

Chambersburg Area School District Mathematic Curriculum
7th Grade

Grade 7 mathematics is about (1) developing understanding of and applying proportional relationships; (2) developing understanding of operations with rational numbers and working with expressions and linear equations; (3) solving problems involving scale drawings and informal geometric constructions, and working with two- and three-dimensional shapes to solve problems involving area, surface area, and volume; and (4) drawing inferences about populations based on samples.

Standards for Mathematical Practice

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and makes sense of regularity in repeated reasoning.

Unit of Study	Unit 1: Ratios & Proportional Relationships	
Time Frame/Pacing	27 days	
Big Ideas	- 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.	
Unit Essential Questions	- 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 to provide insight into the relationship between quantities?	
PA Core Standards		PA Assessment Anchors
7.RP.A.1 = CC.2.1.7.D.1 7.RP.A.2 = CC.2.1.7.D.1 7.RP.A.3 = CC.2.1.7.D.1 7.EE.B.4 = CC.2.2.7.B.3 7.G.A.1 = CC.2.3.7.A.1		M07.A-R.1 M07.B-E.2 M07.C-G.2
PA Eligible Content	M07.A-R.1.1.1 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 1/2 mile in each 1/4 hour, compute the unit rate as the complex fraction $\frac{1/2}{1/4}$ miles per hour, equivalently 2 miles per hour. M07.A-R.1.1.2 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 Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships. M07.A-R.1.1.5 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. M07.C-G.1.1.1 Solve problems involving scale drawings of geometric figures, including finding length and area.												
Learning Objectives (Concepts Taught)	In Module 1, students build on their Grade 6 experiences with ratios, unit rates, and fraction division to analyze proportional relationships. They decide whether two quantities are in a proportional relationship, identify constants of proportionality, and represent the relationship by equations.												
Performance Objectives (Skills Demonstrated)	• Identify proportional relationships • Relate equivalent ratios to the constant of proportionality • Represent proportional relationships with equations ($y = kx$), ratio tables, graphs and scale drawings • Compute unit rates for ratios and rates • Identify and use scale factor												
Key Vocabulary:	<table border="0"> <tr> <td>*Constant of Proportionality</td><td>Scale Factor</td></tr> <tr> <td>*Complex Fraction</td><td>rate</td></tr> <tr> <td>Unit Rate</td><td>slope</td></tr> <tr> <td>Proportional Relationship</td><td>independent variables</td></tr> <tr> <td>*Contained in PSSA Mathematics Glossary</td><td>dependent variables</td></tr> <tr> <td>7th Grade Unit 1 Vocabulary Visuals</td><td>pattern</td></tr> </table>	*Constant of Proportionality	Scale Factor	*Complex Fraction	rate	Unit Rate	slope	Proportional Relationship	independent variables	*Contained in PSSA Mathematics Glossary	dependent variables	7th Grade Unit 1 Vocabulary Visuals	pattern
*Constant of Proportionality	Scale Factor												
*Complex Fraction	rate												
Unit Rate	slope												
Proportional Relationship	independent variables												
*Contained in PSSA Mathematics Glossary	dependent variables												
7th Grade Unit 1 Vocabulary Visuals	pattern												
Assessments	Mid-Module Assessment Task 7.RP.A.2, CC.2.1.7.D.1 https://drive.google.com/open?id=1JRIJ_-xMLF2qoFLmxKNNfqnd-of-Module Assessment Task 7.RP.A.1, 7.RP.A.2, 7.RP.A.3, 7.EE.B.4a, 7.G.A.1, CC.2.1.7.D.1, CC.2.2.7.B.3, CC.2.3.7.A.1												
Resources and Differentiation Tools	PRIMARY RESOURCE: Eureka Module 1 Topic A Proportional Relationships Lesson 1: An Experience in Relationships as Measuring Rate Lesson 2: Proportional Relationships Lessons 3 & 4: Identifying Proportional & Non-proportional Relationships in Tables Lessons 5 & 6: Identifying Proportional & Non-proportional Relationships in Graphs Module 1 Topic B Unit Rate and the Constant of Proportionality Lesson 7: Unit Rate as the Constant of Proportionality Lessons 8 & 9: Representing Proportional Relationships with Equations Lesson 10: Interpreting Graphs of Proportional Relationships (use as assessment?) Module 1 Topic C Ratios and Rates Involving Fractions Lesson 11: Ratios of Fractions and Their Unit Rates Lesson 14: Multi-Step Ratio Problems Lesson 15: Equations of Graphs of Proportional Relationships involving Fractions Module 1 Topic D Ratios of Scale Drawings Lesson 16: Relating Scale Drawings to Ratios and Rates Lesson 17: The Rate as the Scale Factor												

