

# HAZLETON AREA SCHOOL DISTRICT



GRADE 4

Math Curriculum

Hazleton Area School District

Math Curriculum

Grade 4

|                                 |   |
|---------------------------------|---|
| <b>Topic:</b>                   | Geometry / Measurement and Data   |
| <b>Weeks:</b>                   | 4 Weeks   |
| <b>PA Standards:</b>            | CC.2.3.4.A.1 Draw lines and angles and identify these in two-dimensional figures.<br>C.2.3.4.A.2 Classify two-dimensional figures by properties of their lines and angles.<br>CC.2.3.4.A.3 Recognize symmetric shapes and draw lines of symmetry.<br>CC.2.4.4.A.6 Measure angles and use properties of adjacent angles to solve problems.   |
| <b>Math Practice Standards:</b> | <ol style="list-style-type: none"><li>1. Make sense of problems and persevere in solving them.</li><li>2. Reason abstractly and quantitatively.</li><li>3. Construct viable arguments and critique the reasoning of others.</li><li>4. Model with mathematics.</li><li>5. Use appropriate tools strategically.</li><li>6. Attend to precision.</li><li>7. Look for and make use of structure.</li><li>8. Look for and make sense of regularity in repeated reasoning.</li></ol> |

| Weeks  | Topic  | PA Standard  | Eligible Content               | Concepts and Competencies<br><b>The learner will:</b>  | Tier 2 & 3 Vocabulary     |
|--------|--|--|--------------------------------|--|---------------------------|
| 1 week | Lines and Angles<br>Two dimensional figures          | CC.2.3.4.A.1<br>Draw lines and angles and identify these in two-dimensional figures.     | M04.C-G.1.1.1                  | <ul style="list-style-type: none"> <li>Draw points, lines, line segments, rays, angles (right, acute, and obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.</li> </ul>   | Adjacent Angles<br>Degree |
| 1 week | Lines and Angles<br>Classify two dimensional figures | C.2.3.4.A.2<br>Classify two-dimensional figures by properties of their lines and angles. | M04.C-G.1.1.2                  | <ul style="list-style-type: none"> <li>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.</li> </ul>                      |                           |
| 1 week | Symmetry<br>Draw                                     | CC.2.3.4.A.3<br>Recognize symmetric shapes and draw lines of symmetry.                   | M04.C-G.1.1.3                  | <ul style="list-style-type: none"> <li>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 mirroring parts. Identify line-symmetric figures and draw lines of symmetry</li> </ul>                                   | Line Symmetry             |
| 1 week | Measure Angles<br>Adjacent Angles                    | CC.2.4.4.A.6<br>Measure angles and use properties of adjacent angles to solve problems.  | M04.D-M.3.1.1<br>M04.D-M.3.1.2 | <ul style="list-style-type: none"> <li>Measure angles in whole-number degrees using a protractor. With the aid of a protractor, sketch angles of specified measure.</li> <li>Solve addition and subtraction problems to find unknown angles on a diagram in real-world and mathematical problems.</li> </ul> |                           |

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|---------------------------------|---|
| <b>Topic:</b>                   | Operations and Algebraic thinking / Numbers and Operations in Base Ten  |
| <b>Weeks:</b>                   | 12 Weeks  |
| <b>PA Standards:</b>            | CC.2.2.4.A.2 Develop and/or apply number theory concepts to find factors and multiples.<br>CC.2.2.4.A.1 Represent and solve problems involving the four operations.<br>CC.2.2.4.A.4 Generate and analyze patterns using one rule.<br>CC.2.1.4.B.1 Apply place-value concepts to show an understanding of multi-digit whole numbers.<br>CC.2.1.4.B.2 Use place-value understanding and properties of operations to perform multi-digit arithmetic.                               |
| <b>Math Practice Standards:</b> | <ol style="list-style-type: none"><li>1. Make sense of problems and persevere in solving them.</li><li>2. Reason abstractly and quantitatively.</li><li>3. Construct viable arguments and critique the reasoning of others.</li><li>4. Model with mathematics.</li><li>5. Use appropriate tools strategically.</li><li>6. Attend to precision.</li><li>7. Look for and make use of structure.</li><li>8. Look for and make sense of regularity in repeated reasoning.</li></ol> |

