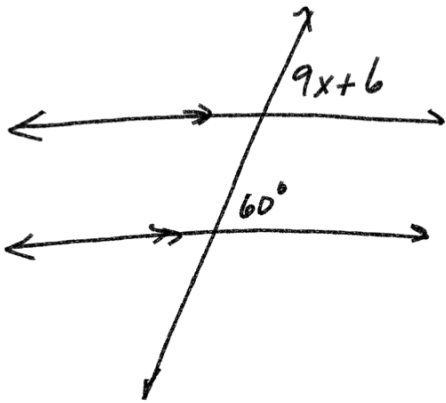


S-G Geometry Session 9 7/6



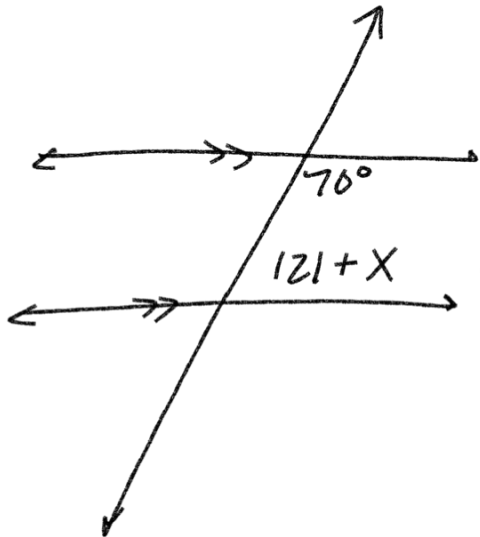
Corresponding
congruent

$$\begin{array}{r} 9x+6 = 60 \\ -6 \quad -6 \\ \hline 9x = 54 \\ \frac{9}{9} \quad \frac{9}{9} \end{array}$$

$$\boxed{x = 6}$$

- Linear Pair
- Vertical
- Corresponding
- Alternate Interior
- Same-side Interior

1.)

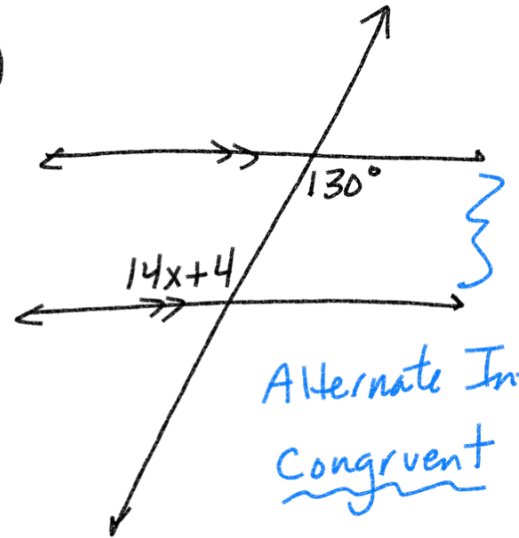


same-side
interior

$$\begin{array}{r} 121+x+70 = 180 \\ -121 \quad -70 \\ \hline x = -11 \end{array}$$

$$\boxed{x = -11}$$

2.)

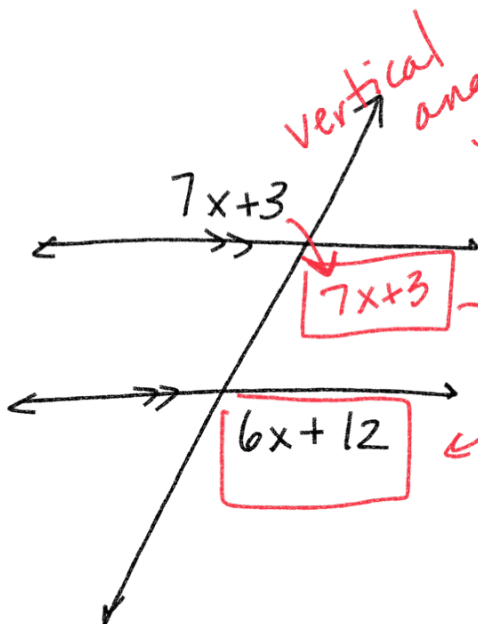


Alternate Interior
congruent

$$\begin{array}{r} 14x+4 = 130 \\ -4 \quad -4 \\ \hline 14x = 126 \\ \frac{14}{14} \quad \frac{14}{14} \end{array}$$

$$\boxed{x = 9}$$

3.)

