## Abington Heights School District Grade 4 Mathematics Curriculum



In Fourth Grade, students develop their numeracy skills through the following areas of study:

1. Numbers and Operations in Base Ten
2. Numbers and Operations - Fractions
3. Operations and Algebraic Thinking
4. Geometry
5. Measurement and Data

Board Approval Date: 5/3/2023
Adoption: 2023-2024 SY
Review Date:


## Abington Heights Math Framework

| Stakeholders | Actions |
| :---: | :---: |
| Students | ^ Engage in mathematical discussions, share their ideas openly, be inquisitive, seek to understand and learn more about mathematical concepts, and try their best daily. <br> $\star$ Exhibit creativity and curiosity in problem solving individually and collaboratively. <br> $\star$ Persevere in engaging and challenging daily mathematical practice. <br> $\star$ Come prepared to learn every day. |
| Teachers | * Create a safe and collaborative classroom environment where students feel vested in a shared vision for mathematical excellence. <br> $\star$ Develop high quality instruction that meets the needs of all learners through differentiation. <br> $\star$ Use a variety of 21st century methodologies to advance learning. <br> $\star$ Partner with parents and guardians to support student success. <br> $\star$ Establish a collaborative community within the building and amongst grade levels to ensure a cohesive level of instruction. |
| Building Leaders | $\star$ Deeply understand the needs of teachers, students, the instructional materials being used, programs being implemented, and the expectations for state-level assessment scores <br> - Knowledgeable about program and grade level standards <br> $\circ$ Ensure consistent and equal access to high-quality instructional materials and resources, building. <br> Be partners with teachers, students and families: <br> - Provide guidance and support to the mathematical community. <br> - Understand needs of teachers, students and families. <br> Trust the educators to make professional decisions based on program, student, and district needs. |
| Central Admin | * Effectively communicate to the school board and community specific areas of need and how to support teachers and building leaders in a quest for mathematical excellence <br> $\star$ Deeply understand the needs of teachers, students, the instructional materials being used, programs being implemented, and the expectations for state-level assessment scores <br> - Have a common metric for mathematical excellence. <br> - Ensure consistent and equal access to high-quality instructional materials and resources, district. <br> - Re-examine best practices/curriculum routinely (6 years). <br> $\star$ Support a culture of collaboration between the other stakeholder groups to maintain the standard of excellence of the Abington Heights <br> $\star$ Trust the educators to make professional decisions based on program, student, and district needs. |
| Parents/ Community | $\star$ Be a strong support system and contribute by building a positive math community for students. <br> $\star$ Encourage a positive math mindset. <br> $\star$ Have conversations with their children about school and ask what they are learning about in school. <br> $\star$ Be open, receptive to the district's ideas about student learning and reach out to teachers/school to learn more about how they can support. <br> $\star$ Trust the educators to make professional decisions based on program, student, and district needs. |
| School Board | $\star$ Provide the fiscal resources to support: <br> - Highly qualified professionals for mathematics <br> - High-quality instructional materials <br> - Effective and efficient math interventions for remediation <br> - Professional development for math content and instructional practices <br> Trust the educators to make professional decisions based on program, student, and district needs. |

