

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

**Subject: MATH**

**Standard: IV. Number Sense And Numeration**

**Strand: (Concepts And Properties Of Numbers) Students Experience Counting And Measuring Activities To Develop Intuitive Sense About Numbers, Develop Understanding About Properties Of Numbers, Understand The Need For And Existence Of Different Sets Of Numbers, And Investigate Properties Of Special Numbers.**

<b>Substrand</b>	<b>Titles that Address the Substrand</b>
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(Gr. K-5 ) Develop an understanding of whole numbers and read, write and count using whole numbers; investigate basic concepts of fractions and decimals.

**Quarter Mile Math Level 1**  
**Quarter Mile Math Level 2**

(Gr. K-5 ) Investigate and develop an understanding of the base-10 place-value system.

**Quarter Mile Math Level 1**  
**Quarter Mile Math Level 2**

(Gr. K-5 ) Develop an understanding of the properties of numbers (e.g., order) and of the properties of the special numbers 0 and 1.

**Quarter Mile Math Level 1**  
**Quarter Mile Math Level 2**

(Gr. K-5 ) Apply their understanding of number systems to model and solve problems.

**Quarter Mile Math Level 2**

**Subject: MATH**

**Standard: IV. Number Sense And Numeration**

**Strand: (Number Relationships) Students Investigate Relationships Such As Equality, Inequality, Inverses, Factors And Multiples, And Represent And Compare Very Large And Very Small Numbers.**

<b>Substrand</b>	<b>Titles that Address the Substrand</b>
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(Gr. K-5 ) Compare and order numbers using 'equal,' 'less than' or 'greater than.'

**Quarter Mile Math Level 1**

(Gr. K-5 ) Use part-whole relationships to explore numbers, develop number concepts and understand computation.

**Quarter Mile Math Level 1**  
**Quarter Mile Math Level 2**

(Gr. K-5 ) Classify numbers as even or odd and explore concepts of factors and multiples.

**Quarter Mile Math Level 1**

(Gr. K-12) Apply their understanding of number relationships in solving problems.

**Quarter Mile Math Level 1**

**Quarter Mile Math Level 2**  
**Quarter Mile Math Level 3**

**Subject: MATH**

**Standard: IV. Number Sense And Numeration**

**Strand: (Representation And Uses Of Numbers) Students Recognize That Numbers Are Used In Different Ways Such As Counting, Measuring, Ordering And Estimating, Understand And Produce Multiple Representations Of A Number, And Translate Among Equivalent Representations.**

**Substrand**                      **Titles that Address the Substrand**

(Gr. K-5 ) Explore and recognize different representations for the same number and explain why they are the same.

**Quarter Mile Math Level 1**  
**Quarter Mile Math Level 2**

(Gr. K-5 ) Investigate ways numbers are used (e.g., counting, ordering, naming, locating, measuring).

**Quarter Mile Math Level 1**  
**Quarter Mile Math Level 2**

(Gr. K-5 ) Develop strategies for estimating quantity and evaluate the reasonableness of their estimates.

**Quarter Mile Math Level 1**  
**Quarter Mile Math Level 2**

(Gr. K-5 ) Select appropriate numbers and representations in order to solve problems.

**Quarter Mile Math Level 1**  
**Quarter Mile Math Level 2**

**Subject: MATH**

**Standard: V. Numerical And Algebraic Operations And Analytical Thinking**

**Strand: (Algebraic And Analytic Thinking) Students Analyze Problems To Determine An Appropriate Process For Solution, And Use Algebraic Notations To Model Or Represent Problems.**

**Substrand**                      **Titles that Address the Substrand**

(Gr. K-5 ) Write and solve open sentences (e.g.,  $\_\_ + \_\_ = 5$ ) and write stories to fit the open sentence.

**Quarter Mile Math Level 1**  
**Quarter Mile Math Level 2**

(Gr. K-5 ) Find replacements for the variable(s) in open sentences.

**Quarter Mile Math Level 1**

**Subject: MATH**

**Standard: V. Numerical And Algebraic Operations And Analytical Thinking**

**Strand: (Operations And Their Properties) Students Understand And Use Various Types Of Operations (e.g., Addition, Subtraction, Multiplication, Division) To Solve Problems.**

**Substrand**                      **Titles that Address the Substrand**

(Gr. K-5 ) Develop and apply the appropriate method of computation from among mental computation, estimation, paper-and-pencil or calculators; explain why they are choosing a method and how they know which operations to perform in a given situation.

