# PA Core Standards For Mathematics
## 2.3 Geometry PreK-12

| Grade | Big Idea | Essential Questions | Concepts | Competencies | Standard | Eligible Content | Vocabulary |
|---|---|---|---|---|---|---|---|
| Pre-K | Patterns exhibit relationships that can be extended, described, and generalized.<br><br>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?<br><br>How can recognizing repetition or regularity assist in solving problems more efficiently?<br><br>How are spatial relationships, including shape and dimension, used to draw, construct, model, and represent real situations or solve problems?<br><br>How can the application of the attributes of geometric shapes support mathematical reasoning and problem solving?<br><br>How can geometric properties and theorems be used to describe, model, and analyze situations? | Shape Identification and Description | Identify shapes as two-dimensional or three-dimensional.<br><br>Describe objects in the environment using names of shapes and describe the relative positions of these objects. | CC.2.3.PREK.A.1 | | Above<br>Addition<br>Below<br>Beside<br>Between<br>Circle<br>Cone<br>Cube<br>Cylinder<br>Equal<br>Greater than<br>Length<br>Less than<br>Measure<br>Numeral<br>Rectangle<br>Sphere<br>Square<br>Subtraction<br>Three dimensional shapes<br>Triangle<br>Two dimensional shapes<br>Weight |
| Pre-K | Patterns exhibit relationships that can be extended, described, and generalized.<br><br>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?<br><br>How can recognizing repetition or regularity assist in solving problems more efficiently?<br><br>How are spatial relationships, including shape and dimension, used to draw, construct, model, and represent real situations or solve problems?<br><br>How can the application of the attributes of geometric shapes support mathematical reasoning and problem solving?<br><br>How can geometric properties and theorems be used to describe, model, and analyze situations? | Shape Comparison and Composition | Use simple shapes to compose larger shapes.<br><br>Analyze and compare two-and three-dimensional shapes, in different sizes and orientations, using informal language to describe their similarities, differences, parts and other attributes.<br><br>Model shapes in the world by building shapes from components and drawing shapes. | CC.2.3.PREK.A.2 | | |

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| | | | | | | | |
| K | Patterns exhibit relationships that can be extended, described, and generalized. | How can patterns be used to describe relationships in mathematical situations?<br><br>How can recognizing repetition or regularity assist in solving problems more efficiently? | Two- and Three-Dimensional Shapes | Identify shapes as two-dimensional or three-dimensional.<br><br>Name shapes regardless of their orientations or overall size.<br><br>Use simple shapes to compose larger shapes. | CC.2.3.K.A.1 | | Addition<br>Area<br>Capacity<br>Circle<br>Cone<br>Corners (vertices)<br>Cube<br>Cylinder<br>Digit<br>Equal<br>Greater than<br>Length<br>Less than<br>Ones<br>Place value<br>Quantity<br>Rectangle<br>Sides<br>Sphere<br>Square<br>Subtraction<br>Tens<br>Total<br>Triangle<br>Weight |
| K | Geometric relationships can be described, analyzed, and classified based on spatial reasoning and/or visualization. | How are spatial relationships, including shape and dimension, used to draw, construct, model, and represent real situations or solve problems?<br><br>How can geometric properties and theorems be used to describe, model, and analyze situations?<br><br>How can the application of the attributes of geometric shapes support mathematical reasoning and problem solving?<br><br>How can geometric properties and theorems be used to describe, model, and analyze situations? | Two- and Three-Dimensional Shapes | Describe objects in the environment using names of shapes and describe the relative positions of these objects using terms such as above, below, beside, in front, behind, and next to.<br><br>Analyze and compare two-and three-dimensional shapes, in different sizes and orientations, using informal language to describe their similarities, differences, parts and other attributes.<br><br>Model shapes in the world by building shapes from components and drawing shapes. | CC.2.3.K.A.2 | | |
| | | | | | | | |
| 1 | Patterns exhibit relationships that can be extended, described, and generalized.<br><br>Geometric | How can recognizing repetition or regularity assist in solving problems more efficiently?<br><br>How are spatial relationships, including shape and dimension, used to draw, construct, model, and represent real | Two – and Three – Dimensional | Compose two and three-dimensional shapes and distinguish between attributes.<br><br>Build and draw shapes to possess attributes. | CC.2.3.1.A.1 | | Addend<br>Addition<br>Analog<br>Circle<br>Compare<br>compose/<br>Cone |

