

**THE FOLLOWING STATE CURRICULUM STANDARDS ARE ADDRESSED BY
THE QUARTER MILE MATH SOFTWARE
FOR THE STATE OF OHIO**

Subject: MATH
Standard: Number, Number Sense And Operations
Strand: Computation and Estimation

Substrand Titles that Address the Substrand

(Gr. 1) 16. Develop strategies for basic addition facts, such as: a. counting all; b. counting on; c. one more, two more; d. doubles; e. doubles plus or minus one; f. make ten; g. using tens frames; h. identity property (adding zero).

Quarter Mile Math Level 1

(Gr. 1) 17. Develop strategies for basic subtraction facts, such as: a. relating to addition (for example, think of $7 - 3 = ?$ as "3 plus ? equals 7"); b. one less, two less; c. all but one (for example, $8 - 7$, $5 - 4$); d. using tens frames; e. missing addends.

Quarter Mile Math Level 1

Subject: MATH
Standard: Number, Number Sense And Operations
Strand: Number and Number Systems

Substrand Titles that Address the Substrand

(Gr. 1) 3. Read and write the numerals for numbers to 100.

Quarter Mile Math Level 1

(Gr. 1) 4. Count forward to 100, count backward from 100, and count forward or backward starting at any number between 1 and 100.

Quarter Mile Math Level 1

(Gr. 1) 5. Use place value concepts to represent whole numbers using numerals, words, expanded notation and physical models with ones and tens. For example: a. Develop a system to group and count by twos, fives and tens; b. Identify patterns and groupings in a 100's chart and relate to place-value concepts; c. Recognize the first digit of a two-digit number as the most important to indicate size of a number and the nearness to 10 or 100.

Quarter Mile Math Level 1

Subject: MATH
Standard: Number, Number Sense And Operations
Strand: Computation and Estimation

Substrand Titles that Address the Substrand

(Gr. 2) 10. Demonstrate fluency in addition facts with addends through 9 and corresponding subtractions; e.g., $9 + 9 = 18$, $18 - 9 = 9$.

Quarter Mile Math Level 1

(Gr. 2) 11. Add and subtract multiples of 10.

Quarter Mile Math Level 1

(Gr. 2) 12. Demonstrate multiple strategies for adding and subtracting 2- or 3-digit whole numbers, such as: a. compatible numbers; b. compensatory numbers; c. informal use of commutative and associative properties of addition.

Quarter Mile Math Level 1

(Gr. 2) 13. Estimate the results of whole number addition and subtraction problems using front-end estimation, and judge the reasonableness of the answers.

Quarter Mile Math Level 1

Subject: MATH

Standard: Number, Number Sense And Operations

Strand: Meaning of Operations

Substrand	Titles that Address the Substrand
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(Gr. 2) 6. Model, represent and explain subtraction as comparison, take-away, and part-to-whole; e.g., solve missing addend problems by counting up or subtracting, such as "I had six baseball cards, my sister gave me more, and I now have ten. How many did she give me?" can be represented as $6 + ? = 10$ or $10 - 6 = ?$.

Quarter Mile Math Level 1

(Gr. 2) 7. Model, represent and explain multiplication as repeated addition, rectangular arrays and skip counting.

Quarter Mile Math Level 1

(Gr. 2) 9. Model and use the commutative property for addition.

Quarter Mile Math Level 1

Subject: MATH

Standard: Number, Number Sense And Operations

Strand: Number and Number Systems

Substrand	Titles that Address the Substrand
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(Gr. 2) 2. Recognize and classify numbers as even or odd.

Quarter Mile Math Level 1

(Gr. 2) 3. Count money and make change using coins and a dollar bill.

Quarter Mile Math Level 2

(Gr. 2) 4. Represent and write the value of money using the ¢ sign and in decimal form when using the \$ sign.

Quarter Mile Math Level 2

Subject: MATH

Standard: Patterns, Functions And Algebra

Strand: Use Patterns, Relations and Functions

Substrand	Titles that Address the Substrand
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(Gr. 2) 1. Extend simple number patterns (both repeating and growing patterns), and create similar patterns using different objects, such as using physical materials or shapes to represent numerical patterns.