**Quarter Mile Math Level 1**  
**Quarter Mile Math Level 2**

(Gr. K-5 ) Explore properties of operations (e.g., commutative and distributive properties) and give examples of how they use those properties.

**Quarter Mile Math Level 1**

**Quarter Mile Math Level 2**

(Gr. K-5 ) Apply operations efficiently and accurately in solving problems.

**Quarter Mile Math Level 1**

**Quarter Mile Math Level 2**

**Subject: MATH**

**Standard: VI. Probability And Discrete Mathematics**

**Strand: (Discrete Mathematics) Students Investigate Practical Situations Such As Scheduling, Routing, Sequencing, Networking, Organizing And Classifying, And Analyze Ideas Like Recurrence Relations, Induction, Iteration, And Algorithm Design.**

**Substrand**

**Titles that Address the Substrand**

(Gr. K-5 ) Explore, develop and invent their own algorithms to accomplish a task or to solve numerical problems.

**Quarter Mile Math Level 1**

**Quarter Mile Math Level 2**

(Gr. K-5 ) Use discrete mathematics concepts as described above to model situations and solve problems; and look for whether or not there is a solution (existence problems), determine how many solutions there are (counting problems) and decide upon a best solution (optimization problems).

**Quarter Mile Math Level 1**

**Quarter Mile Math Level 2**

**Subject: MATH**

**Standard: I. Patterns, Relationships And Functions**

**Strand: (Variability And Change) Students Describe The Relationships Among Variables, Predict What Will Happen To One Variable As Another Variable Is Changed, Analyze Natural Variation And Sources Of Variability, And Compare Patterns Of Change.**

**Substrand**

**Titles that Address the Substrand**

(Gr. 6-8 ) Continue to explore relationships arising from interesting contexts and use variables and relationships to solve mathematical problems.

**Quarter Mile Math Level 3**

**Subject: MATH**

**Standard: IV. Number Sense And Numeration**

**Strand: (Concepts And Properties Of Numbers) Students Experience Counting And Measuring Activities To Develop Intuitive Sense About Numbers, Develop Understanding About Properties Of Numbers, Understand The Need For And Existence Of Different Sets Of Numbers, And Investigate Properties Of Special Numbers.**

**Substrand**

**Titles that Address the Substrand**

(Gr. 6-8 ) Develop an understanding of integers and rational numbers and represent rational numbers in both fraction and decimal form.

**Quarter Mile Math Level 2**

**Quarter Mile Math Level 3**

(Gr. 6-8 ) Extend their understanding of numeration systems to include decimal numeration, scientific numeration and non-decimal numeration systems.

**Quarter Mile Math Level 2**  
**Quarter Mile Math Level 3**

(Gr. 6-8 ) Develop an understanding of the properties of the integer and rational number systems (e.g., order, density) and of the properties of special numbers including 0, 1 and , and the additive and multiplicative inverses.

**Quarter Mile Math Level 2**  
**Quarter Mile Math Level 3**

(Gr. 6-8 ) Apply their understanding of number systems to model and solve mathematical and applied problems.

**Quarter Mile Math Level 2**  
**Quarter Mile Math Level 3**

**Subject: MATH**

**Standard: IV. Number Sense And Numeration**

**Strand: (Number Relationships) Students Investigate Relationships Such As Equality, Inequality, Inverses, Factors And Multiples, And Represent And Compare Very Large And Very Small Numbers.**

**Substrand**                      **Titles that Address the Substrand**

(Gr. 6-8 ) Compare and order integers and rational numbers using relations of equality and inequality.

**Quarter Mile Math Level 2**  
**Quarter Mile Math Level 3**

(Gr. 6-8 ) Express numerical comparisons as ratios and rates.

**Quarter Mile Math Level 2**

(Gr. 6-8 ) Distinguish between prime and composite numbers; identify factors, multiples, common factors and multiples, and relatively prime numbers; and apply divisibility tests to numbers.

**Quarter Mile Math Level 2**

**Subject: MATH**

**Standard: IV. Number Sense And Numeration**

**Strand: (Representation And Uses Of Numbers) Students Recognize That Numbers Are Used In Different Ways Such As Counting, Measuring, Ordering And Estimating, Understand And Produce Multiple Representations Of A Number, And Translate Among Equivalent Representations.**

**Substrand**                      **Titles that Address the Substrand**

(Gr. 6-8 ) Give geometric representations of fractions, prime and composite numbers, triangular and square numbers, and other number concepts; represent rational numbers and integers on the number line.

