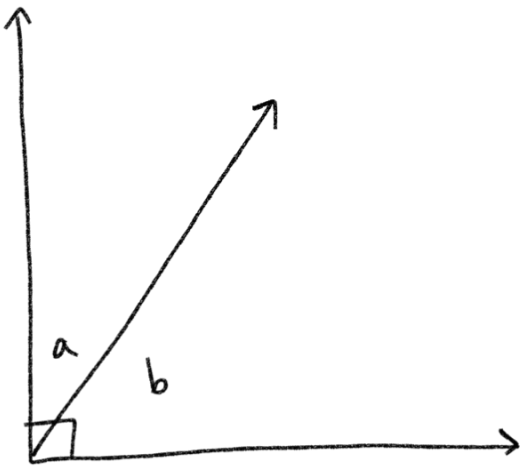
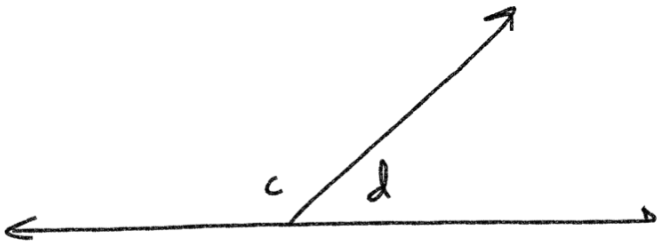
T-G Geometry Week 9 10/31



$\measuredangle a + \measuredangle b = 90°$

$\measuredangle a$ & $\measuredangle b$ are complementary angles



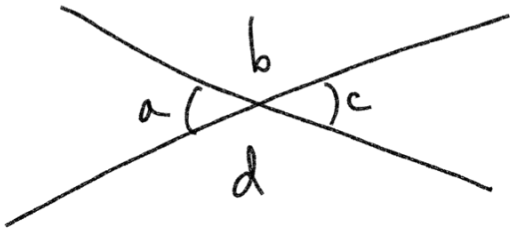
$\measuredangle c + \measuredangle d = 180°$

$\measuredangle c$ & $\measuredangle d$ are supplementary angles

$\measuredangle c$ & $\measuredangle d$ are <u>linear pairs</u>.

a & b linear pairs

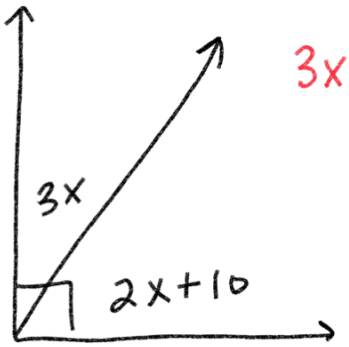
supplementary



a & c vertical angles congruent

b & d vertical angles congruent

1.)



$3x + 2x + 10 = 90$

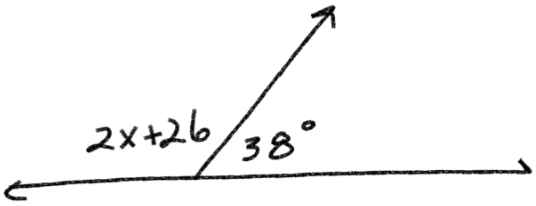
$5x + 10 = 90$

$-10 \quad -10$

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

$\boxed{x = 16}$

2.)



$2x + \underbrace{26 + 38} = 180$

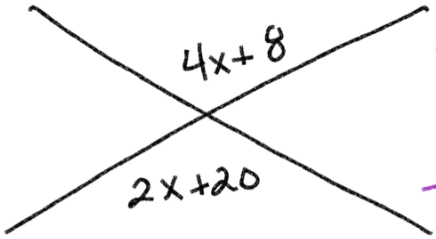
$2x + 64 = 180$

$-64 \quad -64$

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

$\boxed{x = 58}$

3.)