	Lesson 18: Computing Actual Lengths from a Scale Drawing Lesson 19: Computing Actual Areas from a Scale Drawing ELL Mathematics Overlay for Listening and Reading in Grades 6-8 ELL Mathematics Overlay for Speaking and Writing in Grades 6-8	
	Additional Supplemental Resources Big Ideas Math Chapter 5 PTi3 Units 4 & 5	
Authentic Examples (real-world tasks)	2018 Item Sampler #4, 5,6 Dan Meyers 3 Act Math World Record Balloon Dog Gas Station Ripoff Graduation	Graham Fletchy 3 Act Math Thumbs On Fire
Visual Representations & Strategies	Ratio Table Coordinate Plane	
Writing in Math	PSSA Grade 7 Mathematics Item Sampler - Use Item #5 as an open response without the multiple choice options provided.	
Culturally Responsive Activities	culturally diverse math activities Integrating Mathematics of Worldwide Cultures Lesson Plans/Activities Websites	
Grade Level DOK Examples	Grade 7 Math DOK Examples How to Increase Cognitive Demand for Math Tasks	

Unit of Study	Unit 2: Rational Numbers	
Time Frame/Pacing	25 days	
Big Ideas	- Mathematical relationships can be represented as expressions, equations, and inequalities in mathematical situations. - Patterns exhibit relationships that can be extended, described, and generalized.	
Unit Essential Questions	- How can expressions, equations, and inequalities be used to quantify, solve, model and/or analyze mathematical situations? - How can patterns be used to describe relationships in mathematical situations? - How can recognizing repetition or regularity assist in solving problems more efficiently?	
PA Core Standards		PA Assessment Anchors
7.NS.A.1 = CC.2.1.7.E.1 7.NS.A.2 = CC.2.1.7.E.1 7.NS.A.3 = CC.2.1.7.E.1 7.EE.B.4 = CC.2.2.7.B.3		M07.A-N.1 M07.B-E.2
PA Eligible Content	M07.A-N.1.1.1 Apply properties of operations to add and subtract rational numbers, including real-world contexts. M07.A-N.1.1.2 Represent addition and subtraction on a horizontal or vertical number line. M07.A-N.1.1.3 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. M07.B-E.1.1.1 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 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$). M07.B-E.2.2.1 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? M07.B-E.2.3.1 Determine the reasonableness of answer(s) or interpret the solution(s) in the context of the problem. Example: If you want to place a towel bar that is $9\frac{3}{4}$ inches long in the center of a door that is $27\frac{1}{2}$ inches wide, you will need to place the bar about 9 inches from each edge; this estimate can be used as a check on the exact computation.
Learning Objectives (Concepts Taught)	Module 2 builds on previous understanding of the number line. They learn to add, subtract, multiply, and divide rational numbers. Module 2 includes rational numbers as they appear in expressions and equations.
Performance Objectives (Skills Demonstrated)	- Develop rules to add, subtract, multiply, and divide integers - Write, describe, and solve equations containing rational numbers
Key Vocabulary:	Additive Identity Additive Inverse Absolute Value Multiplicative Identity Repeating Decimal Terminating Decimal 7th Grade Uni 2 Vocabulary Visuals
Assessments	Mid-Module Assessment Task 7.NS.A.1, 7.NS.A.2, CC.2.1.7.E.1 End-of-Module Assessment Task 7.NS.A.1, 7.NS.A.2, 7.NS.A.3, 7.EE.A.2, 7.EE.B.4a, CC.2.1.7.E.1, CC.2.2.7.B.3
Resources and Differentiation Tools	PRIMARY RESOURCE: Eureka Module 2 Topic A Addition & Subtraction of Integers & Rational Numbers Lesson 1: Opposite Quantities Combine to Make Zero Lesson 2: Using the Number Line to Model the Addition of Integers Lesson 3: Understanding Addition of Integers Lesson 4: Efficiently Adding Integers & Other Rational Numbers Lesson 5: Understanding Subtraction of Integers & Other Rational Numbers Lesson 6: The Distance Between Two Rational Numbers Lesson 7: Addition and Subtraction of Rational Numbers Lessons 8 & 9: Applying the Properties of Operation to Add & Subtract Rational #s Module 2 Topic B Multiplication & Division of Integers & Rational Numbers Lesson 10: Understanding Multiplication of Integers Lesson 11: Develop Rules for Multiplying Signed Numbers Lesson 12: Division of Integers Lesson 13: Converting Between Fractions and Decimals Using Equivalent Fractions Lesson 14: Converting Rational Numbers to Decimals Using Long Division Lesson 15: Multiplication and Division of Rational Numbers (FOCUS exercise 3) Lesson 16: Applying the Properties of Operations to Multiply & Divide Rational #s Module 2 Topic C Applying Operations with Rational #s to Expressions & Equations Lesson 17: Comparing Tape Diagram Solutions to Algebraic Solutions Lesson 18: Writing, Evaluating, & Finding Equivalent Expressions w/Rational #s Lesson 19: Writing, Evaluating, and Finding Equivalent Expressions with Rational #s Lesson 20: Investments-Performing Operations with Rational #s (supplement)

