PA Core Standards For Mathematics
Curriculum Framework
Grade Level 7

Grade	Big Idea	Essential Questions	Concepts	Competencies	Standard	Eligible Content	Vocabulary
7	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.	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?	Ratios, Proportions, and Percent	Compute unit rates associated with ratios of fractions. Recognize and represent proportional relationships between quantities. Use proportional relationships to solve multistep ratio and percent problems.	CC.2.1.7.D.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	Acute triangle Adjacent angles Alternate exterior angles Alternate interior angles Chance event Circumference Complementary angles Compound event Corresponding angles Data distribution decrease Equally likely Equilateral triangle Independent event Isosceles triangle Likely event Linear expression Obtuse triangle Outcome Percent increase and Population Probability Process of chance Proportion Random sample Relative frequency Repeating decimal Scale drawing Scalene triangle
7	Mathematical relationships among numbers can be represented, compared, and communicated. Mathematical relationships can be represented as	How can mathematics support effective communication? How are relationships represented mathematically? How can expressions, equations and	Rational Numbers	Solve real-world and mathematical problems involving the four operations with rational numbers.	CC.2.1.7.E.1	M07.A-N.1.1.1 M07.A-N.1.1.2 M07.A-N.1.1.3	

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	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.	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?					
7	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.	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?	Algebraic Expressions	Apply properties of operations to generate equivalent expressions.	CC.2.2.7.B.1	M07.B-E.1.1.1	
7	Mathematical relationships among numbers can be represented, compared, and communicated. Mathematical relationships can be represented as expressions, equations and	How is mathematics used to quantify, compare, represent, and model numbers? How can mathematics support effective communication? How are relationships represented	Algebraic Equations	Model and solve real world and mathematical problems using multiple representations such as algebraic, graphical and using tables. Solve multi-step equations or inequalities with one variable.	CC.2.2.7.B.3	M07.B-E.2.1.1 M07.B-E.2.2.1 M07.B-E.2.2.2 M07.B-E.2.3.1	

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	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.	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?		Solve and interpret multi-step real life and mathematical problems posed with positive and negative rational numbers.			
7	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.	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,	Area, Volume, Angles, and Circumference	Use properties of angle types and properties of angles formed when two parallel lines are cut by a transversal line to solve problems. Solve problems involving area and circumference of a circle(s). Solve mathematical problems involving area, volume and surface area of two- and three-dimensional objects.	CC.2.3.7.A.1	M07.C-G.2.1.1 M07.C-G.2.1.2 M07.C-G.2.2.1 M07.C-G.2.2.2	

OCT 2016

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		and analyze situations?					
7	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.	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?	Geometric Figures	Solve problems involving scale drawings of geometric figures. Apply the properties of all types of triangles based on angle and side measure including the triangle inequality theorem. Describe the two-dimensional figures that result from slicing three-dimensional figures.	CC.2.3.7.A.2	M07.C-G.1.1.1 M07.C-G.1.1.2 M07.C-G.1.1.3 M07.C-G.1.1.4	
7	Numerical quantities, calculations, and measurements can be estimated or analyzed by using appropriate strategies and tools. Mathematical relations and functions can be modeled	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?	Data, Distributions, and Random Sampling	Draw inferences about two populations based on random sampling concepts. Determine and approximate relative frequencies and probabilities of events.	CC.2.4.7.B.1 CC.2.4.7.B.2	M07.D-S.1.1.1 M07.D-S.1.1.2 M07.D-S.2.1.1	

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	through multiple representations and analyzed to raise and answer questions. Data can be modeled and used to make inferences.	How does the type of data influence the choice of display? How can probability and data analysis be used to make predictions?		Draw informal comparative inferences about two populations using measures of center and measures of variability.			
7	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 non-customary 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.	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?	Probability	Find probabilities of independent compound events. Predict the approximate relative frequency given the probability. Find the probability of a simple event, including the probability of a simple event not occurring.	CC.2.4.7.B.3	M07.D-S.3.1.1 M07.D-S.3.2.1 M07.D-S.3.2.2 M07.D-S.3.2.3	