Pre-AP Geometry 2018 Spring Semester Exam Topic List

Rigid Transformations

* Know three types of rigid transformations and that dilation is non-rigid.
* Know which transformation has a line of symmetry, which has a point of symmetry, and which maintain orientation, which maintain distance (all rigid transformations maintain distance).
* Write and/or interpret an algebraic rule for reflection of a figure across an axis, translation, rotation around the origin.
* Determine lines of symmetry (or reflection lines) in a sketch.
* Use vector notation for translations.
* Describe a series of transformations that maps one figure exactly onto another (congruence).

Right Triangles and Trigonometry

* Use Pythagorean Theorem to find missing side(s) of a right triangle or diagonal of a square.
* Answer as a simplified radical (multiple choice).
* Use 30-60-90 and 45-45-90 shortcuts to find sides of these special right triangles given one side.
* Find missing information in a right triangle using right triangle trigonometry: write an equation using the correct ratio (sine, cosine, or tangent), solve correctly. These may include real-world application in context.
* Missing information may be an angle (inverse trig ratio) or it may be one or more sides of the right triangle.
* Write trig ratios for sine, cosine, or tangent when sides of a right triangle are known. (EX: sin A = 3/5 when opposite side is 3 and hypotenuse is 5.)
* Find area of an isosceles triangle given sides &/or side & angle.

Polygons, Quadrilaterals, and Algebra

* Know and be able to use Polygon Sum Theorem (180(n-2)) and one angle in an equiangular polygon.
* Recognize exterior angle; know sum of a set of exterior angles; find one exterior angle in a regular polygon.
* Know prefixes for polygons.
* Know definitions and properties of diagonals of parallelograms and special parallelograms (rectangle, rhombus, and square).
* Know kite diagonal properties in order to find missing information.
* Use slope, distance, &/or midpoint to determine type of quadrilateral based on properties. (The algebra will already be done; student will interpret what it means in terms of properties.)

Circles and Unit Circle

* Definition of π.
* Circumference and area formulas applied, including area to circumference or circumference to area, and semicircle.
* Find arc length. (arc length is to circumference as arc measure is to 360°)
* Find area of a sector (part of area is to whole circle as arc measure is to 360°).
* Know and use circle definitions and properties to find unknowns (EX: central angle = arc measure but inscribed angle = half of arc and half of central angle; angle inscribed in a semicircle is a right angle, etc.) There are no questions about chord properties.
* Find coordinates and radian measure from degrees on a unit circle.

Measurement: area, volume, comparisons between two and three dimensions

* Recognize correct names for solids: prism, pyramid, cylinder, cone, hemisphere, sphere, polyhedron.
* Find volume of prism, cylinder, and cone, sphere, hemisphere.
* Know the difference between volumes of prisms and cylinders vs. pyramids and cones.
* Determine type of solid when two-dimensional figure revolves around an axis; find its volume.
* Find area or partial area (shaded area) of simple geometric figures given some information about them. There are no regular polygons or trapezoids on the exam.
* What happens to area or volume if a side or dimension is doubled?