 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. |
| 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. |
| 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 700 ÷ 70 = 10 by applying concepts of place value and division.* |
| 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 >, =, and < symbols to record the results of comparisons. |
| 4.NBT.3 | Use place value understanding to round multi-digit whole numbers to any place. |
| 4.NBT.4 | **Fluently add and subtract multi-digit whole numbers using the standard algorithm.** |

Major    Supporting    Additional (Identified by PARCC Model Content Frameworks).

*Bold type indicates grade level fluency requirements.* (Identified by PARCC Model Content Frameworks).

# ALPHA BORO PUBLIC SCHOOL

| CONTENT AREA: Mathematics | GRADE: 4 | UNIT: # 2 | UNIT NAME: Compute with Multi-digit Whole Numbers and Define Equivalent Fractions |
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| # | STUDENT LEARNING OBJECTIVES | CORRESPONDING CCSS |
|---|---|---|
| 1 | **Compose equations from information supplied in word problems (with all 4 operations) using letters to represent unknowns (without solving).** | 4.OA.3 |
| 2 | Use strategies to multiply multi-digit numbers and explain the answer using equations, rectangular arrays, and area models (up to 4-digits by 1-digit or 2-digits by 2-digits). | 4.NBT.5 |
| 3 | Use strategies to divide multi-digit dividends by one-digit divisors and explain the answer using equations, rectangular arrays, and area models. | 4.NBT.6 |
| 4 | Recognize and generate equivalent fractions and explain why they are equivalent using visual fraction models. | 4.NF.1 |
| 5 | Compare two fractions with different numerators and different denominators using >, <, and = and justify the comparison by using visual fraction models (recognizing the comparison is valid only when two fractions refer to the same whole). | 4.NF.2 |
| 6 | Determine if a number between 1 and 100 is a prime or composite number | 4.OA.4 |
| 7 | Find all factor pairs for a whole number up to 100 and determine whether it is a multiple of a given 1-digit whole number. | 4.OA.4 |

Major Content | Supporting Content | **Additional Content** (identified by PARCC Model Content Frameworks).

*Bold type indicates grade level fluency requirements.* (identified by PARCC Model Content Frameworks).

# ALPHA BORO PUBLIC SCHOOL

| CONTENT AREA: Mathematics | GRADE: 4 | UNIT: # 2 | UNIT NAME: Compute with Multi-digit Whole Numbers and Define Equivalent Fractions |
|---|---|---|---|

## Selected Opportunities for Connection to Mathematical Practices

1. **Make sense of problems and persevere in solving them.**
   SLO #1 Explain correspondences among equations involving all four operations in word problems.

2. **Reason abstractly and quantitatively.**
   SLO #1 Use quantitative reasoning that involves creating a coherent representation of equations from word problems.
   SLO #4 Understand and make sense of equivalent fractions' quantities and their relationships.
   SLO #5 Understand and make sense of fraction quantities with different numerators and denominators in order to compare them.

3. **Construct viable arguments and critique the reason of others.**
   SLO #4 Understand and use stated assumptions and definitions about fractions in order to recognize and generate equivalent fractions.
   SLO #4 Be able to communicate and justify conclusions made about equivalent fractions.

4. **Model with mathematics.**
   SLO #1 Apply and use previously learned concepts about equations and word problems to compose an equation from a word problem.
   SLO #5 Map the relationship between fractions with different numerators and denominators using tools.

5. **Use appropriate tools strategically.**
   SLO #2 Consider and use available tools, such as rectangular arrays and area models, when multiplying multi-digit numbers.
   SLO #3 Consider and use available tools, such as rectangular arrays and area models, when using equations in division.
   SLO #4 Consider and use available tools, such as visual fraction models, when working with equivalent fractions.

6. **Attend to precision.**
   SLO #2 Calculate multiplication of multi-digit numbers accurately and efficiently and be able to explain the solution.
   SLO #3 Calculate division of multi-digit dividends by one-digit divisors accurately and efficiently and be able to explain the solution.
   SLO #4 Be able to precisely communicate why fractions are equivalent.
   SLO #5 State the meaning of the symbols <, >, or = when comparing two fractions with different numerators and denominators.

7. **Look for and make use of structure.**
   SLO #6 Look for and discern patterns to determine prime numbers between 1 and 100.
   SLO #7 Look for and discern patterns to determine factor pairs and multiples of whole numbers up to 100.

8. **Look for and express regularity in repeated reasoning.**
   SLO #6 Look for and express regularity in repeated reasoning when determining prime numbers between 1 and 100.
   SLO #7 Look for and express regularity in repeated reasoning when determining factor pairs and multiples of whole numbers.

