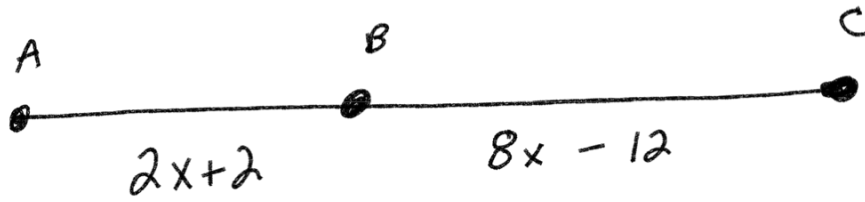


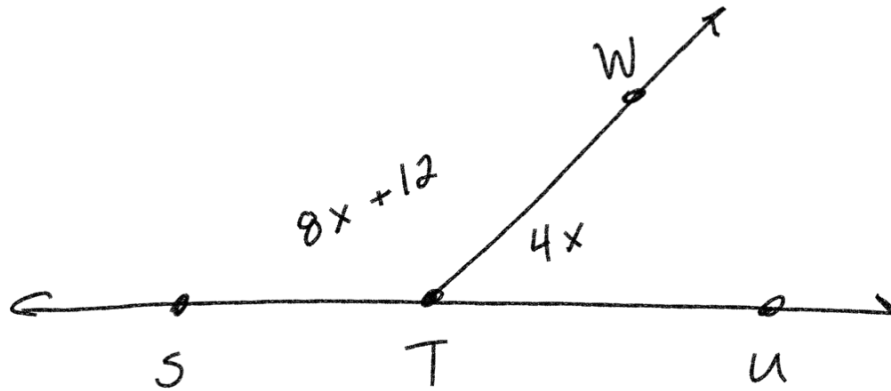
$$\overline{AC} = 80$$



Statement

$$\begin{aligned} \overline{AB} + \overline{BC} &= \overline{AC} \\ 2x+2 + 8x-12 &= 80 \\ 10x-10 &= 80 \\ 10x &= 90 \\ x &= 9 \end{aligned}$$

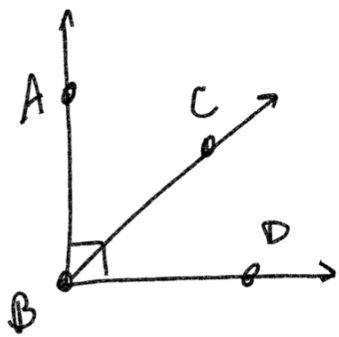
Reason
 Segment Addition Postulate (SAP)
 Substitution
 Simplify
 Addition Prop of Eq
 Div Prop Eq



$$\begin{aligned} \angle STW + \angle WTU &= \angle STU \\ \angle STU &= 180^\circ \\ 8x+12 + 4x &= 180^\circ \\ 12x+12 &= 180^\circ \\ 12x &= 168 \\ x &= 14 \end{aligned}$$

angle addition postulate
 Def of a line
 Substitution
 Simplify
 Subtract Prop Eq
 Div Prop Eq

2.5 Proving Angles Congruent



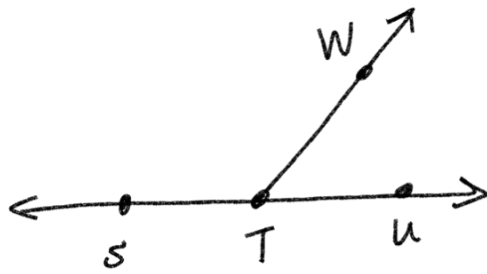
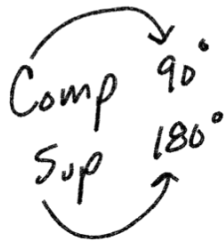
"Perpendicular"

Angles = 90°

Complementary

Def of Complementary Angles

$$\angle ABC + \angle CBD = 90^\circ$$



Angles = 180°

Supplementary

"Linear Pairs"

