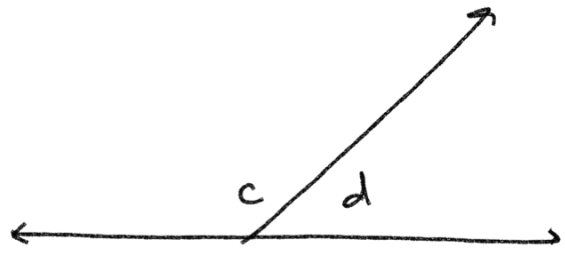


complementary angles

$$\angle a + \angle b = 90^\circ$$



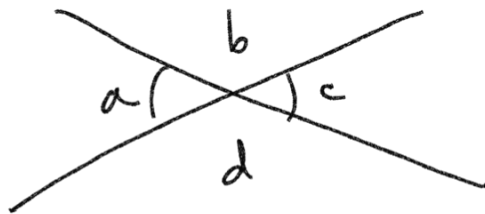
supplemental angles  
linear pair

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

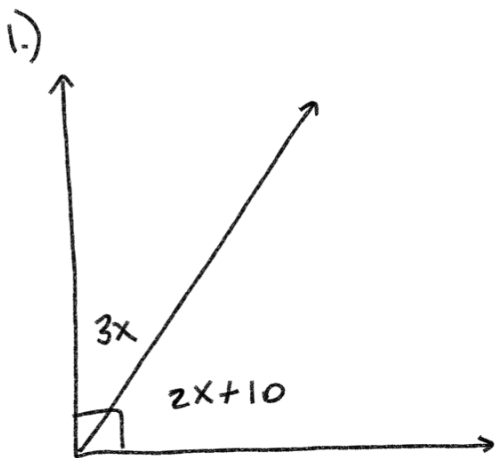
$\angle a \cong \angle b$  linear pair

$\angle a \cong \angle c$  vertical angles  
congruent

$\angle a \cong \angle d$  linear pair



$\angle b \cong \angle d$  vertical angles



$$3x + 2x + 10 = 90$$

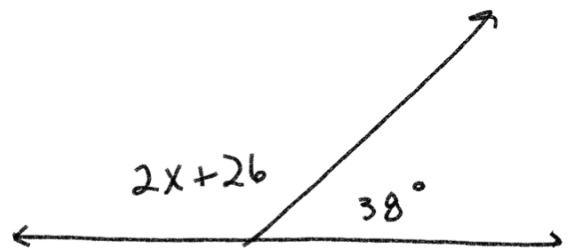
$$5x + 10 = 90$$

$$\begin{array}{r} -10 & -10 \\ 5x & = 80 \end{array}$$

$$\frac{5x}{5} = \frac{80}{5}$$

$$\boxed{x=16}$$

2.)



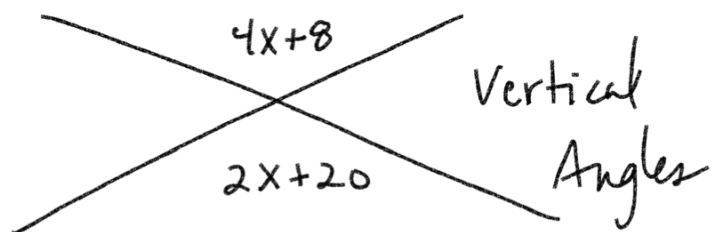
$$2x + 26 + 38 = 180$$

$$\begin{array}{r} 2x + 64 = 180 \\ -64 & -64 \end{array}$$

$$\frac{2x}{2} = \frac{116}{2}$$

$$\boxed{x=58}$$

3.)



$$4x + 8 = 2x + 20$$

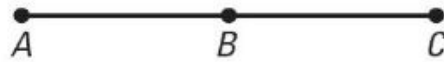
$$\begin{array}{r} -2x & -8 & -2x & -8 \\ 2x & = & 12 \end{array}$$

$$\frac{2x}{2} = \frac{12}{2}$$

$$\boxed{x=6}$$

Geometry Proof Supplemental

- 1.) Given:  $AC = AB + AB$   
 Prove:  $AB = BC$



Statement

$$AB + AB = AC$$

$$AB + BC = AC$$

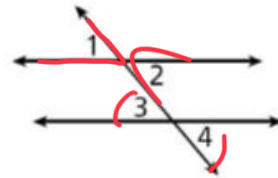
$$AB + BC = AB + AB$$

$$BC = AB$$

Reason

Given (SAP)  
 Segment Addition Postulate  
 Substitution or Syllogism/  
 Transitive Prop.  
 Subtract POE