Quarter Mile Math Level 1

Subject: MATH

Standard: Data Analysis And Probability

Strand: Statistical Methods

Substrand Titles that Address the Substrand

(Gr. 3) 8. Identify the mode of a data set and describe the information it gives about a data set.

Quarter Mile Math Level 2

Subject: MATH

Standard: Number, Number Sense And Operations

Strand: Computation and Estimation

Substrand Titles that Address the Substrand

(Gr. 3) 12. Add and subtract whole numbers with and without regrouping.

Quarter Mile Math Level 1

(Gr. 3) 13. Demonstrate fluency in multiplication facts through 10 and corresponding division facts.

Quarter Mile Math Level 1

(Gr. 3) 14. Multiply and divide 2- and 3-digit numbers by a single-digit number, without remainders for division.

Quarter Mile Math Level 1

(Gr. 3) 15. Evaluate the reasonableness of computations based upon operations and the numbers involved; e.g., considering relative size, place value and estimates.

Quarter Mile Math Level 1

Subject: MATH

Standard: Number, Number Sense And Operations

Strand: Meaning of Operations

Substrand Titles that Address the Substrand

(Gr. 3) 10. Explain and use relationships between operations, such as: a. relate addition and subtraction as inverse operations; b. relate multiplication and division as inverse operations; c. relate addition to multiplication (repeated addition); d. relate subtraction to division (repeated subtraction).

Quarter Mile Math Level 1

Subject: MATH

Standard: Number, Number Sense And Operations

Strand: Number and Number Systems

Substrand Titles that Address the Substrand

(Gr. 3) 3. Use mathematical language and symbols to compare and order; e.g., less than, greater than, at most, at least, $<$, $>$, $=$, $<=$, $>=$.

Quarter Mile Math Level 1

(Gr. 3) 5. Represent fractions and mixed numbers using words, numerals and physical models.

Quarter Mile Math Level 2

Subject: MATH

Standard: Data Analysis And Probability

Strand: Statistical Methods

Substrand	Titles that Address the Substrand
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(Gr. 4) 7. Identify the median of a set of data and describe what it indicates about the data.

Quarter Mile Math Level 2

(Gr. 4) 8. Use range, median and mode to make comparisons among related sets of data.

Quarter Mile Math Level 2

Subject: MATH

Standard: Number, Number Sense And Operations

Strand: Computation and Estimation

Substrand	Titles that Address the Substrand
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(Gr. 4) 8. Solve problems involving counting money and making change, using both coins and paper bills.

Quarter Mile Math Level 2

(Gr. 4) 9. Estimate the results of computations involving whole numbers, fractions and decimals, using a variety of strategies.

Quarter Mile Math Level 2

(Gr. 4) 11. Develop and explain strategies for performing computations mentally.

Quarter Mile Math Level 2

(Gr. 4) 12. Analyze and solve multi-step problems involving addition, subtraction, multiplication and division using an organized approach, and verify and interpret results with respect to the original problem.

Quarter Mile Math Level 2

(Gr. 4) 13. Use a variety of methods and appropriate tools for computing with whole numbers; e.g., mental math, paper and pencil, and calculator.

Quarter Mile Math Level 2

(Gr. 4) 14. Demonstrate fluency in adding and subtracting whole numbers and in multiplying and dividing whole numbers by 1- and 2-digit numbers and multiples of ten.

Quarter Mile Math Level 2

Subject: MATH

Standard: Number, Number Sense And Operations

Strand: Number and Number Systems

Substrand	Titles that Address the Substrand
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(Gr. 4) 1. Identify and generate equivalent forms of fractions and decimals. For example: a. Connect physical, verbal and symbolic representations of fractions, decimals and whole numbers; e.g., $\frac{1}{2}$, $\frac{5}{10}$, "five tenths," 0.5, shaded rectangles with half, and five tenths; b. Understand and explain that ten tenths is the same as one whole in both fraction and decimal form.