| Weeks   | Topic  | PA Standard   | Eligible Content   | Concepts and Competencies<br><b>The learner will:</b>   | Tier 2 & 3 Vocabulary                      |
|---------|--|---|--|---|--|
| 2 weeks | Place Value Concepts                         | CC.2.1.4.B.1<br>Apply place-value concepts to show an understanding of multi-digit whole numbers.             | M04.A-T.1.1.1<br>M04.A-T.1.1.2<br>M04.A-T.1.1.3<br>M04.A-T.1.1.4 | <ul style="list-style-type: none"> <li>• Demonstrate an understanding that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right.</li> <li>• Read and write whole numbers in expanded, standard, and word form through 1,000,000.</li> <li>• Compare two multi-digit numbers through 1,000,000 based on meanings of the digits in each place, using <math>&gt;</math>, <math>=</math>, and <math>&lt;</math> symbols.</li> <li>• Round multi-digit whole numbers to any place.</li> </ul> | Decimal                                    |
| 3 weeks | Place Value Perform Multi – digit arithmetic | CC.2.1.4.B.2<br>Use place-value understanding and properties of operations to perform multi-digit arithmetic. | M04.A-T.2.1.1<br>M04.A-T.2.1.2<br>M04.A-T.2.1.3<br>M04.A-T.2.1.4 | <ul style="list-style-type: none"> <li>• Add and subtract multi-digit whole numbers</li> <li>• Multiply a whole number of up to four digits by a one-digit whole number and multiply 2 two-digit numbers.</li> <li>• Divide up to four-digit dividends by one-digit divisors with answers written as whole-number quotients and remainders.</li> <li>• Estimate the answer to addition, subtraction, and multiplication problems using whole numbers through six digits</li> </ul>  |  |
| 2 weeks | Factors and Multiples<br><br>Number Theory   | CC.2.2.4.A.2<br>Develop and/or apply number theory concepts to find factors and multiples.                    | M04.B-O.2.1.1  | <ul style="list-style-type: none"> <li>• Find all factor pairs for a whole number in the interval 1 through 100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the interval 1 through 100 is a multiple of a given one- digit number. Determine whether a given whole number in the interval 1 through 100 is prime or composite.</li> </ul>  | Factor Pair<br>Multiple<br>Prime<br>Number |

| Weeks   | Topic                                  | PA Standard   | Eligible Content   | Concepts and Competencies<br><b>The learner will:</b>   | Tier 2 & 3 Vocabulary |
|---------|--|---|--|---|-----------------------|
| 3 weeks | Four Operations<br>Represent and solve | CC.2.2.4.A.1<br>Represent and solve problems involving the four operations. | M04.B-O.1.1.1<br>M04.B-O.1.1.2<br>M04.B-O.1.1.3<br>M04.B-O.1.1.4 | <ul style="list-style-type: none"> <li>Interpret a multiplication equation as a comparison. Represent verbal statements of multiplicative comparisons as multiplication equations.</li> <li>Multiply or divide to solve word problems involving multiplicative comparison, distinguishing multiplicative comparison from additive comparison. Example: Know that <math>3 \times 4</math> can be used to represent that Student A has 4 objects and Student B has 3 times as many objects not just 3 more objects.</li> <li>Solve multi-step word problems posed with whole numbers using the four operations. Answers will be either whole numbers or have remainders that must be interpreted yielding a final answer that is a whole number. Represent these problems using equations with a symbol or letter standing for the unknown quantity.</li> <li>Identify the missing symbol (+, -, <math>\times</math>, <math>\div</math>, =, &lt;, and &gt;) that makes a number sentence true.</li> </ul> |                       |
| 2 weeks | Patterns<br>Generate and analyze       | CC.2.2.4.A.4<br>Generate and analyze patterns using one rule.               | M04.B-O.3.1.1<br>M04.B-O.3.1.2<br>M04.B-O.3.1.3                  | <ul style="list-style-type: none"> <li>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.</li> <li>Determine the missing elements in a function table.</li> </ul>   |                       |

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| <b>Topic:</b>                   | Numbers and Operations – Fractions  |
| <b>Weeks:</b>                   | 8 weeks   |
| <b>PA Standards:</b>            | CC.2.1.4.C.1 Extend the understanding of fractions to show equivalence and ordering.<br>CC.2.1.4.C.2 Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.<br>CC.2.1.4.C.3 Connect decimal notation to fractions, and compare decimal fractions (base 10 denominator, e.g., 19/100).  |
| <b>Math Practice Standards:</b> | <ol style="list-style-type: none"><li>1. Make sense of problems and persevere in solving them.</li><li>2. Reason abstractly and quantitatively.</li><li>3. Construct viable arguments and critique the reasoning of others.</li><li>4. Model with mathematics.</li><li>5. Use appropriate tools strategically.</li><li>6. Attend to precision.</li><li>7. Look for and make use of structure.</li><li>8. Look for and make sense of regularity in repeated reasoning.</li></ol> |

