Review: Angles of Polygons

Date KEY

1. Can a polygon have an interior angles sum of 4250? Why or why not.

Assume yes: $(n-2)180 = 4250$

$n-2 = 23.61111\ldots$

$n = 25.61111\ldots$

Since n is not an integer, the answer is no. A regular polygon cannot have 25.6111 sides.

2. Find the measure of each interior and exterior angle of a regular 26-gon.

Interior

$\frac{(n-2)180}{n} = \text{each } \angle$

$\frac{(26-2)180}{26} =$

$166\frac{4}{26} \Rightarrow \boxed{166\frac{2}{23}^\circ \text{ each int } \angle.}$

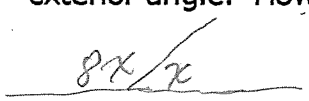
Exterior

$\frac{360}{n} =$

$\frac{360}{26} =$

$\boxed{13\frac{11}{13}^\circ = \text{each ext. } \angle}$

3. The measure of each interior angle of a regular polygon is eight times that of an exterior angle. How many sides does the polygon have?



$8x + x = 180$

$9x = 180$

$x = 20^\circ$ each exterior

$\frac{360}{20} = 18$ sides

$\boxed{18 \text{ sides}}$

4. As the number of sides of a regular polygon increases, what happens to the measure of each exterior angle?

As the # of sides ↑, the measure of each exterior ∡ decreases.

$\frac{360}{4} = 90^\circ \text{ each} \Rightarrow \frac{360}{20} = 18^\circ \text{ each}$

5. As the number of sides of a convex polygon increases, what happens to the sum of the measures of its interior angles?

As the # of sides ↑, the sum of the measures of its interior ∡s increase.

As the # of sides ↑, the # of △s we can form ↑; ∴ the sum of degrees ↑.