	Lessons 22 & 23: Solving Equations Using Algebra ELL Mathematics Overlay for Listening and Reading in Grades 6-8 ELL Mathematics Overlay for Speaking and Writing in Grades 6-8
	Additional Supplemental Resources Big Ideas Chapters 1 & 2 PTi3 Units 2 & 3
Visual Representations & Strategies	Integer Game Number Line Tape Diagram
Writing in Math	Grade 7 Mathematics Item Sampler #2 - Use as an open response. Eliminate the multiple choice items and insert “Explain Your Answer”.
Culturally Responsive Activities	culturally diverse math activities Integrating Mathematics of Worldwide Cultures Lesson Plans/Activities Websites
Grade Level DOK Examples	Grade 7 Math DOK Examples How to Increase Cognitive Demand for Math Tasks

Unit of Study	Unit 3: Expressions and Equations	
Time Frame/Pacing	29 days	
Big Ideas	- Mathematical relationships can be represented as expressions, equations, and inequalities in mathematical situations. - Geometric relationships can be described, analyzed, and classified based on spatial reasoning and/or visualization.	
Unit Essential Questions	- How can expressions, equations, and inequalities be used to quantify, solve, model and/or analyze mathematical situations? - How can geometric properties and theorems be used to describe, model, and analyze situations?	
PA Core Standards		PA Assessment Anchors
7.EE.A.1 = CC.2.2.7.B.1 7.EE.B.3 = CC.2.2.7.B.3 7.EE.B.4 = CC.2.2.7.B.3 7.G.B.4 = CC.2.3.7.A.1 7.G.B.5 = CC.2.3.7.A.1 7.G.B.6 = CC.2.3.7.A.1		M07.B-E.1 M07.B-E.2 M07.C-G.2
PA Eligible Content	M07.B-E.1.1.1 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.2.2.1 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? M07.B-E.2.2.2 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. M07.C-G.2.2.1 Find the area and circumference of a circle. Solve problems involving area and circumference of a circle(s). Formulas will be provided.	