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|---|---|---|---|---|---|---|---|
|  | relationships can be described, analyzed, and classified based on spatial reasoning and/or visualization. | situations or solve problems?<br><br>How can the application of the attributes of geometric shapes support mathematical reasoning and problem solving?<br><br>How can geometric properties and theorems be used to describe, model, and analyze situations? |  |  |  |  | Counting on<br>Cube<br>Cylinder<br>Data<br>decompose<br>Equal to<br>Fourths<br>Fractions – Greater than<br>Half circles |
| 1 | Patterns exhibit relationships that can be extended, described, and generalized.<br><br>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?<br><br>How can recognizing repetition or regularity assist in solving problems more efficiently?<br><br>How are spatial relationships, including shape and dimension, used to draw, construct, model, and represent real situations or solve problems?<br><br>How can the application of the attributes of geometric shapes support mathematical reasoning and problem solving? | Fractions | Partition circles and rectangles into two and four equal shares. Understand that decomposing into more equal shares creates smaller shares. | CC.2.3.1.A.2 |  | Half-hour<br>Halves<br>Hour<br>Length<br>Less than<br>Making ten<br>Ones<br>Place value<br>Quarter-circles<br>Quarters<br>Rectangle<br>Rectangular Prism<br>Square<br>Subtraction<br>Sum<br>Tens<br>Trapezoids<br>Triangle |
|  |  |  |  |  |  |  |  |
| 2 | Patterns exhibit relationships that can be extended, described, and generalized.<br><br>Geometric relationships can be described, analyzed, and classified based | How can patterns be used to describe relationships in mathematical situations?<br><br>How can recognizing repetition or regularity assist in solving problems more efficiently?<br><br>How are spatial relationships, including shape and dimension, used to draw, construct, model, and represent real | Shape Attributes | Recognize and draw shapes having specified attributes. Identify triangles, quadrilaterals, pentagons, hexagons, and cubes. | CC.2.3.2.A.1 |  | A.M.<br>Addend<br>Analog/digital<br>Angles<br>Bar graph<br>Centimeter<br>Compose<br>Decompose<br>Dime<br>Dollar |

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| | on spatial reasoning and/or visualization. | situations or solve problems? | | | | | Equation<br>Equivalent<br>Estimate<br>Even<br>Expanded form<br>Faces<br>Feet<br>Fractions – Thirds<br>Hexagon<br>Hundreds<br>Inch<br>Line plot<br>Meter<br>Money<br>Nickel<br>Odd<br>P.M.<br>Penny<br>Pentagon<br>Picture graph<br>Place value<br>Quadrilateral<br>Quarter<br>Sum |
| 2 | Patterns exhibit relationships that can be extended, described, and generalized.<br><br>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?<br><br>How can recognizing repetition or regularity assist in solving problems more efficiently?<br><br>How are spatial relationships, including shape and dimension, used to draw, construct, model, and represent real situations or solve problems?<br><br>How can the application of the attributes of geometric shapes support mathematical reasoning and problem solving?<br><br>How can geometric properties and theorems be used to describe, model, and analyze situations? | Fractions | Partition circles and rectangles into two, three, or four equal shares, recognize that equal shares of identical wholes need not have the same shape. | CC.2.3.2.A.2 | | |
| 3 | Patterns exhibit relationships that can be extended, described, and generalized.<br><br>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?<br><br>How can recognizing repetition or regularity assist in solving problems more efficiently?<br><br>How can the application of the attributes of geometric shapes support mathematical reasoning and problem solving?<br><br>How can geometric properties and theorems be used to describe, model, and | Two- and Three-Dimensional Figures | Identify and classify shapes and their attributes.<br><br>Compare shapes. | CC.2.3.3.A.1 | M03.C-G.1.1.1<br>M03.C-G.1.1.2 | Area<br>Denominator<br>Division<br>Equivalent fractions<br>Estimate<br>Fraction<br>Linear<br>Liquid Volume<br>Mass<br>Numerator<br>Pattern<br>Pentagon<br>Perimeter |

