

Curriculum Map: 7th Math 2022-2023

Course: 7TH MATH Sub-topic: General

Grade(s): 7

Course Description: This course provides a general study of various fields of mathematics with a focus on algebraic concepts and preparation for PSSA testing. Important basic skills are emphasized in order to provide a solid foundation for the study of higher mathematics. Topics studied include 1) the real number system, 2) operations with rational numbers, 3) algebraic expressions, equations, and inequalities, 4) proportional reasoning, 5) geometric properties of two- and three-dimensional figures, and 6) statistics and probability.

If a student fails this course, he or she must attend a remediation summer school program at the Wyalusing High School in order to be promoted to the next grade.

Course Textbooks, Workbooks, Materials Citations: Math In Focus: Singapore Math
Marshall Cavendish
Course 2
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Course Notes: This curriculum may be modified for remedial and/or accelerated sections of the course.

Unit: A-N: Numbers and Operations - The Number System

Timeline: Week 1 to 12

Unit Description: Students will demonstrate an ability to add, subtract, multiply, and divide rational numbers. In addition, students will be able to locate rational and irrational numbers on a number line.

Unit Essential Questions: How can mathematics support effective communication?
How are relationships represented mathematically?
How can expressions, equations and inequalities be used to quantify, solve, model and/or analyze mathematical situations?
What does it mean to estimate or analyze numerical quantities?
What makes a tool and/or strategy appropriate for a given task?
How can recognizing repetition or regularity assist in solving problems more efficiently?

Unit Big Ideas: Mathematical relationships among numbers can be represented, compared, and communicated.
Mathematical relationships can be represented as expressions, equations and inequalities in mathematical situations.
Numerical quantities, calculations, and measurements can be estimated or analyzed by using appropriate strategies and tools.
Patterns exhibit relationships that can be extended, described, and generalized.

Unit Materials: Multiplication Charts
Calculators
Number Line
IXL
4 inch squares and 2 inch squares

Rulers
Integer Counters (individual and magnetic)
Deck of Playing Cards
Operations Flowchart
Related Worksheets

Unit Assignments: Real Numbers Quiz
Hands-On Activity - Exploring Rational Numbers
Operations with Integers Review Game
Addition and Subtraction Quiz
Multiplication and Division Quiz
Operations with Rational Numbers Review Game (as needed)
Mid-Unit Test on Real Number System
Unit Test on Operations with Rational Numbers

Unit Key Terminology & Definitions : Opposites
Integers
Rational Numbers
Terminating Decimal
Repeating Decimal
Irrational Numbers
Real Number
Real Number Line

STANDARDS: STANDARDS
STATE: PA Core Standards (2014)
[CC.2.1.7.E.1 \(Advanced\)](#) Apply and extend previous understandings of operations with fractions to operations with rational numbers.

Topic: Represent Rational Numbers on a Number Line

Minutes for Topic: 44

STANDARDS

STATE: PA Core Anchors and Eligible Content (2014)

[M07.A-N.1.1.2 \(Advanced\)](#) Represent addition and subtraction on a horizontal or vertical number line.

Alternate Eligible Content Code M07AN1.1.2a: Identify the difference between two numbers on the number line

Topic: Write Rational Numbers as Decimals

Minutes for Topic: 44

STANDARDS

STATE: PA Core Anchors and Eligible Content (2014)

[M07.A-N.1.1.3 \(Advanced\)](#) Apply properties of operations to multiply and divide rational numbers, including real-world contexts; demonstrate that the decimal form of a rational number terminates or eventually repeats.

Alternate Eligible Content Code M07AN1.1.3a: Solve a multiplication or division problem with positive/negative rational numbers

Topic: Identify Irrational Numbers

Minutes for Topic: 88

STANDARDS

STATE: PA Core Anchors and Eligible Content (2014)

[M07.A-N.1.1.3 \(Advanced\)](#) Apply properties of operations to multiply and divide rational numbers, including real-world contexts; demonstrate that the decimal form of a rational number terminates or eventually repeats.

Alternate Eligible Content Code M07AN1.1.3a: Solve a multiplication or division problem with positive/negative rational numbers

Topic: Classify Numbers in the Real Number System

Minutes for Topic: 44

STANDARDS

STATE: PA Core Anchors and Eligible Content (2014)

[M07.A-N.1.1.1 \(Advanced\)](#) Apply properties of operations to add and subtract rational numbers, including real-world contexts.

Alternate Eligible Content Code M07AN1.1.1a: Solve a 1-step addition or subtraction problem with fractions, decimals, or positive/negative integers

Topic: Add Integers

Minutes for Topic: 132

STANDARDS

STATE: PA Core Anchors and Eligible Content (2014)

[M07.A-N.1.1.1 \(Advanced\)](#) Apply properties of operations to add and subtract rational numbers, including real-world contexts.

Alternate Eligible Content Code M07AN1.1.1a: Solve a 1-step addition or subtraction problem with fractions, decimals, or positive/negative integers

[M07.A-N.1.1.2 \(Advanced\)](#) Represent addition and subtraction on a horizontal or vertical number line.

Alternate Eligible Content Code M07AN1.1.2a: Identify the difference between two numbers on the number line

Topic: Subtract Integers

STANDARDS

STATE: PA Core Anchors and Eligible Content (2014)

[M07.A-N.1.1.1 \(Advanced\)](#) Apply properties of operations to add and subtract rational numbers, including real-world contexts.

