Course Overview

Middle School | 7 | Math - *Last Updated on October 28, 2024*

DESCRIPTION

K-12 Content Area | Mission & Philosophy Statement

- With confidence and perseverance, young people can tackle complex and novel mathematical challenges, becoming skilled problem solvers who take ownership over their learning process.
- Young people possess the ability to reason mathematically, make conjectures, solve problems and build understanding through effective dialogue and collaboration.
- Learners exhibit critical inquiry through the deliberate asking of questions and the integration of conceptual understanding, reasoning abilities, and procedural fluency.
- Strategically selecting materials, technology, and other resources support mathematical learning and aid in achieving mathematical goals.

Course Description

The PA Core 7 curriculum stands as an intricate and well-structured educational framework, meticulously crafted to significantly enhance students' mathematical skills and insights across four pivotal areas of focus: numbers and operations, algebraic concepts, geometry and measurement, and data and probability. This curriculum is engineered to not only deepen students' mathematical knowledge but also to refine their problem-solving abilities and analytical thinking.

Within the domain of numbers and operations, the curriculum embarks on an advanced exploration of ratios, proportions, and percents. Students delve into complex computations involving rates associated with ratios of fractions and develop a keen understanding of proportional relationships between quantities. This segment encourages students to apply these relationships in solving intricate multistep ratio and percent problems. Furthermore, students are guided to extend their knowledge of operations from fractions to encompass all rational numbers, broadening their computational expertise significantly. The exploration of algebraic concepts in the PA Core 7 curriculum emphasizes modeling and solving real-world problems through diverse representations, including algebraic expressions and graphical displays. Building on the foundational skills of solving one-step equations and inequalities, students are now challenged to construct and solve more complex two-step and multi-step equations or inequalities involving a single variable. This progressive approach fosters a deeper comprehension of algebraic principles and their applications in various contexts. In the geometry focus area, students engage with the properties of angles, including those formed when two parallel lines are intersected by a transversal, to unravel and solve geometric problems. The curriculum further extends to the application and critical evaluation of formulas to address questions surrounding the area and circumference of circles, as well as the area, volume, and surface area of two- and three-dimensional shapes. In the geometry focus area, students engage with the properties of angles, including those formed when two parallel lines are intersected by a transversal, to unravel and solve geometric problems. The curriculum further extends to the application and critical evaluation of formulas to address questions surrounding the area and circumference of circles, as well as the area, volume, and surface area of two- and three-dimensional shapes.

STANDARDS

Course Overview

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Pennsylvania Common Core - Grade 7 - Mathematics

CC.2.1.7.D.1 CC.2.1.7.E.1 CC.2.2.7.B.1 CC.2.2.7.B.3 CC.2.3.7.A.1 CC.2.3.7.A.2

CC.2.4.7.B.1 CC.2.4.7.B.2 CC.2.4.7.B.3

Pennsylvania - Eligible Content - Grade 7 - Mathematics

M07.A-N.1.1 M07.A-N.1.1.1 M07.A-N.1.1.2 M07.A-N.1.1.3 M07.A-R.1.1 M07.A-R.1.1.1

M07.A-R.1.1.2 M07.A-R.1.1.3 M07.A-R.1.1.4 M07.A-R.1.1.5 M07.A-R.1.1.6 M07.B-E.1.1

M07.B-E.1.1.1 M07.B-E.2.1 M07.B-E.2.2 M07.B-E.2.1.1 M07.B-E.2.2.1 M07.B-E.2.2.2

M07.B-E.2.3 M07.C-G.1.1 M07.B-E.2.3.1 M07.C-G.1.1.1 M07.C-G.1.1.2 M07.C-G.1.1.3

M07.C-G.2.1 M07.C-G.1.1.4 M07.C-G.2.1.1 M07.C-G.2.1.2 M07.C-G.2.2 M07.C-G.2.2.2

M07.C-G.2.2.1 M07.D-S.1.1 M07.D-S.1.1.1 M07.D-S.1.1.2 M07.D-S.2.1.1 M07.D-S.2.1

M07.D-S.3.1 M07.D-S.3.2 M07.D-S.3.1.1 M07.D-S.3.2.1 M07.D-S.3.2.2 M07.D-S.3.2.3

National Common Core - Grade K-12 - Mathematics

CCSS.Math.Practice.MP1 CCSS.Math.Practice.MP2 CCSS.Math.Practice.MP3

CCSS.Math.Practice.MP4 CCSS.Math.Practice.MP5 CCSS.Math.Practice.MP7

CCSS.Math.Practice.MP6 CCSS.Math.Practice.MP8

COURSE OBJECTIVES

Specific objectives for this course are aligned to the Pennsylvania Core Standards for Mathematics and the Common Core State Standards for Mathematics as outlined in the Scope and Sequence for Grade 7 Mathematics.