*Bold type identifies possible starting points for connections to the SLOs in this unit.*

# ALPHA BORO PUBLIC SCHOOL

| CONTENT AREA: Mathematics | GRADE: 4 | UNIT: # 2 | UNIT NAME: Compute with Multi-digit Whole Numbers and Define Equivalent Fractions |
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## Common Core State Standards

| Code # | |
|---|---|
| 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. 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. |
| 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. |
| 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. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. |
| 4.NBT.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. |
| 4.NF.1 | Explain why a fraction a/b is equivalent to a fraction (n × a)/(n × 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. (Grade 4 expectations in this domain are limited to fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100). |
| 4.NF.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. |

# ALPHA BORO PUBLIC SCHOOL

| CONTENT AREA: Mathematics | GRADE: 4 | UNIT: # 2 | UNIT NAME: Compute with Multi-digit Whole Numbers and Define Equivalent Fractions |
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# ALPHA BORO PUBLIC SCHOOL

| CONTENT AREA: Mathematics | GRADE: 4 | UNIT: #3 | UNIT NAME: Properties of Operations with Multi-Digit Arithmetic. Fraction Addition, and Subtraction |
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| # | STUDENT LEARNING OBJECTIVES | CORRESPONDING CCSS |
|---|---|---|
| 1 | Decompose a fraction into a sum of fractions with the same denominator in more than one way; record the decomposition as an equation and justify with a visual fraction model. | 4.NF.3a<br>4.NF.3b |
| 2 | Add and subtract mixed numbers with like denominators by replacing each mixed number with an equivalent fraction. | 4.NF.3c |
| 3 | 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. | 4.NF.3d |
| 4 | Multiply a fraction by a whole number using visual fraction models and equations, demonstrating a fraction a/b as a multiple of 1/b. | 4.NF.4a<br>4.NF.4b |
| 5 | Solve 1-step word problems involving multiplication of a fraction by a whole number. *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?* | 4.NF.4c |
| 6 | Express measurement comparisons within a single system of measurement and record in a two-column chart within a single system of measurement; e.g., *know that 1 ft. is 12 times as long as 1 in.* | 4.MD.1 |
| 7 | Compose equations from information supplied in word problems using letters to represent unknowns and solve the word problems with addition and subtraction. | 4.OA.3 |
| 8 | Add and subtract two multi-digit whole numbers using the standard algorithm fluently (with speed and accuracy) without a calculator. | 4.NBT.4 |

Major Content Supporting Content Additional Content (identified by PARCC Model Content Frameworks).

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# ALPHA BORO PUBLIC SCHOOL

| CONTENT AREA: Mathematics | GRADE: 4 | UNIT: # 3 | UNIT NAME: Properties of Operations with Multi-Digit Arithmetic. Fraction Addition, and Subtraction |
|---|---|---|---|

## Selected Opportunities for Connection to Mathematical Practices

1. **Make sense of problems and persevere in solving them.**

   SLO #5 Explain the meaning and the process of finding a solution to a word problem that involves multiplication of a fraction by a whole number.

2. **Reason abstractly and quantitatively.**

   SLO #7 Explain correspondences between composed equations and equations represented as word problems.

   SLO #1 Understand and make sense of decomposed fraction quantities and understand the relationship to its parts.

   SLO #2 Understand and make sense of addition and subtraction of mixed number quantities and their relationship to an equivalent fraction.

   SLO #3 Understand and make sense of fraction quantities in the context of addition and subtraction word problems.

   SLO #4 Understand and make sense of multiplied fraction quantities.

   SLO #4 Use quantitative reasoning to create a coherent representation of fraction multiplication and understand the fraction quantities involved.

   SLO #5 Understand and makes sense of whole number and fraction quantities in the context of multiplication.

3. Construct viable arguments and critique the reasoning of others.

4. **Model with mathematics.**

   SLO #1 Apply and use previously learned concepts about fractions in order to decompose fractions and record the decomposition in an equation.

   SLO #1 Map the relationship between decomposed fraction units using tools that include a visual fraction model.

   SLO #3 Apply and use previously learned concepts about fractions in order to solve addition and subtraction word problems utilizing fractions.

   SLO #3 Map the relationship between fractions sums and differences using tools.

   SLO #5 Apply previously learned concepts regarding rectangles to solve area and perimeter problems involving rectangles.

   SLO #6 Use specific and appropriate units of measurement when comparing two objects within a single system.