Alternate Eligible Content Code M07AN1.1.1a: Solve a 1-step addition or subtraction problem with fractions, decimals, or positive/negative integers

[M07.A-N.1.1.2 \(Advanced\)](#) Represent addition and subtraction on a horizontal or vertical number line.

Alternate Eligible Content Code M07AN1.1.2a: Identify the difference between two numbers on the number line

Topic: Multiply and Divide Integers

Minutes for Topic: 88

STANDARDS

STATE: PA Core Anchors and Eligible Content (2014)

[M07.A-N.1.1.3 \(Advanced\)](#) Apply properties of operations to multiply and divide rational numbers, including real-world contexts; demonstrate that the decimal form of a rational number terminates or eventually repeats.

Alternate Eligible Content Code M07AN1.1.3a: Solve a multiplication or division problem with positive/negative rational numbers

Topic: Perform Operations with Rational Numbers

STANDARDS

STATE: PA Core Anchors and Eligible Content (2014)

[M07.A-N.1.1.1 \(Advanced\)](#) Apply properties of operations to add and subtract rational numbers, including real-world contexts.

Alternate Eligible Content Code M07AN1.1.1a: Solve a 1-step addition or subtraction problem with fractions, decimals, or positive/negative integers

[M07.A-N.1.1.2 \(Advanced\)](#) Represent addition and subtraction on a horizontal or vertical number line.

Alternate Eligible Content Code M07AN1.1.2a: Identify the difference between two numbers on the number line

[M07.A-N.1.1.3 \(Advanced\)](#) Apply properties of operations to multiply and divide rational numbers, including real-world contexts; demonstrate that the decimal form of a rational number terminates or eventually repeats.

Alternate Eligible Content Code M07AN1.1.3a: Solve a multiplication or division problem with positive/negative rational numbers

Topic: Perform Operations with Decimals

STANDARDS

STATE: PA Core Anchors and Eligible Content (2014)

[M07.A-N.1.1.1 \(Advanced\)](#) Apply properties of operations to add and subtract rational numbers, including real-world contexts.

Alternate Eligible Content Code M07AN1.1.1a: Solve a 1-step addition or subtraction problem with fractions, decimals, or positive/negative integers

[M07.A-N.1.1.2 \(Advanced\)](#) Represent addition and subtraction on a horizontal or vertical number line.

Alternate Eligible Content Code M07AN1.1.2a: Identify the difference between two numbers on the number line

[M07.A-N.1.1.3 \(Advanced\)](#) Apply properties of operations to multiply and divide rational numbers, including real-world contexts; demonstrate that the decimal form of a rational number terminates or eventually repeats.

Alternate Eligible Content Code M07AN1.1.3a: Solve a multiplication or division problem with positive/negative rational numbers

Topic: Assessment Day

Minutes for Topic: 44

Topic:

Topic:

Unit: A-R: Numbers and Operations - Ratios and Proportional Relationships

Timeline: Week 13 to 22

Unit

Description: Students will demonstrate an understanding of proportional relationships.

Unit Essential Questions: How is mathematics used to quantify, compare, represent, and model numbers?

How can mathematics support effective communication? How are relationships represented mathematically?

How can expressions, equations and inequalities be used to quantify, solve, model and/or analyze mathematical situations?

What does it mean to estimate or analyze numerical quantities?

What makes a tool and/or strategy appropriate for a given task?

How can recognizing repetition or regularity assist in solving problems more efficiently?

Unit Big Ideas: Mathematical relationships among numbers can be represented, compared, and communicated.

Mathematical relationships can be represented as expressions, equations and inequalities in mathematical situations.

Numerical quantities, calculations, and measurements can be estimated or analyzed by using appropriate strategies and tools.

Patterns exhibit relationships that can be extended, described, and generalized.

Unit Materials: Calculators

Graph Paper

Bar Model Diagrams

Unit Assignments: Yard Stick

Paper Towel Roll

Direct Proportion Quiz

IXL

Percent of a Number Matching Activity

Percents Quiz

Chapter 5 Project - Inverse Proportions (optional)

Unit Test

Related Worksheets

Unit Key Terminology & Definitions : Proportion

Direct Proportion

Constant of Proportionality

Cross Products

STANDARDS: STANDARDS

STATE: PA Core Standards (2014)

[CC.2.1.7.D.1 \(Advanced\)](#)

Analyze proportional relationships and use them to model and solve real-world and mathematical problems.

Topic: Compute Unit Rates

Minutes for Topic: 88

STANDARDS

STATE: PA Core Anchors and Eligible Content (2014)

[M07.A-R.1.1.1 \(Advanced\)](#)

Compute unit rates associated with ratios of fractions, including ratios of lengths, areas, and other quantities measured in like or different units. Example: If a person walks $\frac{1}{2}$ mile in each $\frac{1}{4}$ hour, compute the unit rate as the complex fraction $\frac{1/2}{1/4}$ miles per hour, equivalently 2 miles per hour.

