

Pennsylvania Tutorials are designed specifically for the Pennsylvania Core Standards and the Pennsylvania Academic Standards to prepare students for the Keystone Exams and the Pennsylvania System of School Assessment (PSSA).

Math Tutorials offer targeted instruction, practice and review designed to develop computational fluency, deepen conceptual understanding, and apply mathematical practices. They automatically identify and address learning gaps down to elementary-level content, using adaptive remediation to bring students to grade-level no matter where they start. Students engage with the content in an interactive, feedback-rich environment as they progress through standards-aligned modules. By constantly honing the ability to apply their knowledge in abstract and real world scenarios, students build the depth of knowledge and higher order skills required to demonstrate their mastery when put to the test.

In each module, the Learn It and Try It make complex ideas accessible to students through focused content, modeled logic and process, multi-modal representations, and personalized feedback as students reason through increasingly challenging problems. The Review It offers a high impact summary of key concepts and relates those concepts to students' lives. The Test It assesses students' mastery of the module's concepts, providing granular performance data to students and teachers after each attempt. To help students focus on the content most relevant to them, unit-level pretests and posttests can quickly identify where students are strong and where they're still learning.

Unit 1: The Number System

- **RATIONAL AND IRRATIONAL NUMBERS**

- CC.2.1.8.E.1: Numbers and Operations The Number System Distinguish between rational and irrational numbers using their properties.
- CC.2.2.8.B.1: Algebraic Concepts Expressions and Equations Apply concepts of radicals and integer exponents to generate equivalent expressions.

- **APPROXIMATING IRRATIONAL NUMBERS**

- CC.2.1.8.E.4: Numbers and Operations The Number System Estimate irrational numbers by comparing them to rational numbers.
- CC.2.1.8.E.1: Numbers and Operations The Number System Distinguish between rational and irrational numbers using their properties.

Unit 2: Exponents

- **PROPERTIES OF EXPONENTS**

- CC.2.2.8.B.1: Algebraic Concepts Expressions and Equations Apply concepts of radicals and integer exponents to generate equivalent expressions.

- **POWERS OF 10**

- CC.2.2.8.B.1: Algebraic Concepts Expressions and Equations Apply concepts of radicals and integer exponents to generate equivalent expressions.

- **SCIENTIFIC NOTATION**

- CC.2.2.8.B.1: Algebraic Concepts Expressions and Equations Apply concepts of radicals and integer exponents to generate equivalent expressions.

Unit 3: Proportional Reasoning and Slope

- **SLOPE**

- CC.2.2.8.B.2: Algebraic Concepts Expressions and Equations Understand the connections between proportional relationships, lines, and linear equations.

- **MULTIPLE REPRESENTATIONS OF PROPORTIONS**

- CC.2.2.8.B.2: Algebraic Concepts Expressions and Equations Understand the connections between proportional relationships, lines, and linear equations.

Unit 4: Functions

- **RELATIONS AND FUNCTIONS**

- CC.2.2.8.C.1: Algebraic Concepts Functions Define, evaluate, and compare functions.
- CC.2.2.8.C.2: Algebraic Concepts Functions Use concepts of functions to model relationships between quantities.

- **COMPARING FUNCTIONS**

- CC.2.2.8.C.1: Algebraic Concepts Functions Define, evaluate, and compare functions.

- **GRAPHS OF FUNCTIONS**

- CC.2.2.8.C.2: Algebraic Concepts Functions Use concepts of functions to model relationships between quantities.

Unit 5: Linear Functions

- **SLOPE-INTERCEPT FORM**

- CC.2.2.8.C.1: Algebraic Concepts Functions Define, evaluate, and compare functions.

- **WRITING LINEAR FUNCTIONS**

- CC.2.2.8.C.2: Algebraic Concepts Functions Use concepts of functions to model relationships between quantities.

Unit 6: Solving Equations

- **SOLVING LINEAR EQUATIONS**

- CC.2.2.8.B.3: Algebraic Concepts Expressions and Equations Analyze and solve linear equations and pairs of simultaneous linear equations.

- **SOLVING SYSTEMS OF LINEAR EQUATIONS**

- CC.2.2.8.B.3: Algebraic Concepts Expressions and Equations Analyze and solve linear equations and pairs of simultaneous linear equations.

- **SOLVING EQUATIONS USING ROOTS**

- CC.2.2.8.B.1: Algebraic Concepts Expressions and Equations Apply concepts of radicals and integer exponents to generate equivalent expressions.

Unit 7: The Pythagorean Theorem and Distance Formula

- **THE PYTHAGOREAN THEOREM**

- CC.2.3.8.A.3: Geometry Geometry Understand and apply the Pythagorean Theorem to solve problems.

- **THE CONVERSE OF THE PYTHAGOREAN THEOREM**

- CC.2.3.8.A.3: Geometry Geometry Understand and apply the Pythagorean Theorem to solve problems.

- **DISTANCE ON THE COORDINATE PLANE**

- CC.2.3.8.A.3: Geometry Geometry Understand and apply the Pythagorean Theorem to solve problems.

Unit 8: Three-Dimensional Geometry

- **VOLUME OF CYLINDERS AND CONES**

- CC.2.3.8.A.1: Geometry Geometry Apply the concepts of volume of cylinders, cones, and spheres to solve real-world and mathematical problems.

- **SPHERES**

- CC.2.3.8.A.1: Geometry Geometry Apply the concepts of volume of cylinders, cones, and spheres to solve real-world and mathematical problems.

Unit 9: Transformations, Congruence, and Similarity

- **BASICS OF TRANSFORMATIONS**

- CC.2.3.8.A.2: Geometry Geometry Understand and apply congruence, similarity, and geometric transformations using various tools.

- **TRANSFORMATIONS AND CONGRUENCE**

- CC.2.3.8.A.2: Geometry Geometry Understand and apply congruence, similarity, and geometric transformations using various tools.

- **TRANSFORMATIONS IN THE COORDINATE PLANE**

- CC.2.3.8.A.2: Geometry Geometry Understand and apply congruence, similarity, and geometric transformations using various tools.

- **SIMILARITY AND DILATIONS**

- CC.2.3.8.A.2: Geometry Geometry Understand and apply congruence, similarity, and geometric transformations using various tools.
- CC.2.3.8.A.3: Geometry Geometry Understand and apply the Pythagorean Theorem to solve problems.

Unit 10: Angles and Angle Relationships

- **PARALLEL LINES AND ANGLE RELATIONSHIPS**

- CC.2.3.8.A.2: Geometry Geometry Understand and apply congruence, similarity, and geometric transformations using various tools.

- **ANGLE RELATIONSHIPS IN TRIANGLES**

- CC.2.3.8.A.2: Geometry Geometry Understand and apply congruence, similarity, and geometric transformations using various tools.

Unit 11: Data and Statistics

- **SCATTERPLOTS**

- CC.2.4.8.B.1: Measurement, Data, and Probability Statistics and Probability Analyze and/or interpret bivariate data displayed in multiple representations.

- **LINEAR MODELS IN DATA**

- CC.2.4.8.B.1: Measurement, Data, and Probability Statistics and Probability Analyze and/or interpret bivariate data displayed in multiple representations.

- **FREQUENCY TABLES**

- CC.2.4.8.B.1: Measurement, Data, and Probability Statistics and Probability Analyze and/or interpret bivariate data displayed in multiple representations.
- CC.2.4.8.B.2: Measurement, Data, and Probability Statistics and Probability Understand that patterns of association can be seen in bivariate data utilizing frequencies.