Quarter Mile Math Level 2

(Gr. 4) 2. Use place value structure of the base-ten number system to read, write, represent and compare whole numbers through millions and decimals through thousandths.

Quarter Mile Math Level 2

(Gr. 4) 3. Round whole numbers to a given place value.

Quarter Mile Math Level 2

Subject: MATH
Standard: Data Analysis And Probability
Strand: Statistical Methods

Substrand **Titles that Address the Substrand**

(Gr. 5) 6. Determine and use the range, mean, median and mode, and explain what each does and does not indicate about the set of data.

Quarter Mile Math Level 2

Subject: MATH
Standard: Number, Number Sense And Operations
Strand: Computation and Estimation

Substrand **Titles that Address the Substrand**

(Gr. 5) 13. Estimate the results of computations involving whole numbers, fractions and decimals, using a variety of strategies.

Quarter Mile Math Level 2

Subject: MATH
Standard: Number, Number Sense And Operations
Strand: Meaning of Operations

Substrand **Titles that Address the Substrand**

(Gr. 5) 7. Use commutative, associative, distributive, identity and inverse properties to simplify and perform computations.

Quarter Mile Math Level 2

(Gr. 5) 8. Identify and use relationships between operations to solve problems.

Quarter Mile Math Level 2

(Gr. 5) 9. Use order of operations, including use of parentheses, to simplify numerical expressions.

Quarter Mile Math Level 2

(Gr. 5) 11. Explain how place value is related to addition and subtraction of decimals; e.g., $0.2 + 0.14$; the two tenths is added to the one tenth because they are both tenths.

Quarter Mile Math Level 2

Subject: MATH
Standard: Number, Number Sense And Operations
Strand: Number and Number Systems

Substrand **Titles that Address the Substrand**

(Gr. 5) 2. Use various forms of "one" to demonstrate the equivalence of fractions; e.g., $18/24 = 9/12 \times 2/2 = 3/4 \times 6/6$.

Quarter Mile Math Level 2

(Gr. 5) 3. Identify and generate equivalent forms of fractions, decimals and percents.

Quarter Mile Math Level 2

(Gr. 5) 4. Round decimals to a given place value and round fractions (including mixed numbers) to the nearest half.

Quarter Mile Math Level 2

Subject: MATH

Standard: Data Analysis And Probability

Strand: Statistical Methods

Substrand **Titles that Address the Substrand**

(Gr. 6) 4. Understand the different information provided by measures of center (mean, mode and median) and measures of spread (range).

Quarter Mile Math Level 2

Subject: MATH

Standard: Number, Number Sense And Operations

Strand: Computation and Estimation

Substrand **Titles that Address the Substrand**

(Gr. 6) 12. Develop and analyze algorithms for computing with fractions and decimals, and demonstrate fluency in their use.

Quarter Mile Math Level 2

Quarter Mile Math Level 3

(Gr. 6) 13. Estimate reasonable solutions to problem situations involving fractions and decimals; e.g., $7/8 + 12/13$ 2 and 4.23×5.8 25.

Quarter Mile Math Level 2

Quarter Mile Math Level 3

(Gr. 6) 15. Determine the percent of a number and solve related problems; e.g., find the percent markdown if the original price was \$140, and the sale price is \$100.

Quarter Mile Math Level 2

Subject: MATH

Standard: Number, Number Sense And Operations

Strand: Meaning of Operations

Substrand **Titles that Address the Substrand**

(Gr. 6) 6. Use the order of operations, including the use of exponents, decimals and rational numbers, to simplify numerical expressions.

Quarter Mile Math Level 2

Quarter Mile Math Level 3

(Gr. 6) 8. Represent multiplication and division situations involving fractions and decimals with models and visual representations; e.g., show with pattern blocks what it means to take $2 \frac{2}{3} \div 1/6$.