Alternate Eligible Content Code M07AR1.1.1a: Find the unit rate in a real-world problem

[M07.A-R.1.1.2 \(Advanced\)](#)

Determine whether two quantities are proportionally related (e.g., by testing for equivalent ratios in a table, graphing on a coordinate plane and observing whether

the graph is a straight line through the origin).

Topic: Identify Direct Proportion

Minutes for Topic: 88

STANDARDS

STATE: PA Core Anchors and Eligible Content (2014)

[M07.A-R.1.1.2 \(Advanced\)](#) Determine whether two quantities are proportionally related (e.g., by testing for equivalent ratios in a table, graphing on a coordinate plane and observing whether the graph is a straight line through the origin).

[M07.A-R.1.1.3 \(Advanced\)](#) Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.

Alternate Eligible Content Code M07AR1.1.3a: Represent a proportional relationship on a line graph

[M07.A-R.1.1.4 \(Advanced\)](#) Represent proportional relationships by equations. Example: If total cost t is proportional to the number n of items purchased at a constant price p , the relationship between the total cost and the number of items can be expressed as $t = pn$.

Topic: Represent Direct Proportion Graphically

Minutes for Topic: 88

STANDARDS

STATE: PA Core Anchors and Eligible Content (2014)

[M07.A-R.1.1.2 \(Advanced\)](#) Determine whether two quantities are proportionally related (e.g., by testing for equivalent ratios in a table, graphing on a coordinate plane and observing whether the graph is a straight line through the origin).

[M07.A-R.1.1.3 \(Advanced\)](#) Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.

Alternate Eligible Content Code M07AR1.1.3a: Represent a proportional relationship on a line graph

[M07.A-R.1.1.5 \(Advanced\)](#) Explain what a point (x, y) on the graph of a proportional relationship means in terms of the situation, with special attention to the points $(0, 0)$ and $(1, r)$, where r is the unit rate.

Alternate Eligible Content Code M07AR1.1.5a: Interpret an ordered pair in a real-world problem

Topic: Solve Direct Proportion Problems

Minutes for Topic: 132

STANDARDS

STATE: PA Core Anchors and Eligible Content (2014)

[M07.A-R.1.1.4 \(Advanced\)](#) Represent proportional relationships by equations. Example: If total cost t is proportional to the number n of items purchased at a constant price p , the relationship between the total cost and the number of items can be expressed as $t = pn$.

[M07.A-R.1.1.6 \(Advanced\)](#) Use proportional relationships to solve multi-step ratio and percent problems. Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease.

Alternate Eligible Content Code M07AR1.1.6a: Use percentages to solve a real-world problem

Topic: Solve Multi-Step Ratio and Percent Problems

Minutes for Topic: 132

STANDARDS

STATE: PA Core Anchors and Eligible Content (2014)

[M07.A-R.1.1.6 \(Advanced\)](#) Use proportional relationships to solve multi-step ratio and percent problems. Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease.

Alternate Eligible Content Code M07AR1.1.6a: Use percentages to solve a real-world

problem

Unit: B-E: Expressions and Equations - Expressions

Timeline: Week 14 to 16

Unit Description: Students will demonstrate an ability to represent expressions in equivalent forms.

Unit Essential Questions: How is mathematics used to quantify, compare, represent, and model numbers?

How are relationships represented mathematically?

How can expressions, equations and inequalities be used to quantify, solve, model, and/or analyze mathematical situations?

How can recognizing repetition or regularity assist in solving problems more efficiently?

Unit Big Ideas: Mathematical relationships among numbers can be represented, compared, and communicated.

Mathematical relationships can be represented as expressions, equations and inequalities in mathematical situations.

Patterns exhibit relationships that can be extended, described, and generalized.

Unit Materials: Algebra Tiles

Calculators

Foam Squares and Hexagons

Tarsia Puzzle - Simplifying Expressions

IXL

Related Worksheets

Unit Assignments: Modeling Expressions Activity

Quiz on Simplifying Expressions

Hands-On Factoring Activity

Quiz on Distributive Property and Factoring

Unit Test

Unit Key Terminology & Definitions : Linear Expression

Term

Operation

Like Terms

Expand an Expression (Distributive Property)

Factor an Expression

Expression

Equation

STANDARDS: STANDARDS

STATE: PA Core Standards (2014)

[CC.2.2.7.B.1](#)
(Advanced)

Apply properties of operations to generate equivalent expressions.

Topic: Adding and Subtracting Algebraic Terms

Minutes for Topic: 132

STANDARDS

STATE: PA Core Anchors and Eligible Content (2014)

[M07.B-E.1.1.1](#) (Advanced)Apply properties of operations to add, subtract, factor, and expand linear expressions with rational coefficients. Example 1: The expression $\frac{1}{2} \cdot (x + 6)$ is equivalent to $\frac{1}{2} \cdot x + 3$. Example 2: The expression $5.3 - y + 4.2$ is equivalent to $9.5 - y$ (or $-y + 9.5$). Example 3: The expression $4w - 10$ is equivalent to $2(2w - 5)$.[M07.B-E.2.1.1](#) (Advanced)Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate. Example: If a woman making \$25 an hour gets a 10% raise, she will make an additional $\frac{1}{10}$ of her salary an hour, or \$2.50, for a new salary of \$27.50 an hour (or $1.1 \times \$25 = \27.50).**Topic: Simplifying Algebraic Expressions**

