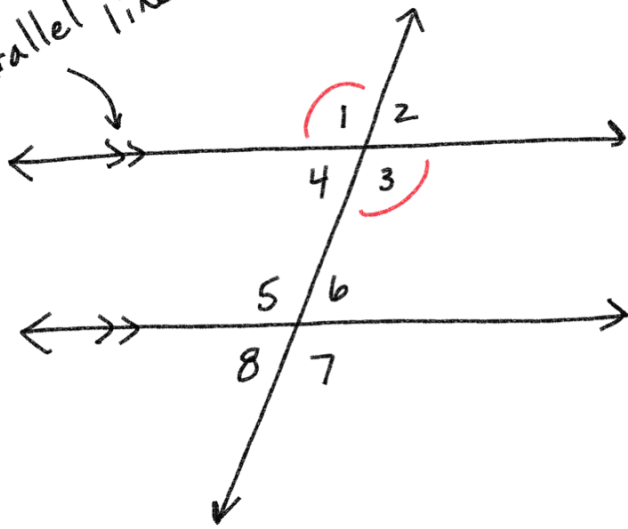


W-G Geometry Week 11 11/28

parallel lines



$\angle 1 + \angle 2 = 180^\circ$ supplemental or linear pair

$\angle 2 + \angle 3 = 180^\circ$ supplemental or linear pair

$\angle 1 + \angle 2 = \angle 2 + \angle 3$ substitution
 $-\angle 2 \quad -\angle 2$