5. **Use appropriate tools strategically.**

   SLO #1 Consider and use available tools, such as models and graphs, when solving problems that relate to number and shape patterns.

   SLO #4 When multiplying fractions consider and use available tools that include equations and visual fraction models.

6. **Attend to precision.**

   SLO #6 Specify units of measure in order to clarify the correspondence with the given quantities.

7. **Look for and make use of structure.**

# ALPHA BORO PUBLIC SCHOOL

| CONTENT AREA: Mathematics | GRADE: 4 | UNIT: # 3 | UNIT NAME: Properties of Operations with Multi-Digit Arithmetic. Fraction Addition, and Subtraction |
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SLO #2 Look for and discern patterns when adding and subtracting mixed numbers.

SLO #3 Look for and discern patterns when adding and subtraction fractions with like denominators and are represented as word problems.

SLO #4 Look for and discern patterns in the multiplication of fraction by a whole number.

SLO #5 Look for and discern patterns in the multiplication of a fraction by a whole number.

SLO #8 Look for and discern patterns when using the standard algorithm to add or subtract two multi-digit numbers.

8. Look for and express regularity in repeated reasoning.

*Bold type identifies possible starting points for connections to the SLOs in this unit.*

# ALPHA BORO PUBLIC SCHOOL

| CONTENT AREA: Mathematics | GRADE: 4 | UNIT: # 3 | UNIT NAME: Properties of Operations with Multi-Digit Arithmetic. Fraction Addition, and Subtraction |
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| Code # | Common Core State Standards |
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| 4.OA.3 | Solve multistep word problems 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 & estimation strategies including rounding. |
| 4.NBT.4 | Fluently add and subtract multi-digit whole numbers using the standard algorithm. |
| 4.NF.3<br>4.NF.3a<br>4.NF.3b<br>4.NF.3c<br>4.NF.3d | Understand a fraction a/b with a > 1 as a sum of fractions 1/b.<br><br>a. Understand addition and subtraction of fractions as joining and separating parts referring to the same whole.<br><br>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.<br><br>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.<br><br>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. |
| 4.NF.4<br>4.NF.4a<br>4.NF.4b<br>4.NF.4c | Apply and extend previous understandings of multiplication to multiply a fraction by a whole number.<br><br>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 × (1/4), recording the conclusion by the equation 5/4 = 5 × (1/4).*<br><br>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 × (2/5) as 6 × (1/5), recognizing this product as 6/5. In general, n × (a/b) = (n × a)/b.*<br><br>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?* |
| 4.MD.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. *For example, know that 1 ft is 12 times as long as 1 in. Express the length of a 4 ft snake as 48 in. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36).* |

Major Content Supporting Content Additional Content (Identified by PARCC Model Content Frameworks).

# ALPHA BORO PUBLIC SCHOOL

| CONTENT AREA: Mathematics | GRADE: 4 | UNIT: # 3 | UNIT NAME: Properties of Operations with Multi-Digit Arithmetic. Fraction Addition, and Subtraction |
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**Bold type indicates grade level fluency requirements.** *(Identified by PARCC Model Content Frameworks).*

# ALPHA BORO PUBLIC SCHOOL

| CONTENT AREA: Mathematics | GRADE: 4 | UNIT: # 4 | UNIT NAME: Extend Understanding of Fractions, Solve Word Problems, and Introduce Decimals. |
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| # | STUDENT LEARNING OBJECTIVES | CORRESPONDING CCSS |
|---|---|---|
| 1 | Generate number or shape patterns by using rules including words, models, or graphs, and identify apparent features of the pattern that were not explicit in the rule of the original pattern. 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. | 4.OA.5 |
| 2 | **Compose equations from information supplied in word problems, using letters to represent unknowns in formulas, and solve the word problems (with all four operations).** | 4.OA.3 |
| 3 | Add two fractions with respective denominators of 10 and 100 by writing each fraction as a fraction with denominator 100. | 4.NF.5 |
| 4 | Use decimal notation to write fractions with denominators of 10 or 100 by writing each fraction as a fraction with denominator 100. | 4.NF.6 |
| 5 | Apply area and perimeter formulas for rectangles in real world math problems (whole numbers). | 4.MD.3 |
| 6 | Make a line plot to display a data set in measurements in fractions of a unit (1/2, 1/4, 1/8) and use it to solve problems involving addition and subtraction of fractions with like denominators. | 4.MD.4 |
| 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. | 4.NF.7 |
| 8 | Solve word problems involving simple fractions or decimals that incorporate measurement comparisons of like units (including problems that require measurements given in a larger unit in terms of a smaller unit). | 4.MD.2, 4.NF.4 |

# ALPHA BORO PUBLIC SCHOOL

| CONTENT AREA: Mathematics | GRADE: 4 | UNIT: # 4 | UNIT NAME: Extend Understanding of Fractions, Solve Word Problems, and Introduce Decimals. |
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## Selected Opportunities for Connection to Mathematical Practices

1. **Make sense of problems and persevere in solving them.**

   SLO #1 Use concrete models to help conceptualize, generate, and identify number and shape patterns using predetermined rules.