$$\angle STW + \angle WTU = 180^\circ$$

Def of Supplementary Angles

congruent

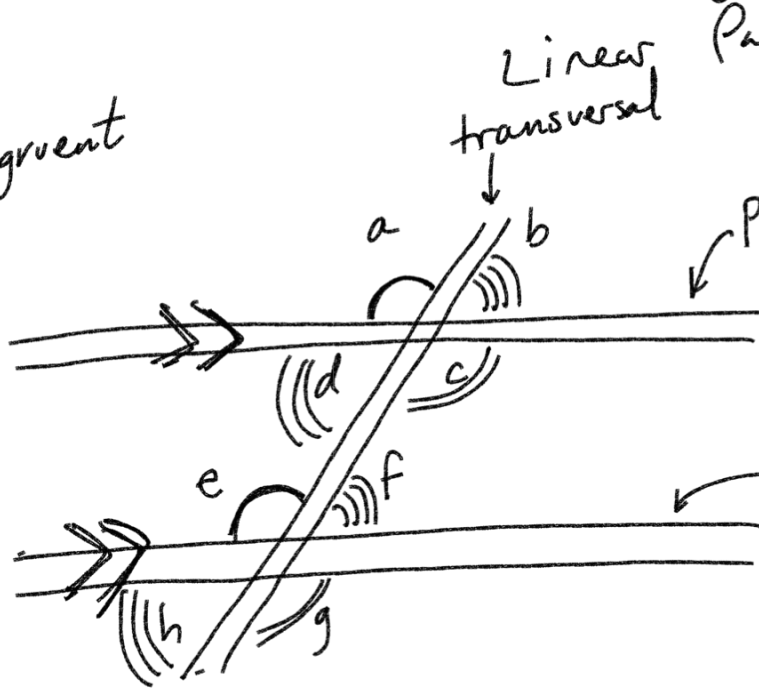
$$\angle a \cong \angle e$$

Corresponding angles

$$\angle c \cong \angle g$$

$$\angle d = \angle h$$

$$\angle b \cong \angle f$$

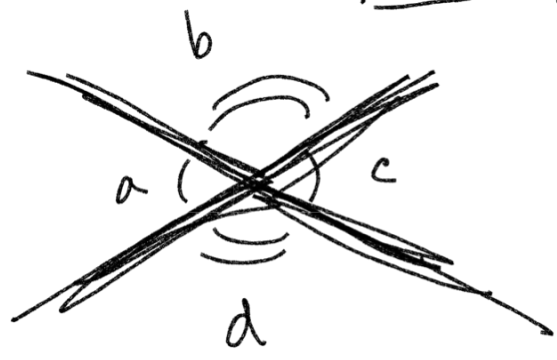


Parallel Roads

parallel

Vertical
Angles

opposite angles are congruent



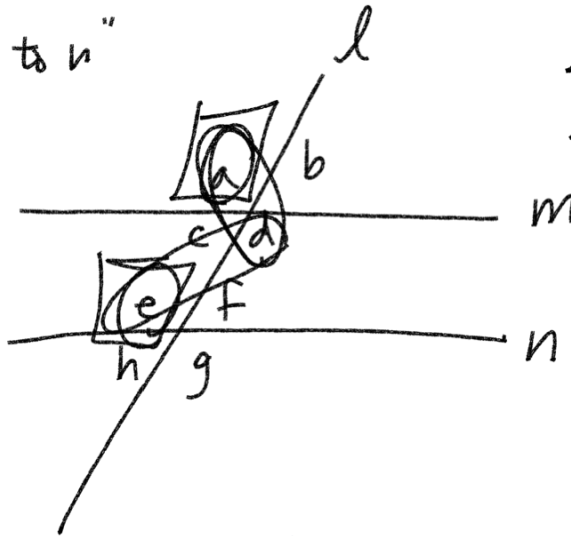
$$\angle a \cong \angle c$$

$$\angle b \cong \angle d$$

"m is parallel to n"

given: $m \parallel n$

Proven $\angle a \cong \angle e$

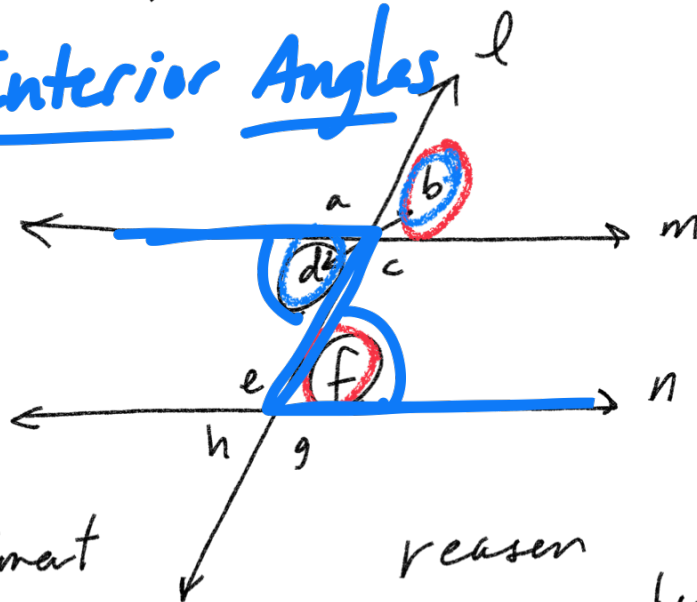


$\angle d \cong \angle a$ vert
 $\angle d \cong \angle e$ Alt.
 Int.
 Angles
 $\angle a \cong \angle e$ transitive
 property

