3.05 Polygon Angle Sums

Notes	Video Links & Practice Space
Vocabulary 1. **Decompose:** to _____ into two or more parts 2. **Polygon:** a closed _____ figure composed of at least three straight _____ and three _____ 3. **Regular polygon:** a polygon that is both _____ (all sides congruent) and _____ (all angles congruent)	**Vocabulary (0:42)**
Polygons A polygon is a closed, two-dimensional shape, like a triangle or pentagon. The _____ of its angle measures can actually be determined using _____. We can _____ a polygon into _____ by connecting one vertex with each of the other _____ vertices. Remember the Triangle Sum Theorem tells us the total number of degrees for each triangle is 180° We can use the Polygon Angle Sum Formula to calculate the _____ of a polygon. **Polygon Angle Sum Formula** $(n - 2) \cdot 180°$ where n is the number of sides of the polygon	**Polygons & Practice 1 (1:55)** **Practice 1:** What is the total number of degrees for a 12-sided polygon?

Using the Polygon Sum Formula

We can use the Polygon Sum Formula to solve for a missing angle in a given polygon.

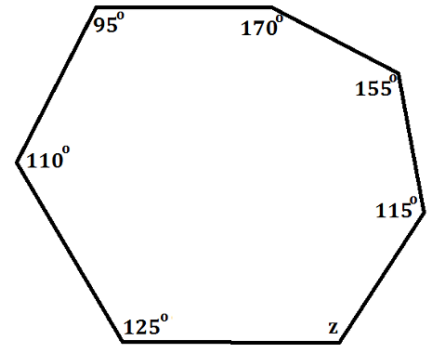**Steps to Solve Problems Using the Polygon Angle Sum Formula**

Step 1: _____

_____, n.

Step 2: _____ the value for n into the Polygon Angle Sum formula and simplify.

Step 3: Use the _____ to solve the problem.

Using the Polygon Sum Formula (2:14)

Practice 2: Find the measure of $\angle z$.

95° 170° 155° 110° 115° 125° z
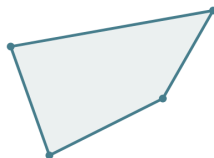
Regular Polygons

A regular polygon is a polygon where all of the _____ are _____ and all of the _____ are congruent.

Regular polygons are different from polygons in that their sides are the _____ and their angles are the _____..

Regular Quadrilateral   Quadrilateral

Regular Polygon Angle Formula

$\dfrac{(n-2)\cdot 180°}{n}$ where n is the number of sides
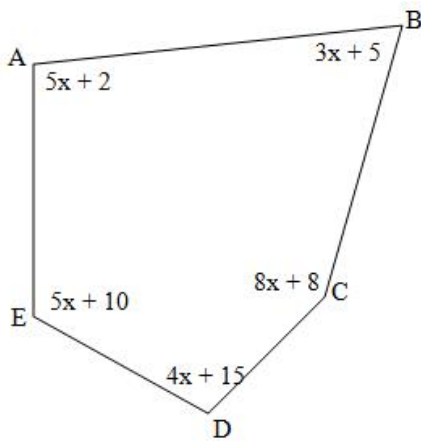
Regular Polygons (2:41)

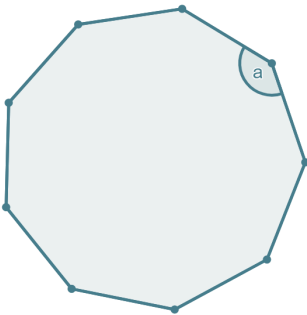**Practice 3:** Find the number of degrees for one angle in a regular 36 -sided shape.

Practice 4: One angle in a regular 36-sided polygon is represented by $(3c - 19)°$. Determine the value of c.

Extra Practice

Practice 5: Find the measure of ∠B

Practice 6: A regular polygon is shown, with one of its angle measures labeled a. If m∠a = (2b + 64)°, find the value of b.