- 2.) Given:  $\angle 1 \cong \angle 4$   
 Prove:  $\angle 2 \cong \angle 3$



Statement

$$\angle 1 \cong \angle 2$$

$$\angle 3 \cong \angle 4$$

$$\angle 1 \cong \angle 4$$

$$\angle 2 \cong \angle 3$$

Reason

vertical angles  
 vertical angles  
 Given  
 substitute or  
 syllogism/  
 transitive

$$\angle 1 \cong \angle 4$$

$$\angle 1 \cong \angle 2$$

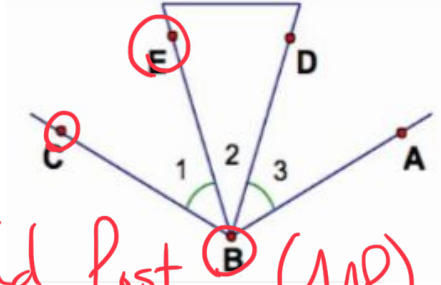
$$\angle 4 \cong \angle 2$$

$$\angle 3 \cong \angle 4$$

$$\angle 3 \cong \angle 2$$

3) Given:  $\angle 1 \cong \angle 3$

Prove:  $m\angle EBA \cong m\angle DBC$



Statement

$\angle 1$     $\angle 2$   
 $\angle CBE + \angle EBD \cong \angle CBD$

$\angle 2$     $\angle 3$   
 $\angle EBD + \angle DBA \cong \angle EBA$

$\angle 1$     $\angle 3$   
 $\angle CBE \cong \angle DBA$

$\angle 2$     $\angle 1$   
 $\angle EBD \cong \angle CBD - \angle CBE$

$\angle 2$     $\angle 3$   
 $\angle EBD \cong \angle EBA - \angle DBA$

$\angle CBD - \angle CBE \cong \angle EBA - \angle DBA$

$\angle CBD - \angle DBA \cong \angle EBA - \angle DBA$

$\angle CBD \cong \angle EBA$

Reason

Angle Add Post (AAP)

Angle Add Post (AAP)

Given

Subtract PoE

Subtract PoE

Substitution/Syllogism

Substitution

Add PoE

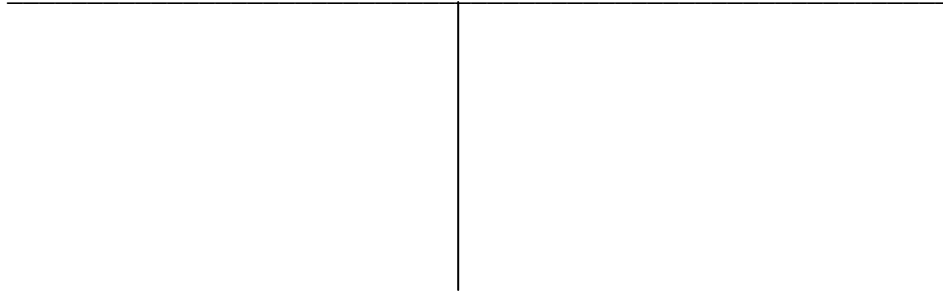
$$\begin{array}{r} \angle 1 + \angle 2 = \angle CBD \\ - \angle 1 \qquad - \angle 1 \\ \hline \angle 2 = \angle CBD - \angle 1 \end{array}$$

$$\angle 2 = \angle EBA - \angle 3$$

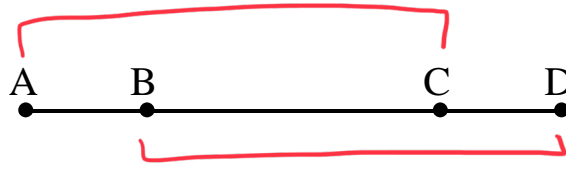
GEOMETRY WORKSHEET---BEGINNING PROOFS

I Given:  $\frac{2x-9}{5} = 1$

Prove:  $x = 7$



II. Given:  $AC = BD$   
 Prove:  $AB = CD$



1.  $AC = BD$

2.  $AC = AB + BC$   
 $BD = BC + CD$

3.  $AB + BC = BC + CD$

4.  $AB = CD$

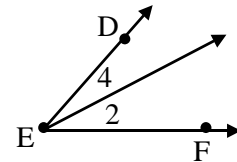
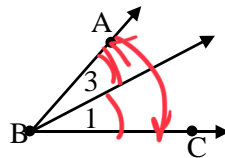
1. Given

2. Segment Add Post.

3. Syllogism / Substitution

4. Subtract POE

III. Given:  $m\angle 1 = m\angle 2$ ;  $m\angle 3 = m\angle 4$   
 Prove:  $m\angle ABC = m\angle DEF$



1.  $m\angle 1 = m\angle 2$ ;  $m\angle 3 = m\angle 4$

2.  $m\angle 1 + m\angle 3 = m\angle 2 + m\angle 4$

3.  $m\angle 1 + m\angle 3 = m\angle ABC$   
 $m\angle 2 + m\angle 4 = m\angle DEF$

4.  $m\angle ABC = m\angle DEF$

1. Given

2. substitution or Add POE

3. Angle Add Postulate

4. Substitution