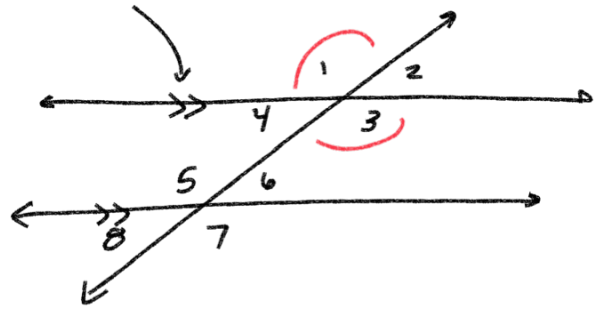
M-G Geometry Week 11 11/27

parallel



$\measuredangle 1 + \measuredangle 2 = 180°$
supplemental
linear pairs

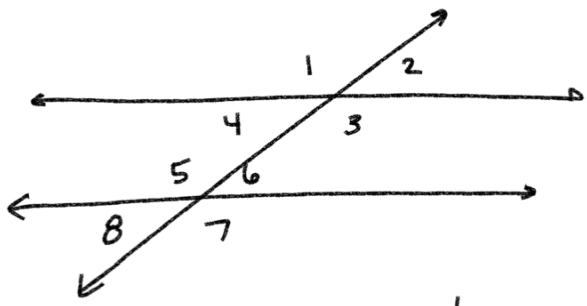
$\measuredangle 2 + \measuredangle 3 = 180°$
supplemental
linear pair

$\measuredangle 1 = \measuredangle 3$ vertical angles

$\measuredangle 2 = \measuredangle 4$ vertical angles

$\measuredangle 1 + \measuredangle 2 = \measuredangle 2 + 3$ substitution
$-\measuredangle 2 \quad -\measuredangle 2$
$\measuredangle 1 = \measuredangle 3$ sub PoE

not drawn to scale



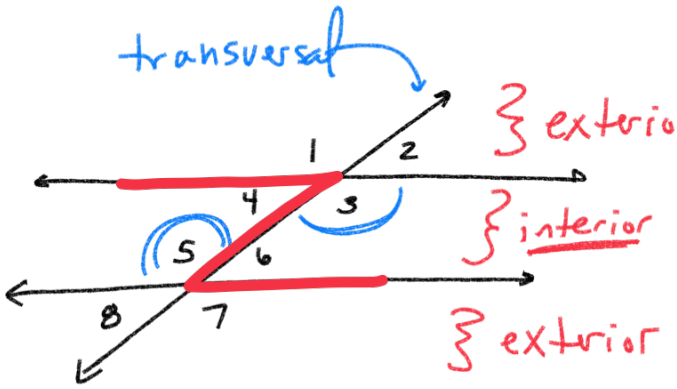
$\measuredangle 1 = \measuredangle 5$ corresponding angles

$\measuredangle 2 = \measuredangle 6$ corresponding angles

$\measuredangle 3 = \measuredangle 7$ corresponding angles

$\measuredangle 4 = \measuredangle 8$ corresponding angles

<u>corresponding</u> angles are <u>congruent</u>



statement	reasons
$\measuredangle 1 = \measuredangle 3$	vertical angles
$\measuredangle 1 = \measuredangle 5$	corresponding angles
$\measuredangle 3 = \measuredangle 5$	substitution or syllogism

$\measuredangle 3 = \measuredangle 5$

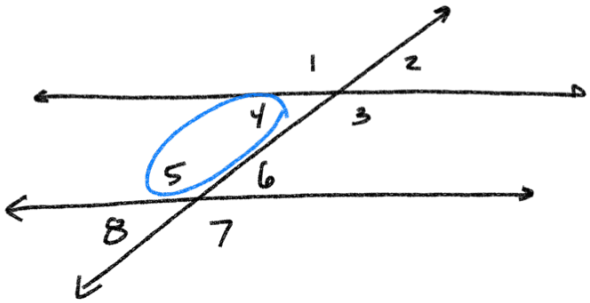
$\measuredangle 4 = \measuredangle 6$

opposite sides of the transversal

Alternate Interior Angles

between parallel lines

congruent

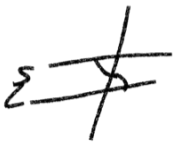


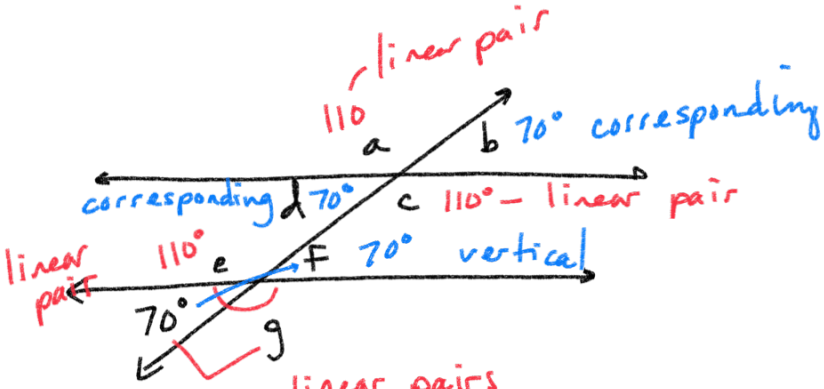
Statement	Reason
$\boxed{\measuredangle 4} = \measuredangle 8$	corresponding angles
$\measuredangle 5 + \measuredangle 8 = 180°$	linear pair
$\measuredangle 5 + \boxed{\measuredangle 4} = 180°$	substitution