Minutes for Topic: 132

STANDARDS

STATE: PA Core Anchors and Eligible Content (2014)

[M07.B-E.1.1.1](#) (Advanced)Apply properties of operations to add, subtract, factor, and expand linear expressions with rational coefficients. Example 1: The expression $\frac{1}{2} \cdot (x + 6)$ is equivalent to $\frac{1}{2} \cdot x + 3$. Example 2: The expression $5.3 - y + 4.2$ is equivalent to $9.5 - y$ (or $-y + 9.5$). Example 3: The expression $4w - 10$ is equivalent to $2(2w - 5)$.[M07.B-E.2.1.1](#) (Advanced)Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate. Example: If a woman making \$25 an hour gets a 10% raise, she will make an additional $\frac{1}{10}$ of her salary an hour, or \$2.50, for a new salary of \$27.50 an hour (or $1.1 \times \$25 = \27.50).**Topic: Expand Algebraic Expressions**

Minutes for Topic: 88

STANDARDS

STATE: PA Core Anchors and Eligible Content (2014)

[M07.B-E.2.1.1](#) (Advanced)Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate. Example: If a woman making \$25 an hour gets a 10% raise, she will make an additional $\frac{1}{10}$ of her salary an hour, or \$2.50, for a new salary of \$27.50 an hour (or $1.1 \times \$25 = \27.50).**Topic: Factor Algebraic Expressions**

Minutes for Topic: 88

STANDARDS

STATE: PA Core Anchors and Eligible Content (2014)

[M07.B-E.1.1.1](#) (Advanced)Apply properties of operations to add, subtract, factor, and expand linear expressions with rational coefficients. Example 1: The expression $\frac{1}{2} \cdot (x + 6)$ is equivalent to $\frac{1}{2} \cdot x + 3$. Example 2: The expression $5.3 - y + 4.2$ is equivalent to $9.5 - y$ (or $-y + 9.5$). Example 3: The expression $4w - 10$ is equivalent to $2(2w - 5)$.**Topic: Write Algebraic Expressions**

Minutes for Topic: 132

STANDARDS

STATE: PA Core Anchors and Eligible Content (2014)

[M07.B-E.2.2.1](#) (Advanced)Solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$, where p , q , and r are specific rational numbers. Example: The perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width?

Alternate Eligible Content Code M07BE2.2.1a: Select an algebraic expression (equations or inequalities) using addition or subtraction of fractions, decimals, or positive/negative integers to solve a 1-step real-world problem

Topic: Write Algebraic Equations

Minutes for Topic: 88

STANDARDS

STATE: PA Core Anchors and Eligible Content (2014)

[M07.B-E.2.2.1 \(Advanced\)](#) Solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$, where p , q , and r are specific rational numbers. Example: The perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width?

Alternate Eligible Content Code M07BE2.2.1a: Select an algebraic expression (equations or inequalities) using addition or subtraction of fractions, decimals, or positive/negative integers to solve a 1-step real-world problem

Unit: B-E: Expressions and Equations - Equations

Timeline: Week 17 to 19

Unit Description: Solve real-world and mathematical problems using numerical and algebraic expressions, equations, and inequalities.

Unit Essential Questions: How is mathematics used to quantify, compare, represent, and model numbers?

How can mathematics support effective communication?

How are relationships represented mathematically?

How can expressions, equations and inequalities be used to quantify, solve, model, and/or analyze mathematical situations?

How can data be organized and represented to provide insight into the relationship between quantities?

How does the type of data influence the choice of display?

How can probability and data analysis be used to make predictions?

Unit Big Ideas: Mathematical relationships among numbers can be represented, compared, and communicated.

Mathematical relationships can be represented as expressions, equations and inequalities in mathematical situations.

Mathematical relations and functions can be modeled through multiple representations and analyzed to raise and answer questions.

Data can be modeled and used to make inferences.

Unit Materials: Calculators

Algebra Tiles

Dry Erase Boards and Markers

IXL

Unit Assignments: I Have - Who Has Algebra Game

Quiz on One-Step and Two-Step Equations

Kahoot

Quiz on Solving Multi-Step Equations

Quiz on Solving and Graphing Inequalities

Tour Builder Activity

Unit Test

Unit Key Equivalent Expressions

Terminology & Definitions : Equation

Solution

Inequality

Open Set

Closed Set

STANDARDS: STANDARDS

STATE: PA Core Standards (2014)

[CC.2.2.7.B.3](#)
(Advanced)

Model and solve real-world and mathematical problems by using and connecting numerical, algebraic, and/or graphical representations.

Topic: Solve One-Step and Two-Step Algebraic Equations

Minutes for Topic: 132

STANDARDS

STATE: PA Core Anchors and Eligible Content (2014)

[M07.B-E.2.2.1 \(Advanced\)](#)

Solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$, where p , q , and r are specific rational numbers. Example: The perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width?

Alternate Eligible Content Code M07BE2.2.1a: Select an algebraic expression (equations or inequalities) using addition or subtraction of fractions, decimals, or positive/negative integers to solve a 1-step real-world problem

Topic: Solve Algebraic Equations

Minutes for Topic: 132

STANDARDS

STATE: PA Core Anchors and Eligible Content (2014)

[M07.B-E.2.2.1 \(Advanced\)](#)

Solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$, where p , q , and r are specific rational numbers. Example: The perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width?

