How many sides are in a polygon with the sum of its interior angles equal to 2340° ?

① Step 1 write the rule

$$S = (n-2) \times 180^\circ$$

② plug in

$$\frac{2340^\circ}{180^\circ} = \frac{(n-2) \times 180^\circ}{180^\circ}$$

$13 = n - 2$
$+2 \qquad +2$

$15 = n$

The polygon has 15 sides.

Which polygon has an interior angle of 140° ?

① $a = \dfrac{(n-2) \times 180^\circ}{n}$

② $\dfrac{140^\circ}{1} = \dfrac{(n-2) \times 180^\circ}{n}$

$140n = (n-2) \times 180^\circ$

$140n = 180n - 360$
$-140n \qquad -140n$

$0 = 40n - 360$
$+360 \qquad +360$

$\dfrac{360}{40} = \dfrac{40n}{40}$

$n = 9$

Nonagon