$\angle 1 = \angle 3$ Sub PoE

$\angle 1 = \angle 3$ vertical Angles

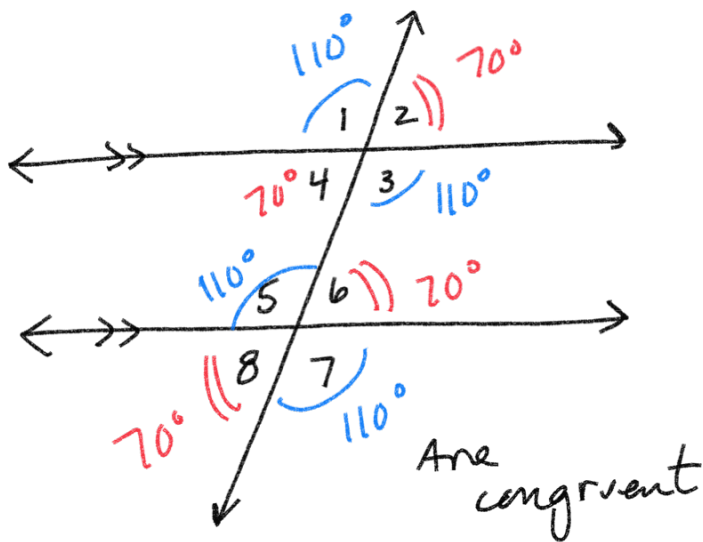
$\angle 2 = \angle 4$

$\angle 1 \cong \angle 5$ Corresponding

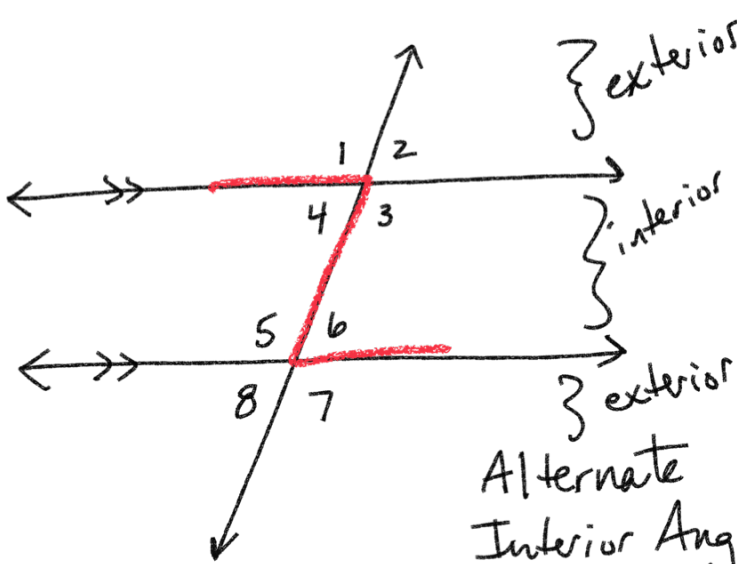
$\angle 2 \cong \angle 6$ Corresponding

$\angle 3 \cong \angle 7$ Corresponding

$\angle 4 \cong \angle 8$ Corresponding



Are congruent



Alternate Interior Angles congruent

$\angle 3 \cong \angle 5$
 $\angle 4 \cong \angle 6$

Prove: $\angle 3 \cong \angle 5$

statement

$\angle 1 \cong \angle 3$

$\angle 1 \cong \angle 5$

$\angle 3 \cong \angle 5$

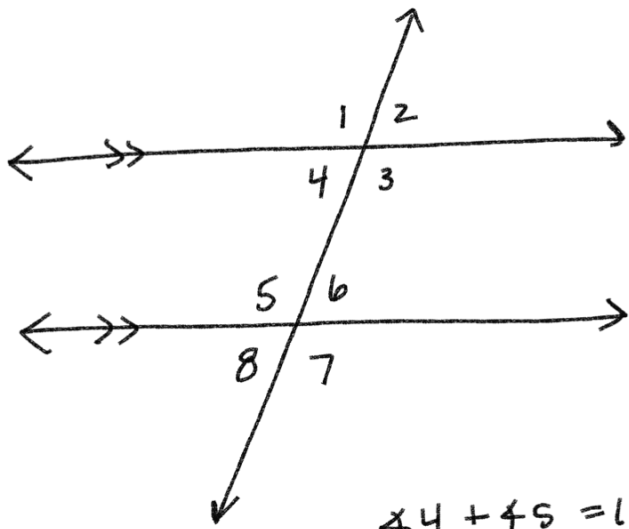
reasons

vertical angles

corresponding

substitution

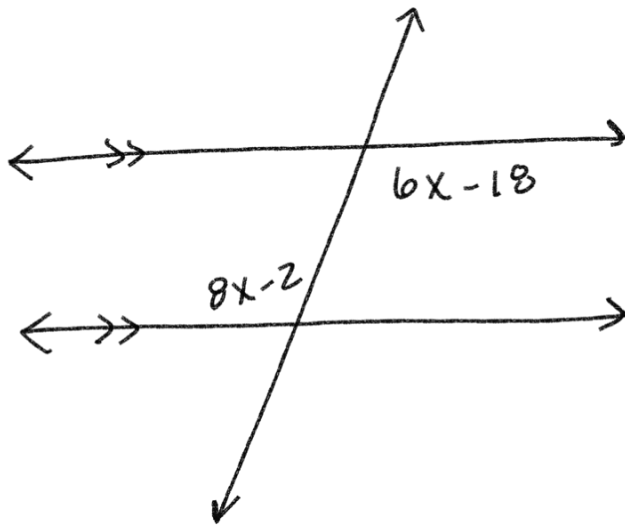
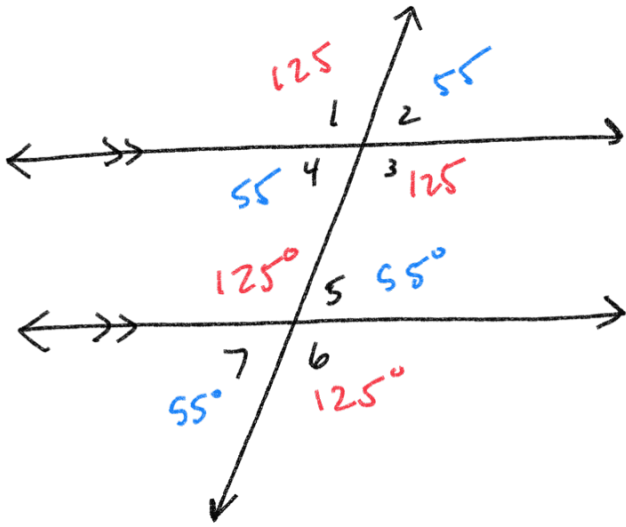
or syllogism/
transitive



Prove: $\angle 4 + \angle 5 = 180^\circ$

| Statement | Reason |
|-----------------------------------|---------------------------|
| $\angle 4 \cong \angle 8$ | corresponding |
| $\angle 5 + \angle 8 = 180^\circ$ | linear pair |
| $\angle 4 + \angle 5 = 180^\circ$ | substitution |
| $\angle 4 + \angle 5 = 180^\circ$ | same-side interior angles |
| $\angle 3 + \angle 6 = 180^\circ$ | supplemental |