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|---|---|---|---|---|---|---|---|
| | | analyze situations? | | | | | Pictograph Polygon Quadrilateral Rhombus Round Square Unit Tally Chart Temperature |
| 3 | Patterns exhibit relationships that can be extended, described, and generalized.<br><br>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?<br><br>How can recognizing repetition or regularity assist in solving problems more efficiently?<br><br>How are spatial relationships, including shape and dimension, used to draw, construct, model, and represent real situations or solve problems?<br><br>How can the application of the attributes of geometric shapes support mathematical reasoning and problem solving?<br><br>How can geometric properties and theorems be used to describe, model, and analyze situations? | Fractions and Area | Partition two-dimensional shapes into equal parts.<br><br>Express the area of a partition as a unit fraction of the whole. | CC.2.3.3.A.2 | M03.C-G.1.1.3 | |
| 4 | Patterns exhibit relationships that can be extended, described, and generalized.<br><br>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?<br><br>How can recognizing repetition or regularity assist in solving problems more efficiently?<br><br>How are spatial relationships, including shape and dimension, used to draw, construct, model, and represent real situations or solve problems?<br><br>How can the application of the attributes of geometric shapes support | Geometric Shapes and Figures | Draw and identify lines and angles.<br><br>Classify shapes by properties of their lines and angles.<br><br>Recognize symmetric shapes and draw lines of symmetry. | CC.2.3.4.A.1<br>CC.2.3.4.A.2<br>CC.2.3.4.A.3 | M04.C-G.1.1.1<br>M04.C-G.1.1.2<br>M04.C-G.1.1.3 | Acute Angle Angle Decimal Decimal Fraction Equivalence Factor Line Line of symmetry Line Segment Mixed Number Multiple Obtuse Triangle Point Ray |

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|---|---|---|---|---|---|---|---|
|  |  | mathematical reasoning and problem solving?<br><br>How can geometric properties and theorems be used to describe, model, and analyze situations? |  |  |  |  | Right Angle<br>Symmetry<br>Unit Fraction<br>Weight |
|  |  |  |  |  |  |  |  |
| 5 | Geometric relationships can be described, analyzed, and classified based on spatial reasoning and/or visualization. | How are spatial relationships, including shape and dimension, used to draw, construct, model, and represent real situations or solve problems?<br><br>How can geometric properties and theorems be used to describe, model, and analyze situations? | Coordinate Plane | Describe and interpret points given an ordered pair.<br><br>Plot points in quadrant I.<br><br>Describe and interpret points given an ordered pair.<br><br>Identify parts of a coordinate grid. | CC.2.3.5.A.1 | M05.C-G.1.1.1<br>M05.C-G.1.1.2 | Braces<br>Brackets<br>Coordinate Plane<br>Cubic Units<br>Decimal Place Value (through thousandths)<br>Measurement Systems<br>Measurement Units<br>Numerical Expressions<br>Order of Operations<br>Origin<br>Parentheses<br>Scaling (resizing)<br>Unit Fraction<br>Volume<br>X-axis<br>X-coordinate<br>Y-axis<br>Y-coordinate |
| 5 | Patterns exhibit relationships that can be extended, described, and generalized.<br><br>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?<br><br>How can the application of the attributes of geometric shapes support mathematical reasoning and problem solving?<br><br>How can geometric properties and theorems be used to describe, model, and analyze situations? | Two-Dimensional Figures | Classify two-dimensional figures based on their properties. | CC.2.3.5.A.2 | M05.C-G.2.1.1 |  |
| 5 | Geometric relationships can be described, analyzed, and classified based on spatial reasoning and/or visualization. | How are spatial relationships, including shape and dimension, used to draw, construct, model, and represent real situations or solve problems?<br><br>How can the application of the attributes of geometric shapes support mathematical reasoning and problem | Volume and Three-Dimensional Solids | Apply concepts of volume to solve problems.<br><br>Relate volume to multiplication and to addition. | CC.2.4.5.A.5 | M05.D-M.3.1.1<br>M05.D-M.3.1.2 |  |