Learning Objectives (Concepts Taught)	Module 3 expands students' previous work with generating equivalent expressions and solving equations. Students solve real-life and mathematical problems using numerical and algebraic expressions and equations. Their work with expressions and equations is applied to finding unknown angles and problems involving area, volume, and surface area.	
Performance Objectives (Skills Demonstrated)	• Generate equivalent expressions using inverse operations • Solve equations and inequalities containing rational numbers • Derive formulas to describe area, volume, and surface area	
Key Vocabulary:	Expanded Form Factored Form Standard Form Coefficient	Term Circumference Diameter Pi 7th Grade Unit 3 Vocabulary Visuals
Assessments	Mid-Module Assessment Task 7.EE.A.1, 7.EE.A.2, 7.EE.B.3, 7.EE.B.4, 7.G.B.5, CC.2.2.7.B.1, CC.2.2.7.B.3 End-of-Module Assessment Task 7.EE.A.1, 7.EE.A.2, 7.G.B.4, 7.G.B.5, 7.G.B.6, CC.2.3.7.A.1, CC.2.2.7.B.1, CC.2.2.7.B.3	
Resources and Differentiation Tools	Module 3 Topic A Use Properties of Operations to Generate Equivalent Expressions Lessons 1 & 2: Generating Equivalent Expressions Lessons 3 & 4: Writing Products as Sums and Sums as Products Lesson 5: Using the Identity and Inverse to Write Equivalent Expressions Lesson 6: Collecting Rational Number Like Terms (exclude ex. 4 & 5) Module 3 Topic B Solve Problems Using Expressions, Equations, and Inequalities Lesson 7: Understanding Equations Lessons 8 & 9: Using If-Then Moves in Solving Equations Lessons 10 & 11: Angle Problems and Solving Equations Lesson 12: Properties of Inequalities Lesson 13: Inequalities Lesson 14 Solving Inequalities Lesson 15: Graphing Solutions to Inequalities Module 3 Topic C Use Equations and Inequalities to Solve Geometry Problems Lesson 16: The Most Famous Ratio of All Lessons 17& 18: The Area of a Circle & More Problems on Area and Circumference Lesson 19: Unknown Area Problems on the Coordinate Plane Lesson 21: Surface Area Lesson 23: The Volume of a Right Prism (Lesson 24 exit ticket?) Lesson 25: Volume and Surface Area ELL Mathematics Overlay for Listening and Reading in Grades 6-8 ELL Mathematics Overlay for Speaking and Writing in Grades 6-8	
	Additional Supplemental Resources Big Ideas Chapters 3, 4, 8 PTi3 Units 6, 7, 8, 9, 10	
Authentic Examples (real-world tasks)	2018 Item Sampler #10, 11 Estimation 180 3 Act Math Stacking Cups Inequalities	

Visual Representations & Strategies	Area Model Coordinate Plane Geometric Figures Nets Number Line Tape Diagram Protractor
Writing in Math	End-of-Module Assessment, Question #2a,b, and c
Culturally Responsive Activities	culturally diverse math activities Integrating Mathematics of Worldwide Cultures Lesson Plans/Activities Websites
Grade Level DOK Examples	Grade 7 Math DOK Examples How to Increase Cognitive Demand for Math Tasks

Unit of Study	Unit 4: Percent and Proportional Relationships	
Time Frame/Pacing	27 days	
Big Ideas	- Mathematical relationships can be represented as expressions, equations, and inequalities in mathematical situations. - Measurement attributes can be quantified and estimated using customary and non-customary units of measure	
Unit Essential Questions	- How are relationships represented mathematically? - How can expressions, equations, and inequalities be used to quantify, solve, model and/or analyze mathematical situations? - How precise do measurements and calculations need to be?	
PA Core Standards		PA Assessment Anchors
7.RP.A.1 = CC.2.1.7.D.1 7.RP.A.2 = CC.2.1.7.D.1 7.RP.A.3 = CC.2.1.7.D.1 7.EE.B.3 = CC.2.2.7.B.3 7.G.A.1 = CC.2.3.7.A.1		M07.A-R.1 M07.B-E.2 M07.C-G.2
PA Eligible Content	M07.A-R.1.1.4 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 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. M07.D-S.3.2.2 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?	
Learning Objectives (Concepts Taught)	Module 4 covers ratios and proportions with a concentration on percent. Problems in this module include simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, and the percent error. This module includes percent problems about populations, which prepare students for probability models about populations covered in the next module.	
Performance Objectives (Skills Demonstrated)	- Solve percent problems - Convert fractions, decimals and percents - Represent and solve multi-step percent scenarios using graphs and tables - Use complex fractions to represent non-whole number percents	
Key Vocabulary:	Absolute Error Percent Error	
Assessments	Mid-Module Assessment Task 7.RP.A.1, 7.RP.A.2, 7.RP.A.3, 7.EE.B.3, CC.2.1.7.D.1, CC.2.2.7.B.3 End-of-Module Assessment Task 7.RP.A.1, 7.RP.A.2, 7.RP.A.3, 7.EE.B.3, 7.G.A.1, CC.2.1.7.D.1, CC.2.2.7.B.3, CC.2.3.7.A.1	