| Weeks   | Topic                                     | PA Standard   | Eligible Content  | Concepts and Competencies<br><b>The learner will:</b>  | Tier 2 & 3 Vocabulary  |
|---------|---|---|---|--|--|
| 2 weeks | Fractions<br>Equivalence and ordering     | CC.2.1.4.C.1<br>Extend the understanding of fractions to show equivalence and ordering.   | M04.A-F.1.1.1<br><br>M04.A-F.1.1.2  | <ul style="list-style-type: none"> <li>Recognize and generate equivalent fractions.</li> <li>Compare two fractions with different numerators and different denominators using the symbols <math>&gt;</math>, <math>=</math>, or <math>&lt;</math> and justify the conclusions</li> </ul>   | Equal to<br>Improper Fraction<br>Mixed Number<br>Proper Fraction |
| 4 weeks | Fractions<br>Build and operations         | CC.2.1.4.C.2<br>Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers. | M04.A-F.2.1.1<br><br>M04.A-F.2.1.2<br><br>M04.A-F.2.1.3<br><br>M04.A-F.2.1.4<br><br>M04.A-F.2.1.5<br><br>M04.A-F.2.1.6<br><br>M04.A-F.2.1.7 | <ul style="list-style-type: none"> <li>Add and subtract fractions with a common denominator</li> <li>Decompose a fraction or a mixed number into a sum of fractions with the same denominator, recording the decomposition by an equation. Justify decompositions.</li> <li>Add and subtract mixed numbers with a common denominator.</li> <li>Solve word problems involving addition and subtraction of fractions referring to the same whole or set and having like denominators.</li> <li>Multiply a whole number by a unit fraction. Multiply a whole number by a non-unit fraction.</li> <li>Solve word problems involving multiplication of a whole number by a fraction.</li> </ul> |  |
| 2 weeks | Fractions<br>Connect decimals and compare | CC.2.1.4.C.3<br>Connect decimal notation to fractions, and compare decimal fractions (base 10 denominator, e.g., $\frac{19}{100}$ ).  | M04.A-F.3.1.1<br><br>M04.A-F.3.1.2<br><br>M04.A-F.3.1.3   | <ul style="list-style-type: none"> <li>Add two fractions with respective denominators 10 and 100.</li> <li>Use decimal notation for fractions with denominators 10 or 100.</li> <li>Compare two decimals to hundredths using the symbols <math>&gt;</math>, <math>=</math>, or <math>&lt;</math>, and justify the conclusions.</li> </ul>  |  |



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| <b>Topic:</b>                   | Measurement and Data  |
| <b>Weeks:</b>                   | 6 Weeks   |
| <b>PA Standards:</b>            | CC.2.4.4.A.1 Solve problems involving measurement and conversions from a larger unit to a smaller unit.<br>CC.2.4.4.A.2 Translate information from one type of data display to another.<br>CC.2.4.4.A.4 Represent and interpret data involving fractions using information provided in a line plot.   |
| <b>Math Practice Standards:</b> | Make sense of problems and persevere in solving them.<br>2. Reason abstractly and quantitatively.<br>3. Construct viable arguments and critique the reasoning of others.<br>4. Model with mathematics.<br>5. Use appropriate tools strategically.<br>6. Attend to precision.<br>7. Look for and make use of structure.<br>8. Look for and make sense of regularity in repeated reasoning. |

| Weeks   | Topic                                       | PA Standard   | Eligible Content   | Concepts and Competencies<br><b>The learner will:</b>   | Tier 2 & 3 Vocabulary |
|---------|---|---|--|---|-----------------------|
| 2 weeks | Converting Conversions- Large to small unit | CC.2.4.4.A.1<br>Solve problems involving measurement and conversions from a larger unit to a smaller unit.  | M04.D-M.1.1.1<br>M04.D-M.1.1.2<br>M04.D-M.1.1.3<br>M04.D-M.1.1.4 | <ul style="list-style-type: none"> <li>Know relative sizes of measurement units within one system of units including standard units</li> <li>Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects; 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.</li> <li>Apply the area and perimeter formulas for rectangles in real-world and mathematical problems.</li> <li>Identify time (analog or digital) as the amount of minutes before or after the hour.</li> </ul> | Pounds                |
| 2 weeks | Data Translate                              | CC.2.4.4.A.2<br>Translate information from one type of data display to another.                             | M04.D-M.2.1.3  | <ul style="list-style-type: none"> <li>Translate information from one type of display to another.</li> </ul>  | Interval              |
| 2 weeks | Data Interpret (fractions), and line plot   | CC.2.4.4.A.4<br>Represent and interpret data involving fractions using information provided in a line plot. | M04.D-M.2.1.1<br>M04.D-M.2.1.2                                   | <ul style="list-style-type: none"> <li>Make a line plot to display a data set of measurements in fractions of a unit.</li> <li>Solve problems involving addition and subtraction of fractions by using information presented in line plots.</li> </ul>  |                       |