Alternate Eligible Content Code M07BE2.2.1a: Select an algebraic expression (equations or inequalities) using addition or subtraction of fractions, decimals, or positive/negative integers to solve a 1-step real-world problem

Topic: Use Equations to Solve Word Problems

Minutes for Topic: 88

STANDARDS

STATE: PA Core Anchors and Eligible Content (2014)

[M07.B-E.2.2.1 \(Advanced\)](#)

Solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$, where p , q , and r are specific rational numbers. Example: The perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width?

Alternate Eligible Content Code M07BE2.2.1a: Select an algebraic expression (equations or inequalities) using addition or subtraction of fractions, decimals, or positive/negative integers to solve a 1-step real-world problem

Topic: Solve Algebraic Inequalities

Minutes for Topic: 88

STANDARDS

STATE: PA Core Anchors and Eligible Content (2014)

[M07.B-E.2.2.2 \(Advanced\)](#) Solve word problems leading to inequalities of the form $px + q > r$ or $px + q < r$, where p , q , and r are specific rational numbers, and graph the solution set of the inequality. Example: A salesperson is paid \$50 per week plus \$3 per sale. This week she wants her pay to be at least \$100. Write an inequality for the number of sales the salesperson needs to make and describe the solutions.

Topic: Use Inequalities to Solve Word Problems

Minutes for Topic: 88

STANDARDS

STATE: PA Core Anchors and Eligible Content (2014)

[M07.B-E.2.2.2 \(Advanced\)](#) Solve word problems leading to inequalities of the form $px + q > r$ or $px + q < r$, where p , q , and r are specific rational numbers, and graph the solution set of the inequality. Example: A salesperson is paid \$50 per week plus \$3 per sale. This week she wants her pay to be at least \$100. Write an inequality for the number of sales the salesperson needs to make and describe the solutions.

Unit: C-G: Geometry - Geometric Figures

Timeline: Week 23 to 26

Unit**Description:** Students will demonstrate an understanding of geometric figures and their properties.**Unit Essential Questions:** How can patterns be used to describe relationships in mathematical situations?

How can recognizing repetition or regularity assist in solving problems more efficiently?

How are spatial relationships, including shape and dimension, used to draw, construct, model, and represent real situations or solve problems?

How can the application of the attributes of geometric shapes support mathematical reasoning and problem solving?

How can geometric properties and theorems be used to describe, model, and analyze situations?

Unit Big Ideas: Patterns exhibit relationships that can be extended, described, and generalized.

Geometric relationships can be described, analyzed, and classified based on spatial reasoning and/or visualization.

Unit Materials: Calculators

Protractors

Straws cut to various lengths

3D Shapes

Play Doh

Unit Discovering Triangle Inequality Theorem Activity

Assignments:

Quiz on Triangles and Scale Drawings
PBS Video - Cross Sections
Kahoot
Hands-On Activity - Parallel Lines Cut by a Transversal
IXL
Quiz on Angles
Unit Test

Unit Key Terminology & Definitions :

Scale Drawing
Acute Triangle
Obtuse Triangle
Right Triangle
Equilateral Triangle
Isosceles Triangle
Scalene Triangle
Triangle Inequality Theorem
Cross Section
Adjacent Angles
Complementary Angles
Supplementary Angles
Vertical Angles
Alternate Exterior Angles
Alternate Interior Angles
Corresponding Angles

STANDARDS: STANDARDS

STATE: PA Core Standards (2014)

[CC.2.3.7.A.2](#)
[\(Advanced\)](#)

Visualize and represent geometric figures and describe the relationships between them.

Topic: Solve Problems Involving Scale Drawings

Minutes for Topic: 44

STANDARDS

STATE: PA Core Anchors and Eligible Content (2014)

[M07.C-G.1.1.1 \(Advanced\)](#)

Solve problems involving scale drawings of geometric figures, including finding length and area.

Alternate Eligible Content Code M07CG1.1.1a: Solve a 1-step real-world problem related to scaling

Topic: Identify and Describe the Properties of Triangles

Minutes for Topic: 88

STANDARDS

STATE: PA Core Anchors and Eligible Content (2014)

[M07.C-G.1.1.2 \(Advanced\)](#) Identify or describe the properties of all types of triangles based on angle and side measures.

Alternate Eligible Content Code M07CG1.1.2a: Identify the properties of a right triangle

Topic: Use and Apply Triangle Inequality Theorem

Minutes for Topic: 44

STANDARDS

STATE: PA Core Anchors and Eligible Content (2014)

[M07.C-G.1.1.3 \(Advanced\)](#) Use and apply the triangle inequality theorem.**Topic: Describe 2D Results from Slicing 3D Figures**

Minutes for Topic: 44

STANDARDS

STATE: PA Core Anchors and Eligible Content (2014)

[M07.C-G.1.1.4 \(Advanced\)](#) Describe the two-dimensional figures that result from slicing three-dimensional figures. Example: Describe plane sections of right rectangular prisms and right rectangular pyramids.