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|  |  | solving?<br><br>How can geometric properties and theorems be used to describe, model, and analyze situations? |  |  |  |  |  |
| 6 | Patterns exhibit relationships that can be extended, described, and generalized.<br><br>Geometric relationships can be described, analyzed, and classified based on spatial reasoning and/or visualization. | How can recognizing repetition or regularity assist in solving problems more efficiently?<br><br>How are spatial relationships, including shape and dimension, used to draw, construct, model, and represent real situations or solve problems?<br><br>How can the application of the attributes of geometric shapes support mathematical reasoning and problem solving?<br><br>How can geometric properties and theorems be used to describe, model, and analyze situations? | Area, Surface Area, and Volume | Determine the area of triangles, quadrilaterals, irregular polygons and compound polygons.<br><br>Calculate the area of a polygon on a plane given the coordinates of the vertices.<br><br>Find volumes of right rectangular prisms with fractional edge lengths.<br><br>Use nets to find surface area of 3 – dimensional figures. | CC.2.3.6.A.1 | M06.C-G.1.1.1<br>M06.C-G.1.1.2<br>M06.C-G.1.1.3<br>M06.C-G.1.1.4<br>M06.C-G.1.1.5<br>M06.C-G.1.1.6 | Absolute value<br>Algebraic expressions<br>Box and whisker plots<br>Coefficient<br>Compound polygon<br>Dependent variable<br>Distributive property<br>Dot plots<br>Exponent<br>Greatest Common Factor<br>Independent variable<br>Inequality<br>Integer<br>Interquartile range<br>Irregular Polygon<br>Least Common Multiple<br>Mean<br>Mean absolute deviation |
| 7 | Patterns exhibit relationships that can be extended, described, and generalized. | How can patterns be used to describe relationships in mathematical situations?<br><br>How can recognizing repetition or regularity assist in solving problems more | 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. | CC.2.3.7.A.1 | M07.C-G.2.1.1<br>M07.C-G.2.1.2<br>M07.C-G.2.2.1<br>M07.C-G.2.2.2 | Acute triangle<br>Adjacent angles<br>Alternate exterior angles<br>Alternate interior |

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|---|---|---|---|---|---|---|---|
| | Geometric relationships can be described, analyzed, and classified based on spatial reasoning and/or visualization. | efficiently?<br><br>How are spatial relationships, including shape and dimension, used to draw, construct, model, and represent real situations or solve problems?<br><br>How can the application of the attributes of geometric shapes support mathematical reasoning and problem solving?<br><br>How can geometric properties and theorems be used to describe, model, and analyze situations? | | Solve problems involving area and circumference of a circle(s).<br><br>Solve mathematical problems involving area, volume and surface area of two- and three-dimensional objects. | | | angles<br>Chance event<br>Circumference<br>Complementary angles<br>Compound event<br>Corresponding angles<br>Data distribution<br>decrease<br>Equally likely<br>Equilateral triangle<br>Independent event<br>Isosceles triangle<br>Likely event<br>Linear expression<br>Obtuse triangle<br>Outcome<br>Percent increase and<br>Population<br>Probability<br>Process of chance<br>Proportion<br>Random sample<br>Relative frequency<br>Repeating decimal<br>Scale drawing<br>Scalene triangle |
| 7 | Patterns exhibit relationships that can be extended, described, and generalized.<br><br>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?<br><br>How can recognizing repetition or regularity assist in solving problems more efficiently?<br><br>How are spatial relationships, including shape and dimension, used to draw, construct, model, and represent real situations or solve problems?<br><br>How can the application of the attributes of geometric shapes support mathematical reasoning and problem solving?<br><br>How can geometric properties and theorems be used to describe, model, and analyze situations? | Geometric Figures | Solve problems involving scale drawings of geometric figures.<br><br>Apply the properties of all types of triangles based on angle and side measure including the triangle inequality theorem.<br><br>Describe the two-dimensional figures that result from slicing three-dimensional figures. | CC.2.3.7.A.2 | M07.C-G.1.1.1<br>M07.C-G.1.1.2<br>M07.C-G.1.1.3<br>M07.C-G.1.1.4 | |

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| | | | | | | | |
| 8 | Patterns exhibit relationships that can be extended, described, and generalized.<br><br>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?<br><br>How can recognizing repetition or regularity assist in solving problems more efficiently?<br><br>How are spatial relationships, including shape and dimension, used to draw, construct, model, and represent real situations or solve problems?<br><br>How can the application of the attributes of geometric shapes support mathematical reasoning and problem solving?<br><br>How can geometric properties and theorems be used to describe, model, and analyze situations? | Cylinders, Cones, and Spheres | Apply concepts of volume of cylinders, cones, and spheres to solve real-world and mathematical problems. | CC.2.3.8.A.1 | M08.C-G.3.1.1 | Bivariate data<br>Clustering<br>Coefficient<br>Cone<br>Congruence<br>Congruent figures<br>Cube root<br>Cylinder<br>Dilations<br>Function<br>Irrational number<br>Line of best fit<br>Linear association<br>Linear equation<br>Negative correlation<br>Non-Linear association<br>Outlier<br>Perfect cube<br>Perfect square<br>Positive correlation<br>Pythagorean theorem<br>Rate of change<br>Rational number<br>Reflection<br>Relation<br>Rotation<br>Scatterplot<br>Scientific notation<br>Similarity<br>Simultaneous linear equations<br>Slope<br>Sphere<br>Square root<br>Transformation |
| 8 | Patterns exhibit relationships that can be extended, described, and generalized.<br><br>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?<br><br>How can recognizing repetition or regularity assist in solving problems more efficiently?<br><br>How are spatial relationships, including shape and dimension, used to draw, construct, model, and represent real situations or solve problems?<br><br>How can the application of the attributes of geometric shapes support mathematical reasoning and problem solving?<br><br>How can geometric properties and | Congruence and Similarity | Use transformations to demonstrate congruence and similarity of geometric figures.<br><br>Use various tools to understand and apply geometric transformations to geometric figures. | CC.2.3.8.A.2 | M08.C-G.1.1.1<br>M08.C-G.1.1.2<br>M08.C-G.1.1.3<br>M08.C-G.1.1.4 | |