Resources and Differentiation Tools	Module 4 - Topic A Finding the Whole Lesson 1: Percent Lesson 2: Part of a Whole as a Percent Lesson 3: Comparing Quantities with Percent Lesson 4: Percent Increase and Decrease Lesson 5: Finding One Hundred Percent Given Another Percent Lesson 6: Fluency with Percents Module 4 - Topic B Percent Problems Including More Than One Whole Lesson 7: Markup and Markdown Problems Lesson 8: Percent Error Problems Lesson 9: Problem Solving When the Percent Changes (2 days? formula?) Lesson 10: Simple Interest Lesson 11: Tax, Commissions, Fees, & Other Real-World % Applications(2 days) Module 4 - Topic C Scale Drawings Lesson 12: The Scale Factor as a Percent for a Scale Drawing (skip example 1?) Lesson 13: Changing Scales Lesson 14: Computing Actual Lengths from a Scale Drawing Lesson 15: Solving Area Problems Using Scale Drawings Module 4 - Topic D (optional) Counting Problems Involving Percents Lesson 18: Counting Problems ELL Mathematics Overlay for Listening and Reading in Grades 6-8 ELL Mathematics Overlay for Speaking and Writing in Grades 6-8 Additional Supplemental Resources Big Ideas Chapter 6 PTi3 Unit 5 Unit 8	
Authentic Examples (real-world tasks)	2018 Item Sampler #9, 12 Dan Meyers 3 Act Math Dueling Discounts	Estimation 180 3 Act Math Thick as a Brick Ferrari Ride
Visual Representations & Strategies	Coordinate Plane Double Number Line Geometric Figures	Ratio Tables Tape Diagrams
Writing in Math	2018 Item Sampler #17	
Culturally Responsive Activities	culturally diverse math activities Integrating Mathematics of Worldwide Cultures Lesson Plans/Activities Websites	
Grade Level DOK Examples	Grade 7 Math DOK Examples How to Increase Cognitive Demand for Math Tasks	

Unit of Study	Unit 5: Statistics and Probability	
Time Frame/Pacing	25 days	
Big Ideas	• Data can be modeled and used to make inferences. • Measurement attributes can be quantified and estimated using customary and non-customary units of measure.	
Unit Essential Questions	• How does the type of data influence the choice of display? • How can probability and data analysis be used to make predictions? • Why does “what” we measure influence “how” we measure?	
PA Core Standards		PA Assessment Anchors
7.SP.A.1 = CC.2.4.7.B.1 7.SP.A.2 = CC.2.4.7.B.1 7.SP.B.3 = CC.2.4.7.B.2 7.SP.B.4 = CC.2.4.7.B.2 7.SP.C.5 = CC.2.4.7.B.2 7.SP.C.6 = CC.2.4.7.B.3 7.SP.C.8 = CC.2.4.7.B.3		M07.D-S.1 M07.D-S.2 M07.D-S.3
PA Eligible Content	M07.D-S.1.1.1 Determine whether a sample is a random sample given a real-world situation.	
	M07.D-S.1.1.2 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.	
	M07.D-S.2.1.1 Compare two numerical data distributions using measures of center and variability. Example 1: The mean height of players on the basketball team is 10 cm greater than the mean height of players on the soccer team. This difference is equal to approximately twice the variability (mean absolute deviation) on either team. On a line plot, note the difference between the two distributions of heights. Example 2: Decide whether the words in a chapter of a seventh-grade science book are generally longer than the words in a chapter of a fourth-grade science book.	
	M07.D-S.3.1.1 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).	