Alternate Eligible Content Code M07CG1.1.4a: Identify a three-dimensional figure with specific attributes

Topic: Identify Pairs of Angles

Minutes for Topic: 44

STANDARDS

STATE: PA Core Anchors and Eligible Content (2014)

[M07.C-G.2.1.1 \(Advanced\)](#) Identify and use properties of supplementary, complementary, and adjacent angles in a multistep problem to write and solve simple equations for an unknown angle in a figure.

Alternate Eligible Content Code M07CG2.1.1a: Use angle relationships to find the missing angle

Topic: Find Unknown Angles in a Figure

Minutes for Topic: 132

STANDARDS

STATE: PA Core Anchors and Eligible Content (2014)

[M07.C-G.2.1.1 \(Advanced\)](#) Identify and use properties of supplementary, complementary, and adjacent angles in a multistep problem to write and solve simple equations for an unknown angle in a figure.

Alternate Eligible Content Code M07CG2.1.1a: Use angle relationships to find the missing angle

Topic: Identify and Use Properties of Angles Formed by a Transversal and Parallel Lines

Minutes for Topic: 88

STANDARDS

STATE: PA Core Anchors and Eligible Content (2014)

[M07.C-G.2.1.1 \(Advanced\)](#) Identify and use properties of supplementary, complementary, and adjacent angles in a multistep problem to write and solve simple equations for an unknown angle in a figure.

Alternate Eligible Content Code M07CG2.1.1a: Use angle relationships to find the missing angle

[M07.C-G.2.1.2 \(Advanced\)](#) Identify and use properties of angles formed when two parallel lines are cut by a transversal (e.g., angles may include alternate interior, alternate exterior, vertical, corresponding).

Unit: C-G: Geometry - Area, Volume, and Circumference

Timeline: Week 27 to 31

Unit Description: Students will solve real-world and mathematical problems involving angle measure, circumference, area, surface area, and volume.

Unit Essential Questions: How can patterns be used to describe relationships in mathematical situations?
How can recognizing repetition or regularity assist in solving problems more efficiently?
How are spatial relationships, including shape and dimension, used to draw, construct, model, and represent real situations or solve problems?
How can the application of the attributes of geometric shapes support mathematical reasoning and problem solving?
How can geometric properties and theorems be used to describe, model, and analyze situations?

Unit Big Ideas: Patterns exhibit relationships that can be extended, described, and generalized.

Geometric relationships can be described, analyzed, and classified based on spatial reasoning and/or visualization.

Unit Materials: Calculators

IXL

Circular Objects

Tape Measures

3D Shapes

Nets of 3D Shapes

Unit Cubes

Paper

Popcorn

Real World 3D Objects (as needed)

Unit Assignments: Quiz on 2D Shapes
Discovering Pi Activity
Discovering Area Activity
Quiz on Circles
Volume of Rectangular Prisms Activity
Real-World Objects and Rulers (as needed)
Quiz on Volume and Surface Area
Unit Test

Unit Key Perimeter

Terminology & Definitions :

Area
Circumference
Prism
Pyramid
Cylinder
Cone
Sphere
Surface Area
Volume
Compound Figure

STANDARDS: STANDARDS

STATE: PA Core Standards (2014)

[CC.2.3.7.A.1 \(Advanced\)](#) Solve real-world and mathematical problems involving angle measure, area, surface area, circumference, and volume.

Topic: Calculate Perimeter and Area of 2D Shapes

Minutes for Topic: 44

STANDARDS

STATE: PA Core Anchors and Eligible Content (2014)

[M07.C-G.2.2.2 \(Advanced\)](#) Solve real-world and mathematical problems involving area, volume, and surface area of two and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms. Formulas will be provided.

Alternate Eligible Content Code M07CG2.2.2a: Find the area or volume of a two- or three-dimensional object given the formula

Topic: Compute Circumference and Area of Circles

Minutes for Topic: 88

STANDARDS

STATE: PA Core Anchors and Eligible Content (2014)

[M07.C-G.2.2.1 \(Advanced\)](#) Find the area and circumference of a circle. Solve problems involving area and circumference of a circle(s). Formulas will be provided.

Topic: Compute Surface and Volume of Rectangular Prisms

Minutes for Topic: 88

STANDARDS

STATE: PA Core Anchors and Eligible Content (2014)

[M07.C-G.2.2.2 \(Advanced\)](#) Solve real-world and mathematical problems involving area, volume, and surface area of two and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms. Formulas will be provided.

Alternate Eligible Content Code M07CG2.2.2a: Find the area or volume of a two- or three-dimensional object given the formula

Topic: Compute Surface Area and Volume of Cylinders

Minutes for Topic: 132

STANDARDS

STATE: PA Core Anchors and Eligible Content (2014)

[M07.C-G.2.2.2 \(Advanced\)](#) Solve real-world and mathematical problems involving area, volume, and surface

area of two and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms. Formulas will be provided.

Alternate Eligible Content Code M07CG2.2.2a: Find the area or volume of a two- or three-dimensional object given the formula

Topic: Compute Surface Area and Volume of Prisms

Minutes for Topic: 88

STANDARDS

STATE: PA Core Anchors and Eligible Content (2014)

[M07.C-G.2.2.2 \(Advanced\)](#) Solve real-world and mathematical problems involving area, volume, and surface area of two and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms. Formulas will be provided.