## Abington Heights Grade 4 Mathematics Curriculum

| PA Core Standards | PA Eligible Content | Everyday Mathematics Grade 4 Lessons |
| :---: | :---: | :---: |
| Numbers and Operations in Base Ten |  |  |
| CC.2.1.4.B.1 Apply place-value concepts to show an understanding of multi-digit whole numbers. | Mo4.A-T.1.1.1 Demonstrate an understanding that in a multi-digit whole number (through 1,000,000), a digit in one place represents ten times what it represents in the place to its right. Example: Recognize that in the number 770 , the 7 in the hundreds place is ten times the 7 in the tens place. <br> Mo4.A-T.1.1.2 Read and write whole numbers in expanded, standard, and word form through 1,000,000. <br> Mo4.A-T.1.1.3 Compare two multi-digit numbers through 1,000,000 based on meanings of the digits in each place, using >, =, and < symbols. <br> Mo4.A-T.1.1.4 Round multi-digit whole numbers (through 1,000,000) to any place. | $\begin{aligned} & 1-1,1-2,1-3,1-4,1-5,1-7,1-8, \\ & 1-9,1-10,4-1,4-2,4-3,4-5,4-6, \\ & 4-8,4-9,4-10,4-12,5-13,6-1, \\ & 6-4,6-7 \end{aligned}$ |
| CC.2.1.4.B. 2 Use place-value understanding and properties of operations to perform multi-digit arithmetic | Mo4.A-T.2.1.1 Add and subtract multi-digit whole numbers (limit sums and subtrahends up to and including $1,000,000$ ). <br> Mo4.A-T.2.1.2 Multiply a whole number of up to four digits by a one-digit whole number and multiply 2 two-digit numbers. <br> Mo4.A-T.2.1.3 Divide up to four-digit dividends by one-digit divisors with answers written as whole-number quotients and remainders. <br> Mo4.A-T.2.1.4 Estimate the answer to addition, subtraction, and multiplication problems using whole | $\begin{aligned} & 1-1,1-4,1-5,1-6,1-7,1-9,1-10, \\ & 1-13,2-1,2-2,2-3,2-4,2-5,2-7, \\ & 2-8,2-9,2-13,4-1,4-2,4-3, \\ & 4-4,4-5,4-6,4-7,4-8,4-9, \\ & 4-10,4-11,4-12,4-13,5-13,6-1, \\ & 6-2,6-3,6-4,6-5,6-6,6-7,6-8, \\ & 6-11,6-13,7-1,7-5,7-7,7-8, \\ & 7-9,8-1,8-2,8-3,8-9,8-12, \\ & 8-13 \end{aligned}$ |


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|  | numbers through six digits (for multiplication, no more than 2 digits $\times 1$ digit, excluding powers of 10 ). |  |
| Numbers and Operations - Fractions |  |  |
| CC.2.1.4.C. 1 Extend the understanding of fractions to show equivalence and ordering. | Mo4.A-F.1.1.1 Recognize and generate equivalent fractions. <br> Mo4.A-F.1.1.2 Compare two fractions with different numerators and different denominators (denominators limited to $2,3,4,5,6,8,10,12$, and 100) using the symbols >, =, or < and justify the conclusions. | $\begin{aligned} & 3-1,3-2,3-3,3-4,3-5,3-6,3-7, \\ & 3-8,5-1,5-2,5-3,5-4,5-5,5-6, \\ & 5-7,5-8,5-9,6-12,7-2,7-6, \\ & 7-10,7-11,7-12,7-13,8-5,8-6, \\ & 8-7,8-8,8-9,8-10,8-11,8-13 \end{aligned}$ |
| CC.2.1.4.C. 2 Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers. | Mo4.A-F.2.1.1 Add and subtract fractions with a common denominator (denominators limited to 2, 3, 4, $5,6,8,10,12$, and 100; answers do not need to be simplified; and no improper fractions as the final answer). <br> Mo4.A-F.2.1.2 Decompose a fraction or a mixed number into a sum of fractions with the same denominator (denominators limited to $2,3,4,5,6,8,10,12$, and 100), recording the decomposition by an equation. Justify decompositions (e.g., by using a visual fraction model). Example 1: $3 / 8=1 / 8+1 / 8+1 / 8$ OR $3 / 8=1 / 8+2 / 8$ Example 2: $21 / 12=1+1+1 / 12=12 / 12+12 / 12+1 / 12$ Mo4.A-F.2.1.3 Add and subtract mixed numbers with a common denominator (denominators limited to 2, 3, 4, $5,6,8,10,12$, and 100; no regrouping with subtraction; fractions do not need to be simplified; and no improper fractions as the final answers). <br> Mo4.A-F.2.1.4 Solve word problems involving addition and subtraction of fractions referring to the same whole or set and having like denominators (denominators limited to $2,3,4,5,6,8,10,12$, and 100 ). | $\begin{aligned} & 5-3,5-4,5-7,5-8,5-9,6-12, \\ & 6-13,7-2,7-3,7-4,7-5,7-6, \\ & 7-10,7-11,7-12,7-13,8-5,8-6, \\ & 8-7,8-8,8-9,8-10,8-11,8-13 \end{aligned}$ |