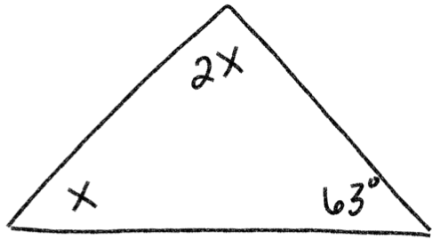


vertical
angles

corresponding

$$\begin{array}{r} 7x+3 = 6x+12 \\ -3 \quad -3 \\ \hline 7x = 6x+9 \\ -6x \quad -6x \\ \hline x = 9 \end{array}$$

$$\boxed{x = 9}$$



Sum of the interior angles of a triangle = 180°

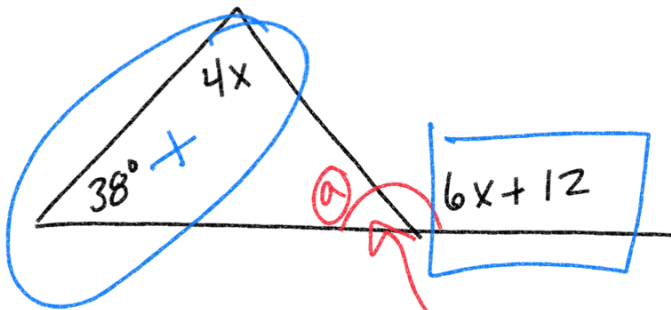
$$x + 2x + 63 = 180^\circ$$

$$3x + 63 = 180^\circ$$

$$\quad -63 \quad -63$$

$$\frac{3x}{3} = \frac{117}{3}$$

$$\boxed{x = 39^\circ}$$



$$[6x + 12] + a = 180$$

$$-[6x + 12] \quad -[6x + 12]$$

$$a = 180 - (6x + 12)$$

$$180 - 6x - 12$$

$$\boxed{a = 168 - 6x}$$

Exterior Angles

$$6x + 12 = 4x + 38$$

$$-4x \quad -4x$$

$$2x + 12 = 38$$

$$-12 \quad -12$$

$$\frac{2x}{2} = \frac{26}{2}$$

$$\boxed{x = 13}$$

$$38 + 4x + 168 - 6x = 180$$

$$-2x + 206 = 180$$

$$-206 \quad -206$$

$$-2x = -26$$

$$\frac{-2x}{-2} = \frac{-26}{-2}$$

$$\boxed{x = 13}$$

Shapes

Number of Sides

Total Interior Angle

Triangle

Quadrilateral

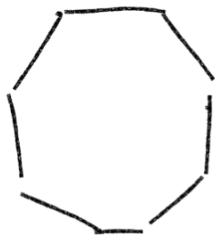
Pentagon

Hexagon

$n = \#$ of sides

$$180^\circ(n-2)$$

Sum of the interior angles
for any polygon.

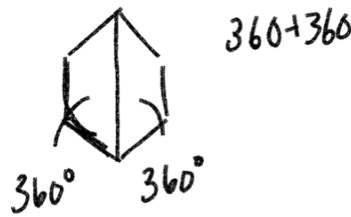
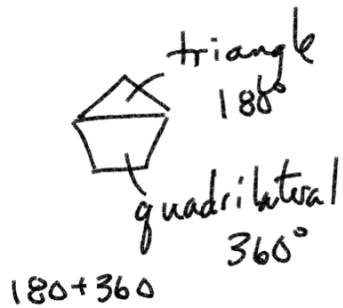
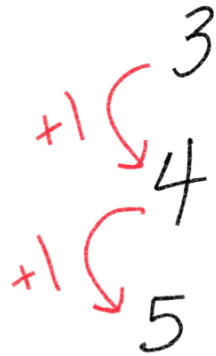