   SLO #2 Be able to explain the meaning of equations derived from word problems, and know the process involved in composing equations.

   SLO #2 Explain correspondences between composed equations and information supplied in a word problem.

   SLO #5 Analyze the relationship between area and perimeter in order to solve real world problems involving rectangles.

   SLO #6 Draw diagrams and construct graphs of important features contained in a dataset.

   SLO #8 Be able to explain the meaning of fractions or decimals that incorporate measurement, and know the process to solve word problems that incorporate both.

2. **Reason abstractly and quantitatively.**

   SLO #3 Understand and make sense of fraction quantities with denominators of 10 or 100.

   SLO #4 Understand and make sense of quantities expressed in decimal notation and as fractions.

   SLO #6 Use and apply two abilities (making a line plot, solving addition and subtraction problems with fractions) to solve problems.

   SLO #7 Understand and make sense of decimal quantities in order to compare them.

   SLO #7 Use quantitative reasoning to create a coherent representation of decimal numbers in order to compare their size.

   SLO #8 Understand and make sense of both decimal and fraction quantities and understand their relationship to each other.

   SLO #8 Use quantitative reasoning to create a coherent representation of word problems involving fractions and decimals.

3. **Construct viable arguments and critique the reasoning of others.**

   SLO #1 Make conjectures and build a logical progression of statements in order to generate and identify number and shape patterns when using predetermined rules.

4. **Model with mathematics.**

   SLO #1 Map the relationships of numbers and shapes using tools that include models, words, and graphs.

   SLO #1 Analyze the relationships and patterns between numbers and shapes that have been generated using a similar rule.

   SLO #2 Apply previously learned concepts regarding composing equations, and all four operations.

   SLO #6 Draw diagrams and construct graphs of important features contained in a dataset.

   SLO #7 Map the relationship of two decimal numbers using various tools.

5. Use appropriate tools strategically.

6. **Attend to precision.**

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# ALPHA BORO PUBLIC SCHOOL

| CONTENT AREA: Mathematics | GRADE: 4 | UNIT: # 4 | UNIT NAME: Extend Understanding of Fractions, Solve Word Problems, and Introduce Decimals. |
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SLO #4 Use clear reasoning and definitions to describe writing fractions in decimal notation.

SLO #6 Specify units of measure when making a line plot from a dataset.

SLO #7 State the meaning of the <, >, or = symbols when comparing two decimal numbers.

7. **Look for and make use of structure.**

SLO #3 Look for and discern patterns when adding two fraction with denominators of 10 or 100.

SLO #4 Look for and discern a pattern when using decimal notation to express a fraction quantity.

8. Look for and express regularity in repeated reasoning.

*Bold type identifies possible starting points for connections to the SLOs in this unit.*

# ALPHA BORO PUBLIC SCHOOL

| CONTENT AREA: Mathematics | GRADE: 4 | UNIT: # 4 | UNIT NAME: Extend Understanding of Fractions, Solve Word Problems, and Introduce Decimals. |
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| Code # | Common Core State Standards |
|---|---|
| 4.OA.3 | Solve multistep word problems 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 & estimation strategies including rounding. |
| 4.OA.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.* |
| 4.NF.4 | 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?* Note: This is standard **4.NF.4c.** |
| 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 3/10 as 30/100, and add 3/10 + 4/100 = 34/100.* |
| 4.NF.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.* |
| 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 >, =, or <, and justify the conclusions, **e.g.,** by using a visual model. |
| 4.MD.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. |
| 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.* |

# ALPHA BORO PUBLIC SCHOOL

| CONTENT AREA: Mathematics | GRADE: 4 | UNIT: # 4 | UNIT NAME: Extend Understanding of Fractions, Solve Word Problems, and Introduce Decimals. |
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| 4.MD.4 | | | Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 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.* |

Major Content Supporting Content Additional Content (identified by PARCC Model Content Frameworks).

