# Course Overview

**Middle School | 6 | 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.

The PA Core 6 curriculum is designed to advance students' mathematical understanding and proficiency, ensuring a seamless transition into more complex mathematical concepts and practices. This educational framework is strategically divided into four pivotal focus areas: numbers and operations, algebraic concepts, geometry and measurement, and data and probability, each designed to deepen students' mathematical skills and reasoning abilities.

Within the numbers and operations domain, the curriculum takes students on an exploratory journey of ratio relationships, presenting these concepts in a variety of forms and contexts. Students enhance their understanding of unit rates and apply this knowledge to real-world situations, embodying the practical application of mathematics. The curriculum also ventures into the realm of fractions, where students interpret and compute quotients, extending their mastery over the operations of multiplication and division to include the division of fractions by fractions. Additionally, students navigate the intricacies of rational numbers and the distributive property, learning to articulate the sum of two numbers and engage with positive and negative numbers to represent quantities in real-world contexts accurately. The exploration of algebraic concepts introduces students to the manipulation and interpretation of numerical expressions involving exponents, as well as the creation, reading, and evaluation of algebraic expressions. Through these exercises, students acquire a profound understanding of how to represent and analyze quantitative relationships between independent and dependent variables, fostering a versatile and analytical approach to algebra. In geometry, students expand their knowledge and application of formulas to ascertain the areas of various shapes, including triangles, quadrilaterals, irregular, and compound polygons. The curriculum's measurement, data, and probability area equips students with the skills to effectively display data using dot plots, histograms, and box-and-whisker plots. Through these data representation methods, students learn to determine quantitative measures of center and variability, enabling them to interpret and analyze data with a critical eye. This focus prepares students for more advanced statistical analysis, emphasizing the importance of data in understanding and solving real-world problems.

## STANDARDS

**Pennsylvania Common Core - Grade 6 - Mathematics**

CC.2.1.6.D.1 CC.2.1.6.E.1 CC.2.1.6.E.2 CC.2.1.6.E.3 CC.2.1.6.E.4 CC.2.2.6.B.2

CC.2.2.6.B.1 CC.2.2.6.B.3 CC.2.4.6.B.1 CC.2.3.6.A.1

**Pennsylvania - Eligible Content - Grade 6 - Mathematics**

M06.A-N.1.1 M06.A-N.1.1.1 M06.A-N.2.1 M06.A-N.2.1.1 M06.A-N.2.2 M06.A-N.2.2.1

M06.A-N.2.2.2 M06.A-N.3.1 M06.A-N.3.1.2 M06.A-N.3.1.1 M06.A-N.3.1.3 M06.A-N.3.2.3

M06.A-N.3.2.2 M06.A-N.3.2.1 M06.A-N.3.2 M06.A-R.1.1 M06.A-R.1.1.1 M06.A-R.1.1.2

M06.A-R.1.1.3 M06.B-E.1.1.1 M06.B-E.1.1 M06.A-R.1.1.5 M06.A-R.1.1.4 M06.B-E.1.1.2

M06.B-E.1.1.3 M06.B-E.1.1.4 M06.B-E.1.1.5 M06.B-E.2.1.3 M06.B-E.2.1.2 M06.B-E.2.1.1

M06.B-E.2.1 M06.B-E.2.1.4 M06.B-E.3.1 M06.B-E.3.1.1 M06.B-E.3.1.2 M06.C-G.1.1

M06.C-G.1.1.1 M06.C-G.1.1.2 M06.C-G.1.1.3 M06.C-G.1.1.6 M06.C-G.1.1.5 M06.C-G.1.1.4

M06.D-S.1.1 M06.D-S.1.1.1 M06.D-S.1.1.2 M06.D-S.1.1.3 M06.D-S.1.1.4

**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.MP6

CCSS.Math.Practice.MP7 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 6 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:

- Collaborative Learning
- Differentiation
- Direct and Guided Instruction
- Hands-on Learning
- Independent Practice
- Instructional components outlined in the Framework for Teaching by Charlotte Danielson
- 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).<br>• Teacher Edition Course 1: Volume 1 (Print & Digital)<br>• Teacher Edition Course 1: Volume 2 (Print & Digital)<br>• Student Edition Course 1: Volume 1 (Print & Digital)<br>• Student Edition Course 1: Volume 2 (Print & Digital) | McGraw Hill, ALEKS (2025)<br>IXL Math (2025) | |

# Unit 1: Math Is

**Middle School | 6 | Math**

## STANDARDS

### Pennsylvania - Eligible Content - Grade 5 - Mathematics

M05.A-F.2.1 M05.A-T.2.1.3 M05.D-M.1.1.1 M05.D-M.1.1 M05.C-G.1.1.2 M05.D-M.3.1.1

M05.D-M.3.1.2 M05.D-M.3.1 M05.B-O.1.1.2 M05.B-O.1.1.1 M05.B-O.2.1.1

### Pennsylvania Common Core - Grade 5 - Mathematics

CC.2.1.5.C.2 CC.2.1.5.B.2 CC.2.4.5.A.1 CC.2.3.5.A.1 CC.2.4.5.A.5 CC.2.2.5.A.1

CC.2.2.5.A.4

### National Common Core - Grade K-12 - Mathematics

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

CCSS.Math.Practice.MP4 CCSS.Math.Practice.MP5 CCSS.Math.Practice.MP6

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

## DESIRED RESULTS

| Meaning | |
|---|---|
| **Big Ideas & Understandings** | **Essential Questions & Instructional Questions** |
| **Students will understand that...**<br>• the role of math in their lives and other people's lives.<br>• there are different approaches for making senses of a problem and determining strategies for solving it.<br>• there are different ways to use mathematics to represent real-world problems.<br>• when constructing arguments they need to support their thinking.<br>• there are different strategies for uncovering patterns and ways to use those patterns to solve problems. | **Students will...**<br>• build upon their problem-solving skills as they consider alternative strategies for solving the problem presented.<br>• model real-world situations with a range of representations.<br>• construct arguments to critique the reasoning of classmates.<br>• use appropriate units in calculations.<br>• make generalizations after noticing repeated calculations with operations. |

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

| Learning Objectives | |
|---|---|
| | **in..**<br>• defining, revising, and refining ideas verbally and in writing.<br>• making conjectures by reflecting on learning and current understanding through writing words, phrases, or sentences related to prior learning, topical, or future math concepts.<br>• critiquing and clarifying students' written ideas and arguments as well as those of others in a collaborative and supportive manner.<br>• creating, writing or sharing verbally unique questions related to solving problems connected to a situation or scenario.<br>• making-sense of problems by reading and rereading problems and sharing and exchanging understandings with peers.<br>• comparing and connecting different approaches to solving problems.<br>• 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. |

## 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).<br>• Teacher Edition Course 1: Volume 1 (Print & Digital)<br>• Teacher Edition Course 1: Volume 2 (Print & Digital)<br>• Student Edition Course 1: Volume 1 (Print & Digital)<br>• Student Edition Course 1: Volume 2 (Print & Digital) | McGraw Hill, ALEKS (2025)<br>IXL Math (2025) | |