Quarter Mile Math Level 2

Quarter Mile Math Level 3

Subject: MATH

Standard: Number, Number Sense And Operations

Strand: Number and Number Systems

Substrand **Titles that Address the Substrand**

(Gr. 6) 2. Find and use the prime factorization of composite numbers. For example: a. Use the prime factorization to recognize the greatest common factor (GCF); b. Use the prime factorization to recognize the least common multiple (LCM); c. Apply the prime factorization to solve problems and explain solutions.

Quarter Mile Math Level 2

Subject: MATH

Standard: Patterns, Functions And Algebra

Strand: Use Algebraic Representations

Substrand **Titles that Address the Substrand**

(Gr. 6) 3. Recognize and generate equivalent forms of algebraic expressions, and explain how the commutative, associative and distributive properties can be used to generate equivalent forms; e.g., perimeter as $2(l + w)$ or $2l + 2w$.

Quarter Mile Math Level 3

(Gr. 6) 6. Evaluate simple expressions by replacing variables with given values, and use formulas in problem-solving situations.

Quarter Mile Math Level 2

Quarter Mile Math Level 3

Subject: MATH

Standard: Number, Number Sense And Operations

Strand: Computation and Estimation

Substrand **Titles that Address the Substrand**

(Gr. 7) 7. Solve problems using the appropriate form of a rational number (fraction, decimal or percent).

Quarter Mile Math Level 2

Quarter Mile Math Level 3

(Gr. 7) 8. Develop and analyze algorithms for computing with percents and integers, and demonstrate fluency in their use.

Quarter Mile Math Level 2

Quarter Mile Math Level 3

Subject: MATH

Standard: Number, Number Sense And Operations

Strand: Meaning of Operations

Substrand **Titles that Address the Substrand**

(Gr. 7) 4. Use order of operations and properties to simplify numerical expressions involving integers, fractions and decimals.

Quarter Mile Math Level 3

(Gr. 7) 5. Explain the meaning and effect of adding, subtracting, multiplying and dividing integers; e.g., how adding two integers can result in a lesser value.

Quarter Mile Math Level 3

Subject: MATH

Standard: Number, Number Sense And Operations

Strand: Number and Number Systems

Substrand Titles that Address the Substrand

(Gr. 7) 2. Explain the meaning of exponents that are negative or 0.
Quarter Mile Math Level 2

Subject: MATH
Standard: Patterns, Functions And Algebra
Strand: Use Algebraic Representations

Substrand Titles that Address the Substrand

(Gr. 7) 9. Recognize a variety of uses for variables; e.g., placeholder for an unknown quantity in an equation, generalization for a pattern, formula.
Quarter Mile Math Level 3

Subject: MATH
Standard: Number, Number Sense And Operations
Strand: Computation and Estimation

Substrand Titles that Address the Substrand

(Gr. 8) 6. Estimate, compute and solve problems involving rational numbers, including ratio, proportion and percent, and judge the reasonableness of solutions.
Quarter Mile Math Level 2

Subject: MATH
Standard: Number, Number Sense And Operations
Strand: Meaning of Operations

Substrand Titles that Address the Substrand

(Gr. 8) 3. Apply order of operations to simplify expressions and perform computations involving integer exponents and radicals.
Quarter Mile Math Level 2

Subject: MATH
Standard: Patterns, Functions And Algebra
Strand: Use Algebraic Representations

Substrand Titles that Address the Substrand

(Gr. 8) 8. Write, simplify and evaluate algebraic expressions (including formulas) to generalize situations and solve problems.
Quarter Mile Math Level 3

Subject: MATH
Standard: Number, Number Sense And Operations
Strand: Computation and Estimation

Substrand Titles that Address the Substrand

(Gr. 9) 4. Demonstrate fluency in computations using real numbers.

Quarter Mile Math Level 3

Subject: MATH

Standard: Patterns, Functions And Algebra

Strand: Use Algebraic Representations

Substrand

Titles that Address the Substrand

(Gr. 9) 11. Add, subtract, multiply and divide monomials and polynomials (division of polynomials by monomials only).

Quarter Mile Math Level 3