Alternate Interior Angles

Given $m \parallel n$

Prove $\angle d \cong \angle f$



$$\angle d \cong \angle f$$

statement

$$\angle b \cong \angle f$$

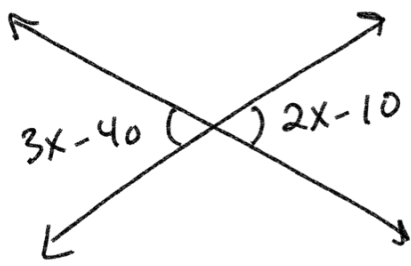
$$\angle d \cong \angle b$$

$$\angle d \cong \angle f$$

reason

corresponding angles
vertical angles

syllogism/transitive
 property

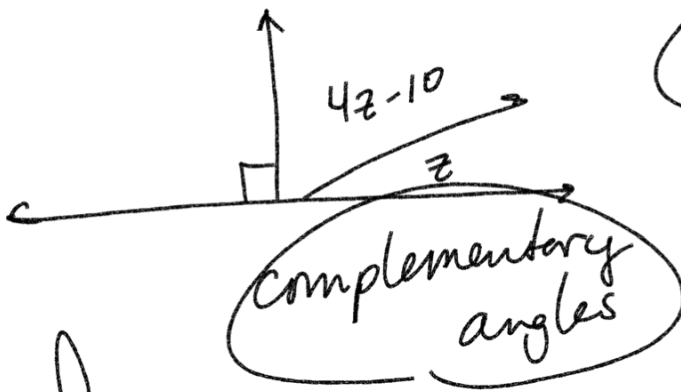


Solve x

VERTICAL ANGLES!

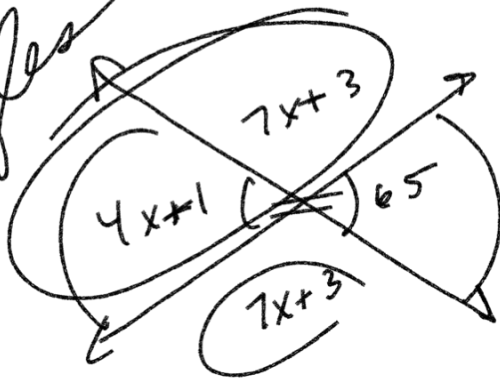
$$\begin{array}{r}
 3x - 40 = 2x - 10 \\
 -2x \quad -2x \\
 \hline
 x - 40 = -10 \\
 +40 \quad +40 \\
 \hline
 \end{array}$$

$$x = 30$$



$$\begin{array}{r}
 4z - 10 + z = 90 \\
 5z - 10 = 90 \\
 +10 \quad +10 \\
 \hline
 5z = \frac{100}{5} \\
 \hline
 z = 20
 \end{array}$$

Vertical Angles



$$\begin{array}{r}
 4x + 1 = 65 \\
 -1 \quad -1 \\
 \hline
 4x = 64 \\
 \frac{4x}{4} = \frac{64}{4} \\
 \hline
 x = 16
 \end{array}$$

Linear pairs

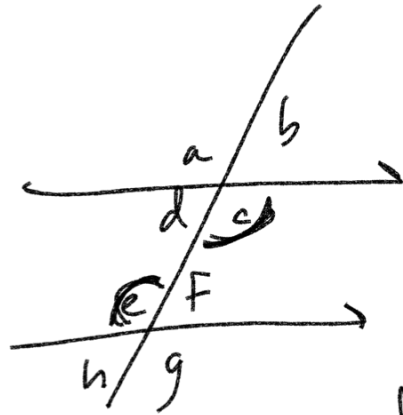
$$4x + 1 + 7x + 3 = 180$$

$$\begin{array}{r}
 11x + 4 = 180 \\
 -4 \quad -4 \\
 \hline
 \end{array}$$

$$\frac{11x}{11} = \frac{176}{11}$$

$$16$$

Same-side interior \angle 's



$\angle d$ & $\angle e$ are supplementary

$$\angle d + \angle e = 180^\circ$$

$$\angle d + \angle c = 180^\circ$$

$$\angle e + \angle f = 180^\circ$$

$$\angle e \cong \angle c$$

Vertical Angles

Quiz 6 due tonight
Quiz 7 due Oct 22nd

2-5 evens
look at supplemental in back of packet
Online HW 8 (Sat)
Quiz 8 (Sat)
due Oct 29th