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Geometria - Polígonos

① decágono regular

$a_i = ?$ $ae = ?$

12 lados

$$S_i = 180^\circ (12 - 2)$$

$$S_i = 180^\circ \cdot 10 = 1800$$

$$a_i = \frac{1800}{12} = 150^\circ$$

$$ae \neq a_i = 180^\circ$$

$$ae + 150^\circ = 180^\circ \rightarrow ae = 30^\circ$$

② $S_i = ?$

icosaédono convexo

$$S_i = 180^\circ (20 - 2) \quad \text{ou} \quad S_i = 3240^\circ$$

$$180 \cdot 18$$

③ $a_i = ?$

$$a_i = \frac{18(n-2)}{n}$$

equiângulo (ângulos iguais)

n lados

④ polígono convexo

$$S_i = 5 \cdot S_e$$

$$S_i = 180(n-2) \quad | \quad S_e = 360$$

$$180(n-2) = 5 \cdot 360$$

$$180n - 360 = 1800$$

$$180n = 1800 + 360$$

$$\rightarrow 180n = 2160$$

$$n = \underline{12}$$

dodecágono

⑤ convexo

$$\frac{n}{2} = \frac{n(n-3)}{2}$$

$$n = 2d$$

$$d = \frac{n(n-3)}{2}$$

$$n = n^2 - 3n \quad (2)$$

$$2n = 2n^2 - 6n$$

$$\rightarrow 2n + 6n = 2n^2$$

$$8n = 2n^2$$

$$8n = 2n \cdot n$$

$$\rightarrow \frac{8n}{2n} = n$$

$$n = \underline{4}$$

⑥ regular

$$a_i = 3 \cdot a_e$$

$$a_i = \frac{180(n-2)}{n}$$

$$a_e = \frac{360}{n}$$

$$\frac{180(n-2)}{n} = 3 \cdot \frac{360}{n}$$

$$180n - 360 = 1080$$

$$180n = 1080 + 360$$

$$180n = 1440$$

$$\rightarrow n = \frac{1440}{180}$$

$$n = \underline{8}$$

③

tilibra