Pre-AP Geometry 2019 Spring Semester Exam Topic List

Similarity

* Know that dilation is a non-rigid transformation that preserves similarity (proportional sides, equal angles)
* Find scale factor of a dilation image or dilate with a scale factor.
* Know that congruence is similarity with a 1:1 ratio.
* Is this class of polygons always similar? Circles, squares, rectangles, regular polygons, isosceles triangles, etc.
* Find the similarity ratio given sides of two figures.
* Apply AA, SAS, and SSS similarity shortcuts to determine or explain why triangles are similar.
* Write and solve proportions to measure indirectly (like shadow problems).
* Given similar polygons, write and solve proportions to find missing sides.

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?