Alternate Eligible Content Code M07CG2.2.2a: Find the area or volume of a two- or three-dimensional object given the formula

Topic: Compute Surface Area and Volume of Pyramids, Cones, and Spheres

Minutes for Topic: 88

STANDARDS

STATE: PA Core Anchors and Eligible Content (2014)

[M07.C-G.2.2.2 \(Advanced\)](#) Solve real-world and mathematical problems involving area, volume, and surface area of two and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms. Formulas will be provided.

Alternate Eligible Content Code M07CG2.2.2a: Find the area or volume of a two- or three-dimensional object given the formula

Topic: Calculate Surface Area and Volume of Composite Solids

Minutes for Topic: 88

STANDARDS

STATE: PA Core Anchors and Eligible Content (2014)

[M07.C-G.2.2.2 \(Advanced\)](#) Solve real-world and mathematical problems involving area, volume, and surface area of two and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms. Formulas will be provided.

Alternate Eligible Content Code M07CG2.2.2a: Find the area or volume of a two- or three-dimensional object given the formula

Unit: D-S: Statistics and Probability - Statistics

Timeline: Week 32 to 33

Unit Description: Students will use random sampling to draw inferences about a population. They will draw comparative inferences about a population.

Unit Essential Questions: What does it mean to estimate or analyze numerical quantities?

What makes a tool and/or strategy appropriate for a given task?

How can data be organized and represented to provide insight into the relationship between quantities?

How does the type of data influence the choice of display?

How can probability and data analysis be used to make predictions?

Unit Big Ideas: Numerical quantities, calculations, and measurements can be estimated or analyzed by using appropriate strategies and tools.

Mathematical relations and functions can be modeled through multiple representations and

analyzed to raise and answer questions.

Data can be modeled and used to make inferences.

Unit Materials: Calculators

Random Sampling Video

IXL

Unit Assignments: Collect Student Data Activity

Quiz on Central Tendency

Quiz on Variation

Unit Test

Unit Key Terminology & Definitions : Sample

Population

Random Sample

Data Distribution

Measure of Central Tendency (Mean, Median, Mode)

Stem-and-Leaf Plot

Measure of Variation

Range

Quartiles

Interquartile Range

Mean Absolute Deviation

Box-and-Whisker Plot

STANDARDS: STANDARDS

STATE: PA Core Standards (2014)

[CC.2.4.7.B.1](#)
(Advanced)

Draw inferences about populations based on random sampling concepts.

[CC.2.4.7.B.2](#)
(Advanced)

Draw informal comparative inferences about two populations.

Topic: Determine Whether a Sample Is Random

Minutes for Topic: 44

STANDARDS

STATE: PA Core Anchors and Eligible Content (2014)

[M07.D-S.1.1.1](#) (Advanced)

Determine whether a sample is a random sample given a real-world situation.

Topic: Use Data from Random Samples to Draw Inferences

Minutes for Topic: 44

STANDARDS

STATE: PA Core Anchors and Eligible Content (2014)

[M07.D-S.1.1.2](#) (Advanced)

Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Example 1: Estimate the mean word length in a book by randomly sampling words from the book. Example 2: Predict the winner of

a school election based on randomly sampled survey data.

Topic: Calculate Measures of Central Tendency

Minutes for Topic: 44

STANDARDS

STATE: PA Core Anchors and Eligible Content (2014)

[M07.D-S.2.1.1 \(Advanced\)](#) Compare two numerical data distributions using measures of center and variability.

Alternate Eligible Content Code M07DS2.1.1a: Compare two sets of data within a single pictograph, line plot, or bar graph M07DS2.1.1b: Use measures of central tendency to interpret data, including overall patterns in the data

Topic: Calculate Measures of Variability

Minutes for Topic: 88

STANDARDS

STATE: PA Core Anchors and Eligible Content (2014)

[M07.D-S.2.1.1 \(Advanced\)](#) Compare two numerical data distributions using measures of center and variability.

Alternate Eligible Content Code M07DS2.1.1a: Compare two sets of data within a single pictograph, line plot, or bar graph M07DS2.1.1b: Use measures of central tendency to interpret data, including overall patterns in the data

Topic: Understand and Use a Stem-and-Leaf Plot

Minutes for Topic: 44

STANDARDS

STATE: PA Core Anchors and Eligible Content (2014)

[M07.D-S.2.1.1 \(Advanced\)](#) Compare two numerical data distributions using measures of center and variability.

Alternate Eligible Content Code M07DS2.1.1a: Compare two sets of data within a single pictograph, line plot, or bar graph M07DS2.1.1b: Use measures of central tendency to interpret data, including overall patterns in the data

Topic: Understand Box Plots and Mean Absolute Deviation

Minutes for Topic: 88

STANDARDS

STATE: PA Core Anchors and Eligible Content (2014)

[M07.D-S.2.1.1 \(Advanced\)](#) Compare two numerical data distributions using measures of center and variability.

Alternate Eligible Content Code M07DS2.1.1a: Compare two sets of data within a single pictograph, line plot, or bar graph M07DS2.1.1b: Use measures of central tendency to interpret data, including overall patterns in the data

Topic: Compare Data Sets Using Measures of Central Tendency and Variability

STANDARDS

STATE: PA Core Anchors and Eligible Content (2014)

[M07.D-S.2.1.1 \(Advanced\)](#) Compare two numerical data distributions using measures of center and variability.