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| | | theorems be used to describe, model, and analyze situations? | | | | | Translation<br>Two-way table<br>y-intercept |
| 8 | Patterns exhibit relationships that can be extended, described, and generalized.<br><br>Geometric relationships can be described, analyzed, and classified based on spatial reasoning and/or visualization. | How can recognizing repetition or regularity assist in solving problems more efficiently?<br><br>How are spatial relationships, including shape and dimension, used to draw, construct, model, and represent real situations or solve problems?<br><br>How can the application of the attributes of geometric shapes support mathematical reasoning and problem solving?<br><br>How can geometric properties and theorems be used to describe, model, and analyze situations? | Pythagorean Theorem | Apply the Pythagorean Theorem and its converse to solve mathematical problems in two and three dimensions. | CC.2.3.8.A.3 | M08.C-G.2.1.1<br>M08.C-G.2.1.2<br>M08.C-G.2.1.3 | |
| GEO | Patterns exhibit relationships that can be extended, described, and generalized.<br><br>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?<br><br>How can recognizing repetition or regularity assist in solving problems more efficiently?<br><br>How are spatial relationships, including shape and dimension, used to draw, construct, model, and represent real situations or solve problems?<br><br>How can the application of the attributes of geometric shapes support mathematical reasoning and problem solving? | Congruence and Similarity | Use properties of congruence, correspondence, and similarity involving 2- and 3-dimensional figures.<br><br>Apply rigid transformations to determine and explain congruence.<br><br>Apply non-rigid transformations to determine and explain similarity.<br><br>Using various methods, write formal proofs and/or use logic statements to construct or validate arguments. | CC.2.3.HS.A.1<br>CC.2.3.HS.A.2<br>CC.2.3.HS.A.3<br>CC.2.3.HS.A.4<br>CC.2.3.HS.A.5<br>CC.2.3.HS.A.6<br>CC.2.3.HS.A.11 | G.1.3.1.1<br>G.1.3.1.2<br>G.1.3.2.1 | Acute Angle<br>Adjacent Angles<br>Alternate Interior Angles<br>Altitude<br>Angle<br>Angle Bisector<br>Arc<br>Arc Length<br>Area<br>Chord<br>Circle<br>Circumference<br>Complementary Angles<br>Composite Figure<br>Compound |

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| | | How can geometric properties and theorems be used to describe, model, and analyze situations? | | Make geometric constructions.<br><br>Prove geometric theorems about lines, angles, triangles, and parallelograms while focusing on validity of underlying reasoning. | | | Events<br>Compound Figure<br>Conditional Probability<br>Congruence<br>Correspondence<br>Corresponding |
| GEO | Patterns exhibit relationships that can be extended, described, and generalized.<br><br>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?<br><br>How can recognizing repetition or regularity assist in solving problems more efficiently?<br><br>How are spatial relationships, including shape and dimension, used to draw, construct, model, and represent real situations or solve problems?<br><br>How can the application of the attributes of geometric shapes support mathematical reasoning and problem solving?<br><br>How can geometric properties and theorems be used to describe, model, and analyze situations? | Trigonometry | Define and/or apply trigonometric ratios.<br><br>Solve problems involving right triangles (Pythagorean Theorem, right triangle trigonometry). | CC.2.3.HS.A.7<br>CC.2.2.HS.C.9 | G.2.1.1.1<br>G.2.1.1.2<br>G.1.3.2.1 | Angles<br>Cylinder (Right Circular)<br>Diameter<br>Direct Proof<br>Equilateral Triangle<br>Independence<br>Indirect Proof<br>Isosceles Triangle<br>Line<br>Median<br>Midpoint<br>Non-rigid Transformation<br>Obtuse Angle<br>Parallel<br>Parallelogram<br>Perimeter<br>Perpendicular |
| GEO | Patterns exhibit relationships that can be extended, described, and generalized.<br><br>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?<br><br>How can recognizing repetition or regularity assist in solving problems more efficiently?<br><br>How are spatial relationships, including shape and dimension, used to draw, construct, model, and represent real situations or solve problems?<br><br>How can the application of the attributes | Circles | Identify, determine, and/or use parts of circles and segments, lines, and angles associated with circles.<br><br>Extend the concept of similarity to determine arc lengths and areas of sectors.<br><br>Understand and apply theorems about circles. | CC.2.3.HS.A.3<br>CC.2.3.HS.A.8<br>CC.2.3.HS.A.9 | G.1.1.1.1<br>G.1.1.1.2<br>G.1.1.1.3<br>G.2.2.2.1<br>G.2.2.2.2<br>G.2.2.2.5 | Point<br>Polyhedra<br>Proof<br>Proof by Contradiction<br>Pyramid (Right)<br>Pythagorean Identity<br>Pythagorean Theorem<br>Radius<br>Ray<br>Rectangle |

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| | | of geometric shapes support mathematical reasoning and problem solving?<br><br>How can geometric properties and theorems be used to describe, model, and analyze situations? | | | | | Regular Polygon<br>Rhombus<br>Right Triangle<br>Rigid Transformation<br>Scalene Triangle<br>Secant |
| GEO | Patterns exhibit relationships that can be extended, described, and generalized.<br><br>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?<br><br>How can recognizing repetition or regularity assist in solving problems more efficiently?<br><br>How are spatial relationships, including shape and dimension, used to draw, construct, model, and represent real situations or solve problems?<br><br>How can the application of the attributes of geometric shapes support mathematical reasoning and problem solving?<br><br>How can geometric properties and theorems be used to describe, model, and analyze situations? | Analytic Geometry | Use coordinate geometry to prove theorems algebraically.<br><br>Use coordinate geometry to establish properties of 2-dimensional shapes.<br>Apply coordinate geometry to calculate distance and/or midpoint between two points.<br><br>Apply coordinate geometry to relate slope to parallel and perpendicular lines. | CC.2.3.HS.A.10<br>CC.2.3.HS.A.11 | G.2.1.2.1<br>G.2.1.2.2<br>G.2.1.2.3 | Sector<br>Segment<br>Semicircle<br>Similarity<br>Slope<br>Sphere<br>Square<br>Supplementary Angles<br>Surface Area<br>Tangent<br>Three-Dimensional<br>Trapezoid<br>Trigonometric Ratios<br>Two-Dimensional<br>Vertical Angles<br>Volume |
| GEO | Geometric relationships can be described, analyzed, and classified based on spatial reasoning and/or visualization. | How are spatial relationships, including shape and dimension, used to draw, construct, model, and represent real situations or solve problems?<br><br>How can the application of the attributes of geometric shapes support mathematical reasoning and problem solving? | Measurement and Dimension | Use and/or compare measurements of angles.<br><br>Use and/or develop procedures to determine, describe, or estimate measures of perimeter, circumference, area, surface area, and/or volume.<br><br>Describe how a change in the linear dimension can affect perimeter, circumference, area, surface area, and/or volume. | CC.2.3.HS.A.3<br>CC.2.3.HS.A.8<br>CC.2.3.HS.A.9<br>CC.2.3.HS.A.12<br>CC.2.3.HS.A.13<br>CC.2.3.HS.A.14 | G.2.2.1.1<br>G.2.2.1.2<br>G.2.2.2.1<br>G.2.2.2.2<br>G.2.2.2.3<br>G.2.2.2.4<br>G.2.2.2.5<br>G.2.2.3.1<br>G2.3.1.1<br>G2.3.1.2<br>G2.3.1.3<br>G2.3.2.1 | |

# PA Core Standards For Mathematics
## 2.3 Geometry PreK-12

| Grade | Big Idea | Essential Questions | Concepts | Competencies | Standard | Eligible Content | Vocabulary |
|-------|----------|---------------------|----------|--------------|----------|------------------|------------|
| | | | | Visualize the relation between two-and three-dimensional objects.<br><br>Apply geometric concepts in modeling situations. | | | |