- 1.) Linear Pair \rightarrow two angles that form a line \rightarrow supplemental 180°
- 2.) Vertical Angles \rightarrow opposite angles of intersecting lines \rightarrow congruent
- 3.) Corresponding Angles \rightarrow occupy the same space in a quadrant \rightarrow congruent
- 4.) Alternate Interior \rightarrow opposite sides of transversal \rightarrow congruent
- 5.) Same-side Interior \rightarrow same side of transversal \rightarrow supplemental

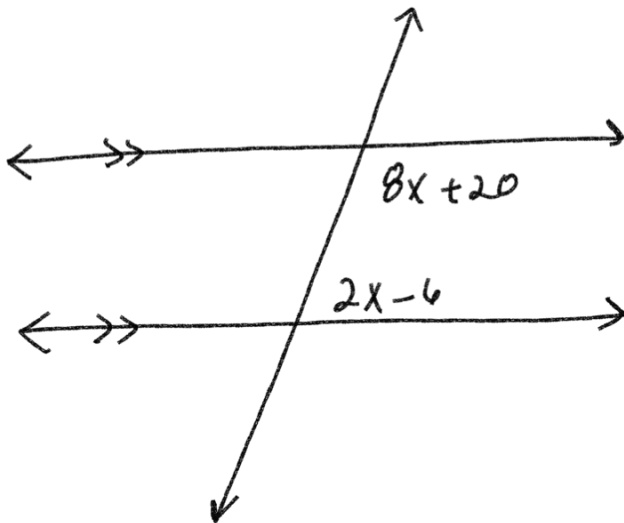


$$6x-18 = 8x-2$$

$$-18 = 2x-2$$

$$\frac{-16}{2} = \frac{2x}{2}$$

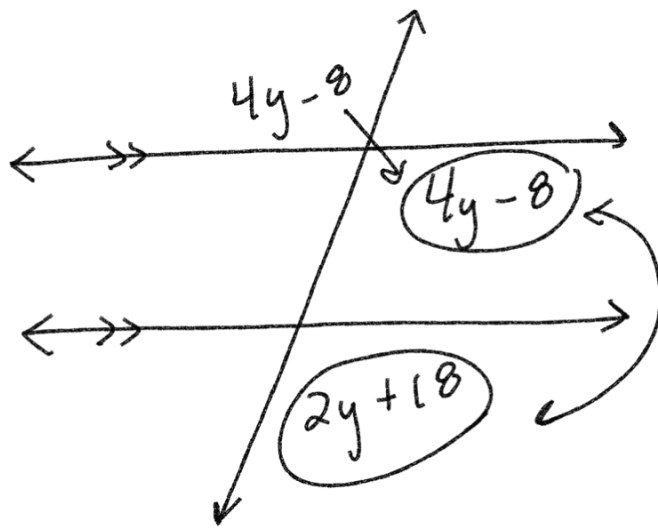
$$\boxed{-8 = x}$$



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

$$10x+14 = 180$$

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



corresponding

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

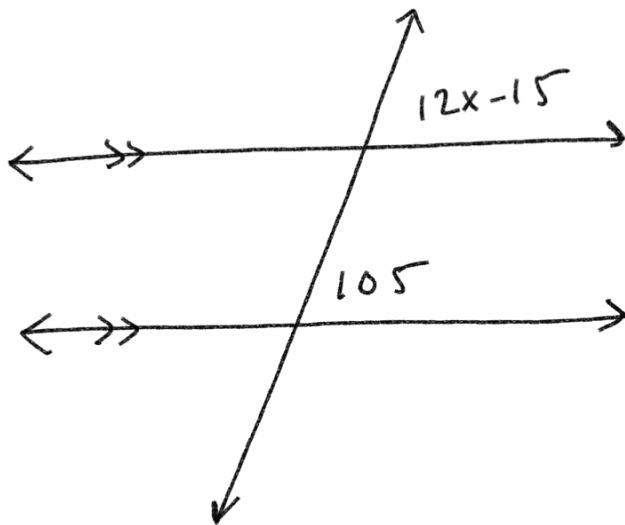
$$\begin{array}{r} -2y \\ -2y \end{array}$$

$$2y - 8 = 18$$

$$\begin{array}{r} +8 \\ +8 \end{array}$$

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

$$\boxed{y = 13}$$



$$12x - 15 = 105$$

$$\begin{array}{r} +15 \\ +15 \end{array}$$

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

$$\boxed{x = 10}$$