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|  | Mo4.A-F.2.1.5 Multiply a whole number by a unit fraction (denominators limited to $2,3,4,5,6,8,10,12$, and 100 and final answers do not need to be simplified or written as a mixed number). Example: $5 \times(1 / 4)=5 / 4$ <br> Mo4.A-F.2.1.6 Multiply a whole number by a non-unit fraction (denominators limited to $2,3,4,5,6,8,10,12$, and 100 and final answers do not need to be simplified or written as a mixed number). Example: $3 \times(5 / 6)=$ 15/6 <br> Mo4.A-F.2.1.7 Solve word problems involving multiplication of a whole number by a fraction (denominators limited to $2,3,4,5,6,8,10,12$, and 100 ). |  |
| CC.2.1.4.C. 3 Connect decimal notation to fractions, and compare decimal fractions (base 10 denominator, e.g., 19/100). | Mo4.A-F.3.1.1 Add two fractions with respective denominators 10 and 100. Example: Express 3/10 as $30 / 100$, and add $3 / 10+4 / 100=30 / 100+4 / 100=$ 34/100. <br> Mo4.A-F.3.1.2 Use decimal notation for fractions with denominators 10 or 100 . Example: Rewrite 0.62 as 62/100 and vice versa. <br> Mo4.A-F.3.1.3 Compare two decimals to hundredths using the symbols >, $=$, or $<$, and justify the conclusions. | $\begin{aligned} & 3-8,3-9,3-10,3-11,3-12,3-13 \\ & 5-5,7-12,8-7,8-13 \end{aligned}$ |
| Operations and Algebraic Thinking |  |  |
| CC.2.2.4.A.1 Represent and solve problems involving the four operations. | Mo4.B-O.1.1.1 Interpret a multiplication equation as a comparison. Represent verbal statements of multiplicative comparisons as multiplication equations. Example 1: Interpret $35=5 \times 7$ as a statement that 35 is 5 times as many as 7 and 7 times as many as 5 . Example 2: Know that the statement 24 is 3 times as many as 8 can be represented by the equation $24=3 \times 8$ or $24=8$ | $\begin{aligned} & 1-5,1-6,1-7,1-9,2-6,2-8,2-9 \\ & 3-12,4-1,4-2,4-12,5-13,6-5 \\ & 6-8,7-2,7-7,7-12,8-1,8-9 \end{aligned}$ |


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|  | $\times 3$. <br> Mo4.B-O.1.1.2 Multiply or divide to solve word problems involving multiplicative comparison, distinguishing multiplicative comparison from additive comparison. Example: Know that $3 \times 4$ 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. <br> Mo4.B-O.1.1.3 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. <br> Mo4.B-O.1.1.4 Identify the missing symbol $(+,-, \times, \div,=$, $<$, and $>$ ) that makes a number sentence true (single-digit divisor only). |  |
| CC.2.2.4.A. 2 Develop and/or apply number theory concepts to find factors and multiples. | Mo4.B-O.2.1.1 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. | $\begin{aligned} & 2-3,2-4,2-5,3-2,3-4,6-1,6-3, \\ & 6-7 \end{aligned}$ |
| CC.2.2.4.A.4 Generate and analyze patterns using one rule. | Mo4.B-O.3.1.1 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. Example 1 : Given the rule "add 3 " and the starting number 1, generate terms in the resulting sequence and observe that the terms alternate between odd and even numbers. Example 2: Given the rule "increase the number of sides | $\begin{aligned} & 1-8,2-1,2-4,2-6,2-13,3-2, \\ & 3-4,7-9 \end{aligned}$ |


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|  | by 1 " and starting with a triangle, observe that the tops of the shapes alternate between a side and a vertex. <br> Mo4.B-O.3.1.2 Determine the missing elements in a function table (limit to,+- , or $\times$ and to whole numbers or money). <br> Mo4.B-O.3.1.3 Determine the rule for a function given a table (limit to,+- , or $\times$ and to whole numbers). |  |
| Geometry |  |  |
| CC.2.3.4.A. 1 Draw lines and angles and identify these in two-dimensional figures. | Mo4.C-G.1.1.1 Draw points, lines, line segments, rays, angles (right, acute, and obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures. | $\begin{aligned} & 1-11,1-12,2-11,5-10,5-11,6-9 \\ & 6-10,6-11,8-2,8-8 \end{aligned}$ |
| C.2.3.4.A. 2 Classify two-dimensional figures by properties of their lines and angles. | Mo4.C-G.1.1.2 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. | 1-12, 1-13, 2-10, 2-11, 4-11 |
| CC.2.3.4.A.3 Recognize symmetric shapes and draw lines of symmetry. | Mo4.C-G.1.1.3 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 mirroring parts. Identify line-symmetric figures and draw lines of symmetry (up to two lines of symmetry). | 2-12, 5-12, 8-4, 8-8 |
| Measurement and Data |  |  |
| CC.2.4.4.A. 1 Solve problems involving measurement and conversions from a larger unit to a smaller unit. | Mo4.D-M.1.1.1 Know relative sizes of measurement units within one system of units including standard units (in., $\mathrm{ft}, \mathrm{yd}$, mi; oz., lb; and c, pt, qt, gal), metric units ( $\mathrm{cm}, \mathrm{m}$, $\mathrm{km} ; \mathrm{g}$, kg; and mL, L), and time (sec, min, hr, day, wk, mo , and yr ). Within a single system of measurement, | $\begin{array}{\|l} 1-10,1-13,2-2,2-7,3-1,3-8, \\ 3-11,3-12,3-13,4-3,4-4,4-6, \\ 4-7,4-8,4-9,4-11,5-7,6-2, \\ 6-3,6-4,6-6,6-12,7-1,7-2,7-5, \\ 7-8,7-9,7-10,7-11,7-12,8-5, \end{array}$ |