	M07.D-S.3.2.1 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 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 Find probabilities of independent compound events using organized lists, tables, tree diagrams, and simulation.
Learning Objectives (Concepts Taught)	In Module 5, students learn to draw inferences about populations based on random samples. Through the study of chance processes, students learn to develop, use, and evaluate probability models.
Performance Objectives (Skills Demonstrated)	• Interpret probability as likelihood of an event • Estimate probability using collected data, diagrams, and simulations • Draw informal inferences about a population using random sampling • Compare variability of two populations
Key Vocabulary:	*Chance Event (Random Event) *Compound Event *Independent Events Probability Experiment Simulation Event Frequency Relative Frequency Population Sample Random *Contained in PSSA Mathematics Glossary 7th Grade Unit 5 Vocabulary Visuals
Assessments	Mid-Module Assessment Task 7.SP.C.5, 7.SP.C.6, 7.SP.C.7, 7.SP.C.8, CC.2.4.7.B.2, CC.2.4.7.B.3 End-of-Module Assessment Task 7.SP.A.1, 7.SP.A.2, 7.SP.B.3, 7.SP.B.4, 7.SP.C.5, 7.SP.C.6, 7.SP.C.7, 7.SP.C.8, CC.2.4.7.B.1, CC.2.4.7.B.2, CC.2.4.7.B.3
Resources and Differentiation Tools	Module 5 Topic A Calculating & Interpreting Probabilities Lesson 1 & 2: Chance Experiments & Estimating Probabilities by Collecting Data Lesson 3: Chance Experiments with Equally Likely Outcomes Lesson 4: Calculating Probabilities for Chance Experiments with Equally Likely Outcomes Lesson 5: Chance Experiments with Outcomes That Are Not Equally Likely (focus on complements) Lesson 6: Using Tree Diagrams to Represent a Sample Space and to Calculate Probabilities Lesson 7: Calculating Probabilities of Compound Events Module 5 - Topic C Random Sampling and Estimating Population Characteristics (choose the most appropriate questions) Lesson 13: Populations, Samples, and Generalizing Sample-to-Population Lesson 14: Selecting a Sample Lesson 15: Random Sampling

	Lesson 16: Methods for Selecting a Random Sample Lesson 17: Sampling Variability Lesson 18: Sampling Variability and the Effect of Sample Size Lesson 19: Understanding Variability When Estimating a Population Proportion Lesson 20: Estimating a Population Proportion Module 5 Topic D Comparing Populations Lessons 22: Using Sample Data to Compare the Means of Two or More Populations ELL Mathematics Overlay for Listening and Reading in Grades 6-8 ELL Mathematics Overlay for Speaking and Writing in Grades 6-8
	Additional Supplemental Resources Big Ideas/Other Chapter 10 PTi3 Units 11, 12 & 13
Authentic Examples (real-world tasks)	2018 Item Sampler #14, 15, 16 Estimation 180 3 Act Math Dan Meyers 3 Act Math Carnival of Probability Yellow Starbursts
Visual Representations & Strategies	Dot Plots Histograms Desmos (graphing calculator)
Writing in Math	End-of-Module Assessment, Question #1a, b, c
Culturally Responsive Activities	culturally diverse math activities Integrating Mathematics of Worldwide Cultures Lesson Plans/Activities Websites
Grade Level DOK Examples	Grade 7 Math DOK Examples How to Increase Cognitive Demand for Math Tasks

Unit of Study	Unit 6: Geometry	
Time Frame/Pacing	31 days	
Big Ideas	Geometric relationships can be described, analyzed, and classified based on spatial reasoning and/or visualization.	
Unit Essential Questions	- 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?	
PA Core Standards		PA Assessment Anchors
7.G.A.3 = CC.2.3.7.A.1 7.G.B.5 = CC.2.3.7.A.2 7.G.B.6 = CC.2.3.7.A.2		M07.C-G.1
PA Eligible Content	M07.C-G.1.1.2 Identify or describe the properties of all types of triangles based on angle and side measures. M07.C-G.1.1.3 Use and apply the triangle inequality theorem. M07.C-G.1.1.4 Describe the two-dimensional figures that result from slicing three-dimensional figures. Example: Describe plane sections of right rectangular prisms and right rectangular pyramids. M07.C-G.2.1.1 Identify and use properties of supplementary, complementary, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure. M07.C-G.2.1.2 Identify and use the properties of angles formed when two parallel lines are cut by a transversal (e.g., angles may include alternate interior, alternate exterior, vertical, corresponding). M07.C-G.2.2.2 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.	
Learning Objectives (Concepts Taught)	Students will be drawing and constructing geometric figures in Module 6. They also revisit unknown angle, area, volume, and surface area problems, which now include problems involving percentages of areas or volumes.	
Performance Objectives (Skills Demonstrated)	- Solve for unknown angles - Use ruler, compass and protractor or construct geometric figures - Explore cross sections and slices of three-dimensional figures - Find volume, area and surface area	

Key Vocabulary:	*Alternate Exterior Angles *Alternate Interior Angles *Complementary Angles *Corresponding Angles *Cube *Pyramid *Scale Drawing *Supplementary Angles *Transversal *Triangle Inequality Theorem *Vertical Angles 7th Grade Unit 6 Vocabulary Visuals	*Alternate Exterior Angles *Alternate Interior Angles *Complementary Angles *Corresponding Angles *Cube *Pyramid *Scale Drawing *Supplementary Angles *Transversal *Triangle Inequality Theorem *Vertical Angles *Contained in PSSA Mathematics Glossary
Assessments	Mid-Module Assessment Task 7.G.B.2, 7.G.A.5, CC.2.3.7.A.2 End-of-Module Assessment Task 7.G.A.2, 7.G.A.3, 7.G.B.5, 7.G.B.6, CC.2.3.7.A.1, CC.2.3.7.A.2	
Resources and Differentiation Tools	Module 6 Topic A Unknown Angles Lesson 1: Complementary and Supplementary Angles Lesson 2 - 4: Solving for Unknown Angles Using Equations 8th Grade Module 2 Topic C Congruence and Angle Relationships Lesson 12: Angles Associated with Parallel Lines Lesson 14: More on the Angles of a Triangle (extension?) Module 6 Topic B Constructing Triangles Lesson 11: Conditions on Measurements That Determine a Triangle Module 6 Topic C Slicing Solids Lesson 16: Slicing a Right Rectangular Prism with a Plane Lesson 17: Slicing a Right Rectangular Pyramid with a Plane Big Ideas 7.3 Triangles 7.3e Angles of Triangles Module 6 Topic D Problems Involving Area and Surface Area Lessons 23-24: Surface Area (Focus on Prisms) Module 6 Topic E Problems Involving Volume Lesson 26: Volume of Composite Three-Dimensional Objects ELL Mathematics Overlay for Listening and Reading in Grades 6-8 ELL Mathematics Overlay for Speaking and Writing in Grades 6-8 Additional Supplemental Resources TinkerCad Activity Big Ideas/Other Red Book Chapters 7 & 9 Blue Book Chapter 3 PTi3 7th Grade Units 9 & 10 8th Grade Unit 6	
Authentic Examples (real-world tasks)	Dan Meyers 3 Act Math Holes Pokemon Go Cheat Broken Falcon Radar Volcano Penny Circle Coffee Traveler	Estimation 180 3 Act Math Tether Ball Toilet Paper Roll Fun with a Sticky File Cabinet 8th-Transversals, Tape, & Stickies

	Popcorn Picker Coin Carpet Pizza Doubler
Visual Representations & Strategies	Triangle Inequality AngLeg Activity AngLegs Familiar Objects Cross Sections Site Tinker Cad
Writing in Math	End-of-Module Assessment, Question #3a, b, and c
Culturally Responsive Activities	culturally diverse math activities Integrating Mathematics of Worldwide Cultures Lesson Plans/Activities Websites
Grade Level DOK Examples	Grade 7 Math DOK Examples How to Increase Cognitive Demand for Math Tasks