**Quarter Mile Math Level 2**

(Gr. 6-8 ) Recognize equivalent representations of a number, especially fractions, decimals and percents, and translate freely among representations.

**Quarter Mile Math Level 2**

(Gr. 6-8 ) Distinguish between numbers that are used for counting, numbers that are used for ordering, numbers that are used for measuring and numbers that are used for naming.

**Quarter Mile Math Level 2**

(Gr. 6-8 ) Develop and refine strategies for estimating quantities, including fractional quantities, and evaluate the reasonableness and appropriateness of their estimates.

**Quarter Mile Math Level 2**  
**Quarter Mile Math Level 3**

(Gr. 6-8 ) Select appropriate representations for numbers, including integers and rational numbers, in order to simplify and solve problems.

**Quarter Mile Math Level 2**  
**Quarter Mile Math Level 3**

**Subject: MATH**

**Standard: V. Numerical And Algebraic Operations And Analytical Thinking**

**Strand: (Algebraic And Analytic Thinking) Students Analyze Problems To Determine An Appropriate Process For Solution, And Use Algebraic Notations To Model Or Represent Problems.**

**Substrand**                      **Titles that Address the Substrand**

(Gr. 6-8 ) Read and write algebraic expressions; develop original examples expressed verbally and algebraically; simplify expressions and translate between verbal and algebraic expressions; and solve linear equations and inequalities.

**Quarter Mile Math Level 3**

(Gr. 6-8 ) Solve linear equalities and inequalities using algebraic and geometric methods, and use the context of the problem to interpret and explain their solutions.

**Quarter Mile Math Level 3**

(Gr. 6-8 ) Analyze problems modeled by linear functions, determine strategies for solving the problems and evaluate the adequacy of the solutions in the context of the problems.

**Quarter Mile Math Level 2**  
**Quarter Mile Math Level 3**

**Subject: MATH**

**Standard: V. Numerical And Algebraic Operations And Analytical Thinking**

**Strand: (Operations And Their Properties) Students Understand And Use Various Types Of Operations (e.g., Addition, Subtraction, Multiplication, Division) To Solve Problems.**

**Substrand**                      **Titles that Address the Substrand**

(Gr. 6-8 ) Compute with integers, rational numbers and simple algebraic expressions using mental computation, estimation, calculators and paper-and-pencil; explain what they are doing and how they know which operations to perform in a given situation.

**Quarter Mile Math Level 2**  
**Quarter Mile Math Level 3**

(Gr. 6-8 ) Describe the properties of operations with rationals and integers (e.g., closure; associative, commutative and distributive properties) and give examples of how they use those properties.

**Quarter Mile Math Level 2**  
**Quarter Mile Math Level 3**

(Gr. 6-8 ) Efficiently and accurately apply operations with integers, rational numbers and simple algebraic expressions in solving problems.

**Quarter Mile Math Level 2**  
**Quarter Mile Math Level 3**

**Subject: MATH**

**Standard: IV. Number Sense And Numeration**

**Strand: (Number Relationships) Students Investigate Relationships Such As Equality, Inequality, Inverses, Factors And Multiples, And Represent And Compare Very Large And Very Small Numbers.**

**Substrand**                                **Titles that Address the Substrand**

(Gr. 9-12) Compare and order real numbers and compare rational approximations to exact values.

**Quarter Mile Math Level 3**

(Gr. 9-12) Extend the relationships of primes, factors, multiples and divisibility in an algebraic setting.

**Quarter Mile Math Level 2**

(Gr. 9-12) Express number relationships using positive and negative rational exponents, logarithms and radicals.

**Quarter Mile Math Level 3**

**Subject: MATH**

**Standard: IV. Number Sense And Numeration**

**Strand: (Representation And Uses Of Numbers) Students Recognize That Numbers Are Used In Different Ways Such As Counting, Measuring, Ordering And Estimating, Understand And Produce Multiple Representations Of A Number, And Translate Among Equivalent Representations.**

**Substrand**                                **Titles that Address the Substrand**

(Gr. 9-12) Apply estimation in increasingly complex situations.

**Quarter Mile Math Level 2**