**Bold type indicates grade level fluency requirements.** *(Identified by PARCC Model Content Frameworks).*

# ALPHA BORO PUBLIC SCHOOL

| CONTENT AREA: Mathematics | GRADE: 4 | UNIT: # 5 | UNIT NAME: Compare Decimals and Measure and Classify Geometric Figures |
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| # | STUDENT LEARNING OBJECTIVES | CORRESPONDING CCSS |
| --- | --- | --- |
| 1 | Determine the measure of an angle in degrees. The two rays of an angle share a common endpoint. If that endpoint is located at the center of a circle, the fraction of the circular arc (between the points where the rays intersect the circle) measures the angle in degrees. A "degree" is defined as 1/360 (one degree angle) of the entire circle; and an angle that turns **n** one degree angles is said to measure **n** degrees. | 4.MD.5a;b |
| 2 | **Add and subtract two multi-digit whole numbers using the standard algorithm fluently (with speed and accuracy) without a calculator.** | 4.NBT.4 |
| 3 | Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines and identify these in two-dimensional figures. | 4.G.1 |
| 4 | Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specific size. Recognize right angles as a category, and identify right triangles. | 4.G.2 |
| 5 | Use a protractor to measure angles in whole number degrees and sketch angles of specific measures. | 4.MD.6 |
| 6 | Solve addition and subtraction problems to find unknown angles on a diagram in real world and mathematical problems using a symbol for an unknown angle measure. | 4.MD.7 |
| 7 | Draw lines of symmetry and identify line-symmetric figures. | 4.G.3 |

Major Content Supporting Content **Additional Content** (Identified by PARCC Model Content Frameworks).

**Bold type indicates grade level fluency requirements.** *(Identified by PARCC Model Content Frameworks).*

# ALPHA BORO PUBLIC SCHOOL

| CONTENT AREA: Mathematics | GRADE: 4 | UNIT: # 5 | UNIT NAME: Compare Decimals and Measure and Classify Geometric Figures |
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## Selected Opportunities for Connection to Mathematical Practices

1. **Make sense of problems and persevere in solving them.**
   SLO #1 Consider and use available tools when determining the measure of angles in degrees.
   SLO #3 Analyze the relationship and constraints of various geometric objects.
   SLO #4 Analyze the relationship between two-dimensional figures based on the presence or absence of parallel lines, perpendicular lines, or angles.
   SLO #5 Analyze the givens and constraints when measuring angles.
   SLO #7 Analyze the constraints and relationships between lines of symmetry and line-symmetric figures.

2. Reason abstractly and quantitatively.

3. **Construct viable arguments and critique the reasoning of others.**
   SLO #6 Understand and use the stated assumptions and definitions of angles to solve addition and subtraction problems utilizing angles.

4. Model with mathematics.

5. **Use appropriate tools strategically.**
   SLO #2 Use the standard algorithm to add and subtract multi-digit numbers.
   SLO #3 Consider and use available tools, such as graphing paper, a ruler, and concrete models, when drawing points, lines, line segments, rays, angles, perpendicular, and parallel lines.
   SLO #5 Consider and use available and appropriate tools, such as a protractor, a ruler, and graphing paper, to measure angles.

6. Attend to precision.

7. **Look for and make use of structure.**
   SLO #1 Look for and discern patterns in the measurement of angles.
   SLO #4 Look for and discern patterns in two dimensional figures based on the presence or absence of lines or angles.
   SLO #7 Look for and discern patterns in lines of symmetry and line-symmetric figures.

8. Look for and express regularity in repeated reasoning.

# ALPHA BORO PUBLIC SCHOOL

| CONTENT AREA: Mathematics | GRADE: 4 | UNIT: # 5 | UNIT NAME: Compare Decimals and Measure and Classify Geometric Figures |
|---|---|---|---|

| Code # | Common Core State Standards |
|---|---|
| 4.NBT.4 | **Fluently add and subtract multi-digit whole numbers using the standard algorithm.** |
| 4.MD.5 | Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement. |
|  | 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 |
| 4.MD.5a | 1/360 of a circle is called a "one-degree angle," and can be used to measure angles. |
| 4.MD.5b | b. An angle that turns through *n* one-degree angles is said to have an angle measure of *n* degrees. |
| 4.MD.6 | Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure. |
| 4.MD.7 | 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. |
| 4.G.1 | Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures. |
| 4.G.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. |
| 4.G.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. |

Major Content Supporting Content Additional Content (Identified by PARCC Model Content Frameworks).

*Bold type indicates grade level fluency requirements.* (Identified by PARCC Model Content Frameworks).