

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

Grades PK - 3

Subject: MATH

Standard: Algebra And Functions

Strand: Grade 3

Substrand Titles that Address the Substrand

(Gr. PreK-3) Substitute a missing addend in a number sentence.

Quarter Mile Math Level 1

(Gr. PreK-3) Create a story to match a given combination of symbols and numbers.

Quarter Mile Math Level 1

Subject: MATH

Standard: Computation And Estimation

Strand: Grade 3

Substrand Titles that Address the Substrand

(Gr. PreK-3) Demonstrate the concept of multiplication as repeated addition and arrays.

Quarter Mile Math Level 1

(Gr. PreK-3) Demonstrate the concept of division as repeated subtraction and as sharing.

Quarter Mile Math Level 1

(Gr. PreK-3) Use estimation skills to arrive at conclusions.

Quarter Mile Math Level 1

(Gr. PreK-3) Determine the reasonableness of calculated answers.

Quarter Mile Math Level 1

(Gr. PreK-3) Explain addition and subtraction algorithms with regrouping.

Quarter Mile Math Level 1

Subject: MATH

Standard: Concepts Of Calculus

Strand: Grade 3

Substrand Titles that Address the Substrand

(Gr. PreK-3) Identify whole number quantities and measurements from least to most and greatest value.

Quarter Mile Math Level 1

Subject: MATH

Standard: Mathematical Problem Solving And Communication

Strand: Grade 3

Substrand Titles that Address the Substrand

(Gr. PreK-3) Use appropriate problem-solving strategies (e.g., guess and check, working backwards).

Quarter Mile Math Level 1

(Gr. PreK-3) Select and use an appropriate method, materials and strategy to solve problems, including mental mathematics, paper and pencil and concrete objects.

Quarter Mile Math Level 1

Subject: MATH

Standard: Numbers, Number Systems, And Number Relationships

Strand: Grade 3

Substrand Titles that Address the Substrand

(Gr. PreK-3) Count using whole numbers (to 10,000) and by 2s, 3s, 5s, 10s, 25s and 100s.

Quarter Mile Math Level 1

(Gr. PreK-3) Estimate, approximate, round or use exact numbers as appropriate.

Quarter Mile Math Level 1

(Gr. PreK-3) Describe the inverse relationship between addition and subtraction.

Quarter Mile Math Level 1

(Gr. PreK-3) Demonstrate knowledge of basic facts in four basic operations.

Quarter Mile Math Level 1

(Gr. PreK-3) Represent equivalent forms of the same number through the use of concrete objects, drawings, word names and symbols.

Quarter Mile Math Level 1

(Gr. PreK-3) Apply number patterns (even and odd) and compare values of numbers on the hundred board.

Quarter Mile Math Level 1

(Gr. PreK-3) Apply place-value concepts and numeration to counting, ordering and grouping.

Quarter Mile Math Level 1

Subject: MATH

Standard: Probability And Predictions

Strand: Grade 3

Substrand Titles that Address the Substrand

(Gr. PreK-3) Analyze data using the concepts of largest, smallest, most often, least often and middle.

Quarter Mile Math Level 1

Grades 4 - 5

Subject: MATH

Standard: Algebra And Functions

Strand: Grade 5

Substrand Titles that Address the Substrand

(Gr. 4-5) Select and use appropriate strategies, including concrete materials, to solve number sentences and explain the method of solution.

Quarter Mile Math Level 2

Subject: MATH

Standard: Computation And Estimation

Strand: Grade 5

Substrand Titles that Address the Substrand

(Gr. 4-5) Demonstrate the ability to round numbers.

Quarter Mile Math Level 2

(Gr. 4-5) Determine through estimations the reasonableness of answers to problems involving addition, subtraction, multiplication and division of whole numbers.

Quarter Mile Math Level 2

(Gr. 4-5) Demonstrate skills for using fraction calculators to verify conjectures, confirm computations and explore complex problem-solving situations.

Quarter Mile Math Level 2

(Gr. 4-5) Apply estimation strategies to a variety of problems including time and money.

Quarter Mile Math Level 2

(Gr. 4-5) Explain multiplication and division algorithms.

Quarter Mile Math Level 2

Subject: MATH

Standard: Concepts Of Calculus

Strand: Grade 5

Substrand Titles that Address the Substrand

(Gr. 4-5) Make comparisons of numbers (e.g., more, less, same, least, most, greater than, less than).

Quarter Mile Math Level 1

Subject: MATH

Standard: Mathematical Problem Solving And Communication

Strand: Grade 5

Substrand Titles that Address the Substrand

(Gr. 4-5) Connect, extend and generalize problem solutions to other concepts, problems and circumstances in mathematics.

Quarter Mile Math Level 2

(Gr. 4-5) Select, use and justify the methods, materials and strategies used to solve problems.

Quarter Mile Math Level 2

(Gr. 4-5) Use appropriate problem-solving strategies (e.g., solving a simpler problem, drawing a picture or diagram).

Quarter Mile Math Level 2

Subject: MATH

Standard: Mathematical Reasoning And Connections

Strand: Grade 5

Substrand Titles that Address the Substrand

(Gr. 4-5) Compare quantities and magnitudes of numbers.

Quarter Mile Math Level 2

Subject: MATH

Standard: Numbers, Number Systems, And Number Relationships

Strand: Grade 5

Substrand Titles that Address the Substrand

(Gr. 4-5) Use expanded notation to represent whole numbers or decimals.

Quarter Mile Math Level 2

(Gr. 4-5) Apply number theory concepts to rename a number quantity (e.g., six, 6, $12 / 2$, $3 * 2$, $10 - 4$).

Quarter Mile Math Level 2

(Gr. 4-5) Demonstrate that mathematical operations can represent a variety of problem situations.

Quarter Mile Math Level 2

(Gr. 4-5) Explain the concepts of prime and composite numbers.

Quarter Mile Math Level 2

(Gr. 4-5) Use simple concepts of negative numbers (e.g., on a number line, in counting, in temperature).

Quarter Mile Math Level 2

(Gr. 4-5) Develop and apply number theory concepts (e.g., primes, factors, multiples, composites) to represent numbers in various ways.

Quarter Mile Math Level 2

Grades 6 - 8

Subject: MATH

Standard: Algebra And Functions

Strand: Grade 8

Substrand Titles that Address the Substrand

(Gr. 6-8) Apply simple algebraic patterns to basic number theory and to spatial relations

Quarter Mile Math Level 2

Quarter Mile Math Level 3

(Gr. 6-8) Show that an equality relationship between two quantities remains the same as long as the same change is made to both quantities; explain how a change in one quantity determines another quantity in a functional relationship.

Quarter Mile Math Level 2

Quarter Mile Math Level 3

(Gr. 6-8) Create and interpret expressions, equations or inequalities that model problem situations.

Quarter Mile Math Level 2

Quarter Mile Math Level 3

(Gr. 6-8) Select and use a strategy to solve an equation or inequality, explain the solution and check the solution for accuracy.

Quarter Mile Math Level 2

Quarter Mile Math Level 3

Subject: MATH
Standard: Computation And Estimation
Strand: Grade 8

Substrand **Titles that Address the Substrand**

(Gr. 6-8) Complete calculations by applying the order of operations.

Quarter Mile Math Level 2
Quarter Mile Math Level 3

(Gr. 6-8) Add, subtract, multiply and divide different kinds and forms of rational numbers including integers, decimal fractions, percents and proper and improper fractions.

Quarter Mile Math Level 2
Quarter Mile Math Level 3

(Gr. 6-8) Estimate amount of tips and discounts using ratios, proportions and percents.

Quarter Mile Math Level 2

(Gr. 6-8) Determine the appropriateness of overestimating or underestimating in computation.

Quarter Mile Math Level 2

(Gr. 6-8) Identify the difference between exact value and approximation and determine which is appropriate for a given situation.

Quarter Mile Math Level 2

Subject: MATH
Standard: Mathematical Problem Solving And Communication
Strand: Grade 8

Substrand **Titles that Address the Substrand**

(Gr. 6-8) Invent, select, use and justify the appropriate methods, materials and strategies to solve problems.

Quarter Mile Math Level 2
Quarter Mile Math Level 3

(Gr. 6-8) Verify and interpret results using precise mathematical language, notation and representations, including numerical tables and equations, simple algebraic equations and formulas, charts, graphs and diagrams.

Quarter Mile Math Level 3

Subject: MATH
Standard: Mathematical Reasoning And Connections
Strand: Grade 8

Substrand **Titles that Address the Substrand**

(Gr. 6-8) Construct, use and explain algorithmic procedures for computing and estimating with whole numbers, fractions, decimals and integers.

Quarter Mile Math Level 2
Quarter Mile Math Level 3

Subject: MATH
Standard: Numbers, Number Systems, And Number Relationships
Strand: Grade 8

Substrand **Titles that Address the Substrand**

(Gr. 6-8) Represent and use numbers in equivalent forms (e.g., integers, fractions, decimals, percents, exponents, scientific notation, square roots).

Quarter Mile Math Level 2

Quarter Mile Math Level 3

(Gr. 6-8) Simplify numerical expressions involving exponents, scientific notation and using order of operations.

Quarter Mile Math Level 2

Quarter Mile Math Level 3

(Gr. 6-8) Distinguish between and order rational and irrational numbers.

Quarter Mile Math Level 2

Quarter Mile Math Level 3

(Gr. 6-8) Simplify and expand algebraic expressions using exponential forms.

Quarter Mile Math Level 2

(Gr. 6-8) Use the inverse relationships between addition, subtraction, multiplication, division, exponentiation and root extraction to determine unknown quantities in equations.

Quarter Mile Math Level 2

Quarter Mile Math Level 3

Subject: MATH

Standard: Statistics And Data Analysis

Strand: Grade 8

Substrand **Titles that Address the Substrand**

(Gr. 6-8) Compare and contrast different plots of data using values of mean, median, mode, quartiles and range.

Quarter Mile Math Level 2

Subject: MATH

Standard: Computation And Estimation

Strand: Grade 11

Substrand **Titles that Address the Substrand**

(Gr. 9-11) Develop and use computation concepts, operations and procedures with real numbers in problem-solving situations.

Quarter Mile Math Level 3

(Gr. 9-11) Use estimation to solve problems for which an exact answer is not needed.

Quarter Mile Math Level 2

Subject: MATH

Standard: Mathematical Problem Solving And Communication

Strand: Grade 11

Substrand **Titles that Address the Substrand**

(Gr. 9-11) Select and use appropriate mathematical concepts and techniques from different areas of mathematics and apply them to solving non-routine and multi-step problems.

Quarter Mile Math Level 3