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|  | express measurements in a larger unit in terms of a smaller unit. A table of equivalencies will be provided. <br> Example 1: Know that 1 kg is 1,000 times as heavy as 1 g . <br> Example 2: Express the length of a 4 -foot snake as 48 in . <br> Mo4.D-M.1.1.2 Use the four operations to solve word problems involving distances, intervals of time (such as elapsed 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. <br> Mo4.D-M.1.1.3 Apply the area and perimeter formulas for rectangles in real-world and mathematical problems (may include finding a missing side length). Whole numbers only. The formulas will be provided. <br> Mo4.D-M.1.1.4 Identify time (analog or digital) as the amount of minutes before or after the hour. Example 1: 2:50 is the same as 10 minutes before 3:00. Example 2: Quarter past six is the same as 6:15. | 8-6, 8-7, 8-8, 8-9, 8-10, 8-11 |
| CC.2.4.4.A. 2 Translate information from one type of data display to another. | Mo4.D-M.2.1.3 Translate information from one type of display to another (table, chart, bar graph, or pictograph). | Intentionally blank. |
| CC.2.4.4.A.4 Represent and interpret data involving fractions using information provided in a line plot. | Mo4.D-M.2.1.1 Make a line plot to display a data set of measurements in fractions of a unit (e.g., intervals of $1 / 2,1 / 4$, or $1 / 8$ ). <br> Mo4.D-M.2.1.2 Solve problems involving addition and subtraction of fractions by using information presented in line plots (line plots must be labeled with common denominators, such as $1 / 4,2 / 4,3 / 4$ ). | 5-9, 7-13, 8-5 |


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| CC.2.4.4.A.6 Measure angles and use properties of <br> adjacent angles to solve problems. | Mo4.D-M.3.1.1 Measure angles in whole-number <br> degrees using a protractor. With the aid of a protractor, <br> sketch angles of specified measure. <br> Mo4.D-M.3.1.2 Solve addition and subtraction problems <br> to find unknown angles on a diagram in real-world and <br> mathematical problems. (Angles must be adjacent and <br> non-overlapping.) | $5-10,5-11,6-9,6-10,6-11,8-2$, <br> $8-3$ |

By the end of 4th Grade, students will:

| Numbers \& Operations in Base Ten | Numbers \& Operations Fractions | Operations and Algebraic Thinking | Geometry | Measurement and Data |
| :---: | :---: | :---: | :---: | :---: |
| 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 Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form Compare multi-digit numbers using <, >, = Round multi-digit whole numbers (through $1,000,000$ ) to any place Fluently add and subtract multi-digit whole numbers within 1,000,000 Multiply two-digit by two-digit numbers and up to four digits by one digit Divide up to a four-digit number by a one-digit number | Recognize and generate equivalent fractions Compare two fractions with unlike numerators and denominators Add and subtract fractions with like denominators Add and subtract mixed numbers with like denominators Solve addition, subtraction, and multiplication word problems involving fractions Understand decimal notation and compare two decimals to the hundredths using <, >, = | Solve multi-step whole number word problems using the four operations including problems with remainders Explore prime and composite numbers Explore factors and multiples Analyze and explain patterns | Explore points, lines, line segments, rays, angles (right, acute, obtuse) and parallel and perpendicular lines Classify two-dimensional figures based on attributes Explore right triangles Identify symmetry of two-dimensional figures | Solve problems involving measurement conversions 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) Apply area and perimeter formulas for rectangles in real world and mathematical problems Identify time as the amount of minutes before or after the hour Solve problems involving addition and subtraction of fractions of a unit $\left(\frac{1}{2}, \frac{1}{4}, \frac{1}{8}\right)$ by using information presented in line plots Measure and explore concepts with angles |

## Notes:

