**Vertical Progression: Geometry – Polygons**

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| * 1. **The student will**
1. **define polygon;**
2. **identify and name polygons with 10 or fewer sides; and**
3. **combine and subdivide polygons with three or four sides and name the resulting polygon(s).**

***Essential Knowledge and Skills:*** * Define polygon. (a)
* Classify figures as polygons or not polygons. (a)
* Identify and name polygons with 10 or fewer sides in various orientations:
* triangle is a three-sided polygon;
* quadrilateral is a four-sided polygon;
* pentagon is a five-sided polygon;
* hexagon is a six-sided polygon;
* heptagon is a seven-sided polygon;
* octagon is an eight-sided polygon;
* nonagon is a nine-sided polygon; and
* decagon is a ten-sided polygon. (b)
* Combine no more than three polygons, where each has three or four sides, and name the resulting polygon. (c)
* Subdivide a three-sided or four-sided polygon into no more than three parts and name the resulting polygon(s). (c)
 | **4.11 The student will identify, describe, compare, and contrast plane and solid figures according to their characteristics (number of angles, vertices, edges, and the number and shape of faces) using concrete models and pictorial representations.*****Essential Knowledge and Skills*:** * Identify concrete models and pictorial representations of solid figures (cube, rectangular prism, square pyramid, sphere, cone, and cylinder).
* Identify and describe solid figures (cube, rectangular prism, square pyramid, and sphere) according to their characteristics (number of angles, vertices, edges, and by the number and shape of faces).
* Compare and contrast plane and solid figures (circle/sphere, square/cube, triangle/square pyramid, and rectangle/ rectangular prism) according to their characteristics (number of sides, angles, vertices, edges, and the number and shape of faces).
 | **5.12 The student will classify and measure right, acute, obtuse, and straight angles.*****Essential Knowledge and Skills:*** * Classify angles as right, acute, obtuse, or straight.
* Identify the appropriate tools (e.g., protractor and straightedge or angle ruler as well as available software) used to measure and draw angles.
* Measure right, acute, obtuse, and straight angles, using appropriate tools, and identify their measures in degrees.
* Solve addition and subtraction problems to determine unknown angle measures on a diagram in practical problems
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|  | **4.12 The student will classify quadrilaterals as parallelograms, rectangles, squares, rhombi, and/or trapezoids.** ***Essential Knowledge and Skills:*** * Develop definitions for parallelograms, rectangles, squares, rhombi, and trapezoids.
* Identify properties of quadrilaterals including parallel, perpendicular, and congruent sides.
* Classify quadrilaterals as parallelograms, rectangles, squares, rhombi, and/or trapezoids.
* Compare and contrast the properties of quadrilaterals.
* Identify parallel sides, congruent sides, and right angles using geometric markings to denote properties of quadrilaterals.
 | **5.13 The student will** 1. classify triangles as right, acute, or obtuse and equilateral, scalene, or isosceles; and
2. investigate the sum of the interior angles in a triangle and determine an unknown angle measure.

***Essential Knowledge and Skills:*** * Classify triangles as right, acute, or obtuse. (a)
* Classify triangles as equilateral, scalene, or isosceles. (a)
* Compare and contrast the properties of triangles. (a)
* Identify congruent sides and right angles using geometric markings to denote properties of triangles. (a)
* Use models to prove that the sum of the interior angles of a triangle is 180 degrees, and use that relationship to determine an unknown angle measure in a triangle. (b)
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Resource: VDOE, 2016 *Mathematics Curriculum Frameworks*