Alternate Eligible Content Code M07DS2.1.1a: Compare two sets of data within a single pictograph, line plot, or bar graph M07DS2.1.1b: Use measures of central tendency to interpret data, including overall patterns in the data

Unit: D-S: Statistics and Probability- Probability

Timeline: Week 34 to 36

Unit

Description:

Students will investigate chance processes and develop, use, and evaluate probability models.

Unit Essential Questions: What makes a tool and/or strategy appropriate for a given task?

In what ways are the mathematical attributes of objects or processes measured, calculated and/or interpreted?

How can data be organized and represented to provide insight into the relationship between quantities?

How can probability and data analysis be used to make predictions?

Unit Big Ideas: Numerical quantities, calculations, and measurements can be estimated or analyzed by using appropriate strategies and tools.

Measurement attributes can be quantified, and estimated using customary and noncustomary units of measure.

Mathematical relations and functions can be modeled through multiple representations and analyzed to raise and answer questions.

Data can be modeled and used to make inferences.

Unit Materials: Dice

Virtual Spinner

Coins

Playing Cards

IXL

Calculators

Unit Assignments: Skunk Activity

What Are My Chances Activity

Sum of Two Dice Activity

Quiz on Probability

Quiz on Compound Events

Unit Test

Unit Key Terminology & Definitions : Chance Event
Process of Chance

Outcome

Sample Space

Unlikely

Equally Likely

Likely Event

Relative Frequency

Fair

Biased

Probability

Experimental Probability

Theoretical Probability

Complement
Probability Model
Uniform Probability
Nonuniform Probability
Compound Event
Independent Event

STANDARDS: STANDARDS

STATE: PA Core Standards (2014)

[CC.2.4.7.B.3 \(Advanced\)](#) Investigate chance processes and develop, use, and evaluate probability models.

Topic: Identify Outcomes, Events, and Sample Spaces

Minutes for Topic: 44

STANDARDS

STATE: PA Core Anchors and Eligible Content (2014)

[M07.D-S.3.1.1 \(Advanced\)](#) Predict or determine whether some outcomes are certain, more likely, less likely, equally likely, or impossible (i.e., a probability near 0 indicates an unlikely event, a probability around 1/2 indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event).

Alternate Eligible Content Code M07DS3.1.1a: Identify the probability of events occurring as possible/impossible or likely/unlikely

[M07.D-S.3.2.1 \(Advanced\)](#) Determine the probability of a chance event given relative frequency. Predict the approximate relative frequency given the probability. Example: When rolling a number cube 600 times, predict that a 3 or 6 would be rolled roughly 200 times but probably not exactly 200 times.

[M07.D-S.3.2.2 \(Advanced\)](#) Find the probability of a simple event, including the probability of a simple event not occurring. Example: What is the probability of not rolling a 1 on a number cube?

[M07.D-S.3.2.3 \(Advanced\)](#) Find probabilities of independent compound events using organized lists, tables, tree diagrams, and simulation.

Topic: Predict the Likelihood of an Outcome

Minutes for Topic: 44

STANDARDS

STATE: PA Core Anchors and Eligible Content (2014)

[M07.D-S.3.1.1 \(Advanced\)](#) Predict or determine whether some outcomes are certain, more likely, less likely, equally likely, or impossible (i.e., a probability near 0 indicates an unlikely event, a probability around 1/2 indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event).

Alternate Eligible Content Code M07DS3.1.1a: Identify the probability of events occurring as possible/impossible or likely/unlikely

Topic: Determine Probability Using Relative Frequency

Minutes for Topic: 88

STANDARDS

STATE: PA Core Anchors and Eligible Content (2014)

[M07.D-S.3.2.1 \(Advanced\)](#) Determine the probability of a chance event given relative frequency. Predict the approximate relative frequency given the probability. Example: When rolling a number cube 600 times, predict that a 3 or 6 would be rolled roughly 200 times but probably not exactly 200 times.

Topic: Find the Probability of a Simple Event

Minutes for Topic: 44

STANDARDS

STATE: PA Core Anchors and Eligible Content (2014)

[M07.D-S.3.2.2 \(Advanced\)](#) Find the probability of a simple event, including the probability of a simple event not occurring. Example: What is the probability of not rolling a 1 on a number cube?

Topic: Develop Probability Models

Minutes for Topic: 88

STANDARDS

STATE: PA Core Anchors and Eligible Content (2014)

[M07.D-S.3.2.2 \(Advanced\)](#) Find the probability of a simple event, including the probability of a simple event not occurring. Example: What is the probability of not rolling a 1 on a number cube?

Topic: Find Probability of Independent Compound Events

Minutes for Topic: 88

STANDARDS

STATE: PA Core Anchors and Eligible Content (2014)

[M07.D-S.3.2.3 \(Advanced\)](#) Find probabilities of independent compound events using organized lists, tables, tree diagrams, and simulation.

Topic: Find the Probability of Dependent Events

Minutes for Topic: 44

STANDARDS

STATE: PA Core Anchors and Eligible Content (2014)

[M07.D-S.3.2.3 \(Advanced\)](#) Find probabilities of independent compound events using organized lists, tables, tree diagrams, and simulation.