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ASSESSMENT TYPES

- Diagnostic Assessments
- Formative Assessments
- Progress Monitoring
- Summative Assessments

SUGGESTED METHODS OF INSTRUCTION

Below is a list of suggested strategies for high-quality instruction in Mathematics:

- Instructional components outlined in the Framework for Teaching by Charlotte Danielson
- Collaborative Learning
- Differentiation
- Direct and Guided Instruction
- Hands-on Learning
- Independent Practice
- Math Language Development Routines
- Problem-solving and Critical Thinking Tasks
- Real-World Applications
- Sense-Making Routines
- Use of Technology
- Visual Representations

RESOURCES

District Approved Program Resources	District Approved Supplemental Resources	District Approved Technology Resources
McGraw Hill Reveal Math. (2025). • Teacher Edition Course 2: Volume 1 (Print & Digital) • Teacher Edition Course 2: Volume 2 (Print & Digital) • Student Edition Course 1: Volume 1 (Print & Digital) • Student Edition Course 2: Volume 2 (Print & Digital)	McGraw Hill, ALEKS (2025) IXL Math (2025)	

Unit 1: Math Is

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STANDARDS

Pennsylvania - Eligible Content - Grade 6 - Mathematics

M06.A-R.1.1.1 M06.A-R.1.1.2 M06.A-R.1.1.3 M06.C-G.1.1.1 M06.C-G.1.1.2

National Common Core - Grade K-12 - Mathematics

CCSS.Math.Practice.MP1 CCSS.Math.Practice.MP3 CCSS.Math.Practice.MP5

CCSS.Math.Practice.MP7 CCSS.Math.Practice.MP8 CCSS.Math.Practice.MP6

CCSS.Math.Practice.MP2 CCSS.Math.Practice.MP4

DESIRED RESULTS

Meaning	
Big Ideas & Understandings	**Essential Questions & Instructional Questions**
Students will understand that... • The role of math in their and other people's lives. • There are different approaches for making sense of a problem and determining the strategies for solving it. • There are different ways to use mathematics to represent a real-world situation. • When constructing arguments they need to support their thinking. • There are different strategies for uncovering patterns and ways to use those patterns to solve problems.	**Students will...** • Build upon their problem-solving skills as they consider alternative strategies for solving the problem presented. • Model real-world situations with a range of representations. • Construct arguments to critique the reasoning of classmates. • Use appropriate units in calculations. • Make generalizations after noticing repeated calculations with operations.

Learning Objectives	
Knowledge	**Skills**
Students will know... • the habits of mind that are part of the problem-solving process. • classroom norms that are integral to a productive math learning environment. • themselves as doers of math	**Students will be skilled at...** • using habits of mind that are a part of the problem-solving process • constructing arguments to support their mathematical thinking • using precise language when constructing arguments • applying their knowledge of themselves as doers of math to solve problems efficiently. • applying their knowledge of the language of mathematics when engaging in mathematical discourse. **Students will use math language to build skills in...**

Learning Objectives	
	• defining, revising, and refining ideas describing how to use patterns to solve problems and about their strengths and weaknesses, verbally and in writing. • making conjectures by reflecting on learning and current understanding through writing words, phrases, or sentences related to how they use math in day-to-day life, how math is used to explain and explore real-world situations, types of math tools, precision, and approaches to problem solving. • creating, writing or sharing verbally unique questions related to solving problems connected to a situation or scenario. • making-sense of problems by reading and rereading problems and sharing and exchanging understanding with peers. • comparing and connecting different possible approaches to solving problems involving the price of jeans, their representations of a problem involving arrangements of photographs, how they use patterns, repeated calculations, and generalizations to solve a problem, and their ideas about successfully working on their own and in a group. • discussing which tools and strategies, including words, symbols, diagrams, physical models, and technology students know can help them solve a problem and defend their ideas related to the different ways they can show that two areas are equal.

Unit 1: Math Is

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ASSESSMENT EVIDENCE

- Math Attitudes Survey
- Lesson Quizzes
- Exit Tickets

RESOURCES

District Approved Program Resources	District Approved Supplemental Resources	District Approved Technology Resources
McGraw Hill Reveal Math. (2025). • Teacher Edition Course 2: Volume 1 (Print & Digital) • Teacher Edition Course 2: Volume 2 (Print & Digital) • Student Edition Course 2: Volume 1 (Print & Digital) • Student Edition Course 2: Volume 2 (Print & Digital)	McGraw Hill, ALEKS (2025) IXL Math (2025)	