$\measuredangle 4$ & $\measuredangle 5$ are supplemental

same side interior angles

$\measuredangle 3$ & $\measuredangle 6$ supplemental

Type	Description	Congruent/Supplemental
1.) Linear Pair	Two angles that form a straight line	Supplemental $=180°$
2.) Vertical Angles	Two angles that are opposite angles on intersecting lines	Congruent $\cong$
3.) Corresponding Angles	Angles that occupy the space in a "quadrant"	Congruent $\cong$
4.) Alternate Interior Angles 	Inside angles on opposite sides of the transversal	Congruent $\cong$
5.) Same-side Interior Angles	Inside angles on same-side of the transversal	supplemental $=180°$

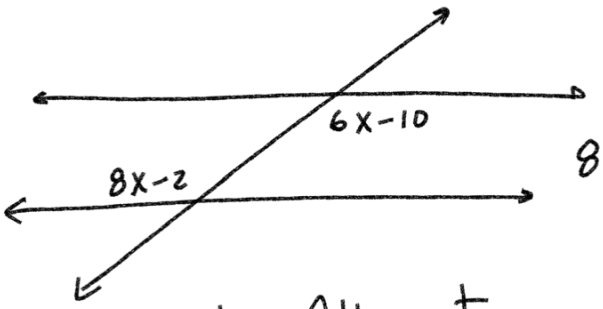


linear pairs

$70° + g = 180°$

$-70 \qquad -70°$

$g = 110°$



Congruent – Alternate Interior Angles

Two options

$8x - 2 = 6x - 10$ congruent

or

$8x - 2 + 6x - 10 = 180°$ supplemental

$8x - 2 = 6x - 10$

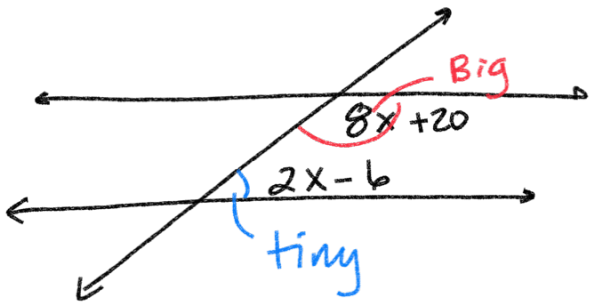
$+2 \qquad +2$

$8x = 6x - 8$

$-6x \quad -6x$

$\frac{2x}{2} = \frac{-8}{2}$

$\boxed{x = -4}$

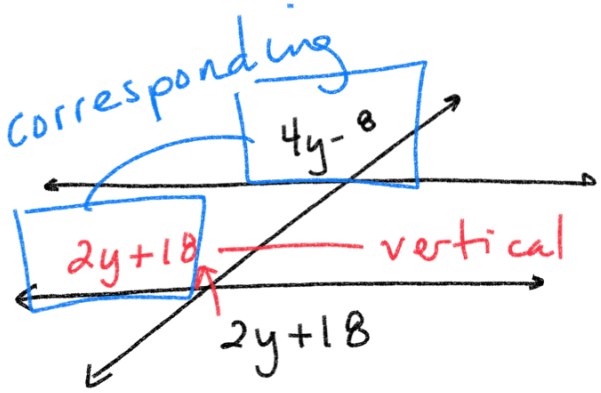


Supplemental

$$8x+20+2x-6=180^\circ$$

$$10x+14=180$$
$$-14 \quad -14$$

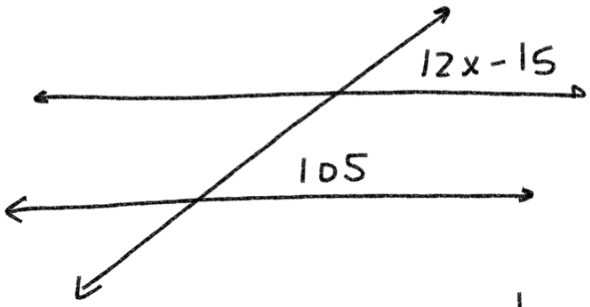
$$\frac{10x}{10}=\frac{166}{10} \qquad \boxed{x=16.6}$$



$$4y-8=2y+18$$
$$-2y \qquad -2y$$

$$2y-8=18$$
$$+8 \quad +8$$

$$\frac{2y}{2}=\frac{26}{2} \qquad \boxed{y=13}$$



Congruent

Corresponding

$$12x-15=105$$
$$+15 \quad +15$$

$$\frac{12x}{12}=\frac{120}{12}$$

$$\boxed{x=10}$$