$2x + 20 = 4x + 8$

$-8 \quad -8$

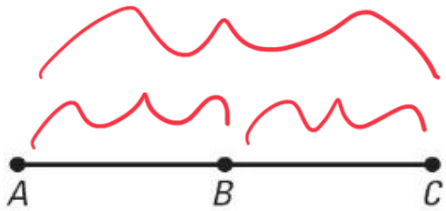
$2x + 12 = 4x$

$-2x \quad -2x$

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

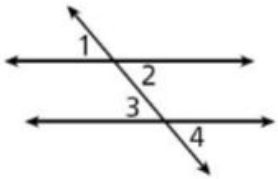
$\boxed{x = 6}$

Geometry Proof Supplemental



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

Statement	Reason
A → B AB + AB = AC	Given
C ← B AB + BC = AC	segment Addition Postulate CSAP
C ← A AB + BC = AB + AB	substitution or syllogism (transitive)
−AB −AB BC = AB	sub POE



2.) Given: ∠1 ≅ ∠4
Prove: ∠2 ≅ ∠3

Statement	Reason
∠1 ≅ ∠2	vertical angles
∠3 ≅ ∠4	vertical angles
∠1 ≅ ∠4	given
∠2 ≅ ∠3	substitution or syllogism (transitive)

hot dog = hamburger

shake = large fries

hamburger = shake

GEOMETRY WORKSHEET---BEGINNING PROOFS

I Given: $\frac{2x-9}{5}=1$ Prove: $x=7$

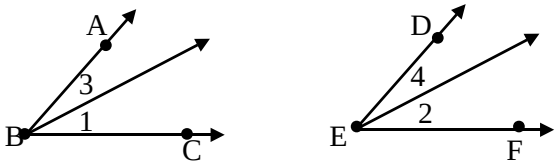
$5\left(\frac{2x-9}{5}\right)=(1)5$	Given
$2x-9=5$	Mult POE
$+9 \quad +9$	Add POE
$\frac{2x}{2}=\frac{14}{2}$	Div POE
$x=7$	

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

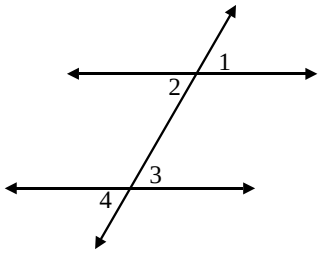
1. AC = BD	1. Given
2. AC = AB + BC BD = BC + CD	2. Segment Add Postulate
3. AB + BC = BC + CD $-BC \quad -BC$	3. Substitution or syllogism
4. AB = CD	4. Sub PoE

$\measuredangle 1 = \measuredangle 2$
$+\measuredangle 3 \quad +\measuredangle 4$

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



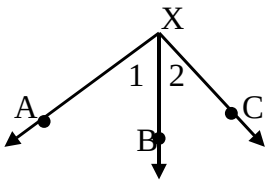
1. $m\angle 1 = m\angle 2$; $m\angle 3 = m\angle 4$	1. Given
2. $m\angle 1 + m\angle 3 = m\angle 2 + m\angle 4$	2. substitution or Add PoE
3. $m\angle 1 + m\angle 3 = m\angle ABC$ $m\angle 2 + m\angle 4 = m\angle DEF$	3. Angle Add Post
4. $m\angle ABC = m\angle DEF$	4. Substitution



IV. Given: $\angle 2 \cong \angle 3$

Prove: $\angle 1 \cong \angle 4$

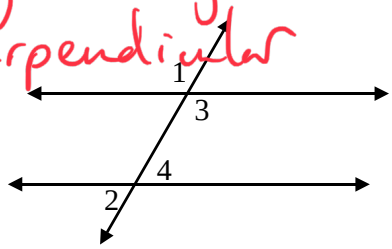
1. $\angle 1 \cong \angle 2$	1.
2. $\angle 2 \cong \angle 3$	2.
3. $\angle 3 \cong \angle 4$	3.
4. $\angle 1 \cong \angle 4$	4.



V. Given: $\angle 1$ and $\angle 2$ are complementary

Prove: $\overrightarrow{XA} \perp \overrightarrow{XC}$ perpendicular

1. $\angle 1$ and $\angle 2$ are complementary	1. Given
2. $m\angle 1 + m\angle 2 =$ 90°	2. Definition of complementary
3. $m\angle AXC = m\angle 1 + m\angle 2$	3. Angle Add Postulate
4. $m\angle AXC =$ 90°	4. Substitution or syllogism
5. $\angle AXC$ is a right angle	5. Def of right angle
6. $\overline{XA} \perp \overline{XC}$	6. Def of perpendicular



VI. Given: $\angle 1$ and $\angle 2$ are supplementary

Prove: $\angle 3$ and $\angle 4$ are supplementary

1.	1. Given
2.	2. Def. of supplementary angles
3.	3. Vertical angles are congruent
4.	4. Def. of congruent angles
5.	5. Substitution
6.	6. Def. of _____