octagon $n = 8$

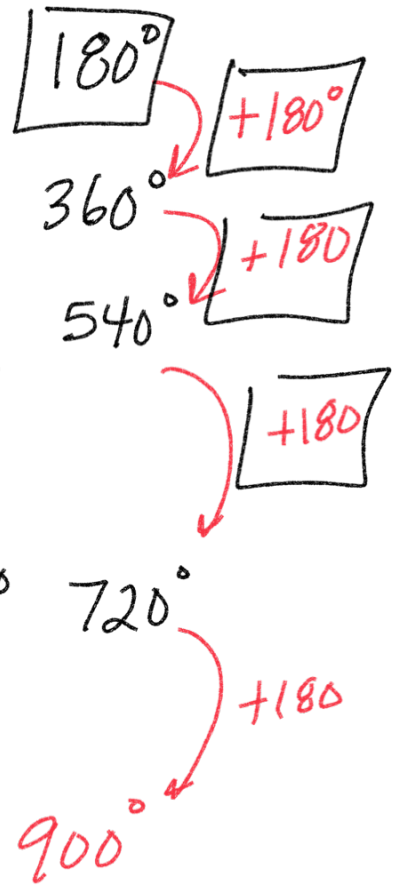
$$180^\circ(n-2)$$

$$180^\circ(8-2)$$

$$180(6) = 1080^\circ$$



$$(6-2)180$$
$$4(180) = 720$$

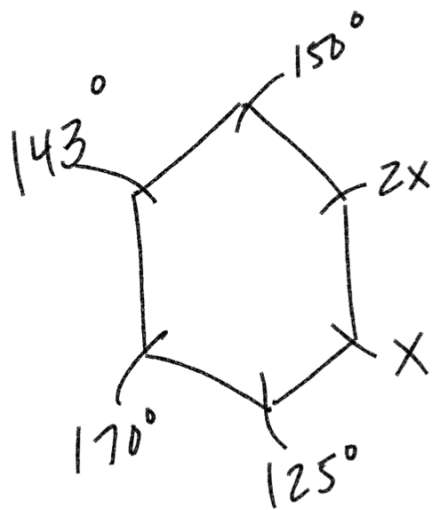


90-sided polygon "90-gon"

$$(n-2)180$$

$$(90-2)180$$

$$(88)180 = 15,840^\circ$$



$$n=6$$

$$(n-2)180$$

$$(6-2)180$$

$$4(180) = 720^\circ$$

Not to
drawn to
scale

$$150 + 2x + x + 125 + 170 + 143 = 720$$

$$3x + 588 = 720$$

$$-588 \quad -588$$

$$\frac{3x}{3} = \frac{132}{3}$$

$$x = 44$$

"Regular" Polygon - All sides are equal.
All angles are equal.

Find the interior angle
of a Regular Decagon $n=10$

$$\frac{(10-2)180}{10} = \frac{8(180)}{10}$$

$$\left[\frac{(n-2)180}{n} \right]$$

$$\frac{1440}{10} = 144^\circ$$

The individual angle measure in a regular (42)-gon.

$$\frac{(n-2)180}{n} \quad \frac{(42-2)180}{42}$$

$$\frac{(40)180}{42} = \frac{7200}{42} = 171.4$$



A regular ∞ -gon

delta \rightarrow "change"

$$\text{slope} = \frac{\text{rise}}{\text{run}} = \frac{\Delta y}{\Delta x} = \frac{y_2 - y_1}{x_2 - x_1}$$

Find the slope between $(4, 8)$ and $(2, -6)$
 x_1, y_1 x_2, y_2

$$\text{slope} = m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-6 - 8}{2 - 4} = \frac{-14}{-2} = 7$$

Movement ratio $\frac{7 \text{ up}}{1 \text{ right}}$

Find the slope between $(8, 12)$ and $(2, -6)$

x_2, y_2
 x_1, y_1

x_1, y_1
 x_2, y_2

$$\text{slope} = \frac{\text{rise}}{\text{run}} = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-6 - 12}{2 - 8} = \frac{-18}{-6} = \boxed{3}$$

$$\frac{y_2 - y_1}{x_2 - x_1} = \frac{12 - (-6)}{8 - 2} = \frac{12 + 6}{8 - 2} = \frac{18}{6} = \boxed{3}$$