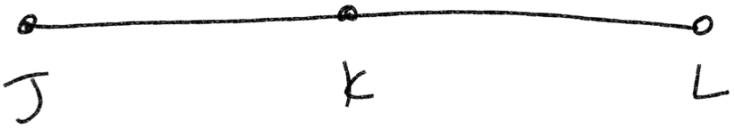
S-G Geometry Session 6 6/27

Given: $4x+3=27$

Prove: $x=6$

Statements	Reasons
$4x+3=27$	Given
$-3 \quad -3$	subtraction PoE
$\frac{4x}{4}=\frac{24}{4}$	Division PoE
$x=6$	



Given:

$\overline{JK}=5x$

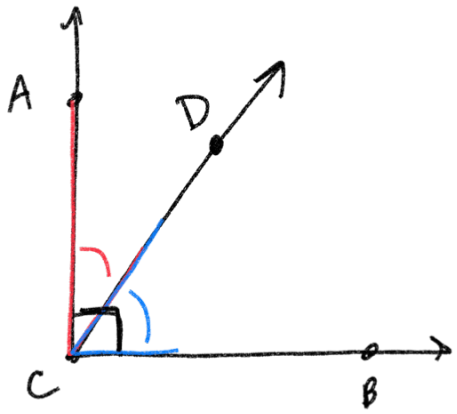
$\overline{JL}=62$

$\overline{KL}=8x-3$

Prove:

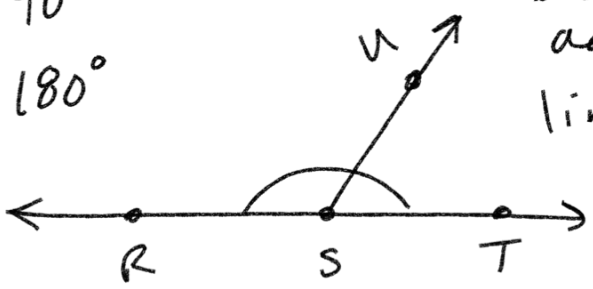
$x=5$

Statement	Reason
$\overline{JK}=5x$	Given
$\overline{JL}=62$	
$\overline{KL}=8x-3$	
$\overline{JK}+\overline{KL}=\overline{JL}$	Segment Addition Postulate (SAP)
$\downarrow \quad \downarrow \quad \downarrow$	
$5x+8x-3=62$	Substitution
$13x-3=62$	Simplify
$+3 \quad +3$	
$\frac{13x}{13}=\frac{65}{13}$	Add PoE
$x=5$	Division PoE



C → 90°

S → 180°



Because adjacent, linear pair.

$\boxed{\measuredangle ACB = 90^\circ}$

Right Angle Perpendicular

$\measuredangle ACD + \measuredangle DCB = 90^\circ$

Angle Addition Postulate

$\measuredangle ACD$ & $\measuredangle DCB$ are complementary angles

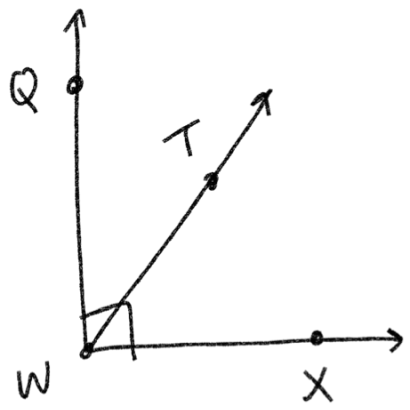
$\measuredangle RST = 180^\circ$

straight line

$\measuredangle RSU + \measuredangle UST = 180^\circ$

Angle Addition Postulate

$\measuredangle RSU$ & $\measuredangle UST$ are supplemental angles



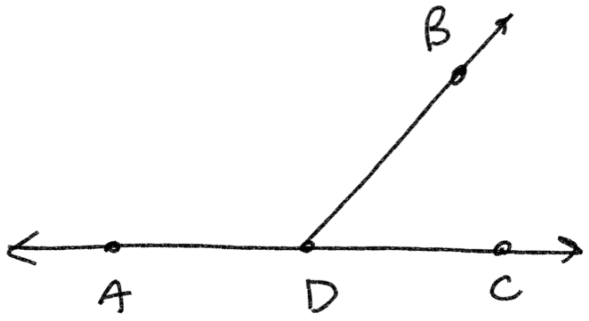
Given $\measuredangle QWT = 2x$

$\measuredangle TWX = x + 6$

QWX is right angle

Prove: $x = 28$

Statements	Reasons
$\measuredangle QWT = 2x$	Given
$\measuredangle TWX = x + 6$	Given
QWX is right angle	Definition of Right Angle
$\measuredangle QWX = 90°$	Angle Addition Postulate (AAP)
$\measuredangle QWT + \measuredangle TWX = \measuredangle QWX$	substitution
$2x + x + 6 = 90°$	simplify
$3x + 6 = 90$	Subtract PoE
$-6 \quad -6$	
$\frac{3x}{3} = \frac{84}{3}$	Division PoE
$x = 28$	

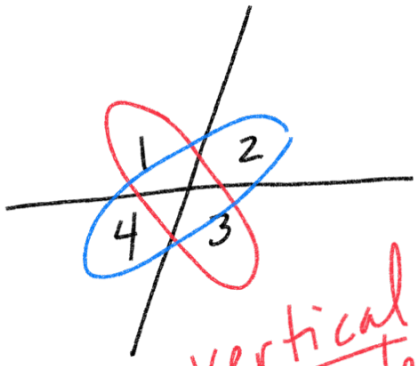


Given: $\measuredangle ADB = 3x+6$

$\measuredangle BDC = 2x+4$

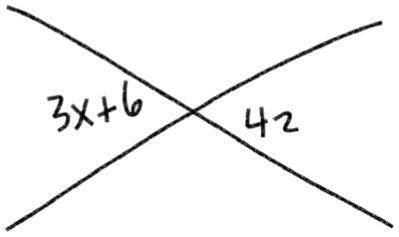
Prove: $x = 34$

Statements	Reasons
$\measuredangle ADB = 3x+6$, $\measuredangle BDC = 2x+4$	Given
$\measuredangle ADC = 180°$	Definition of a line
$\measuredangle ADB + \measuredangle BDC = 180°$	Definition of supplemental angles.
or	
$\measuredangle ADB + \measuredangle BDC = \measuredangle ADC$	Angle Add Postulate
$3x+6+2x+4 = 180°$	substitution
$5x+10 = 180°$	simplify
$-10 \quad -10$	subtract PoE
$\frac{5x}{5} = \frac{170}{5}$	Divide PoE
$x = 34$	



vertical angles

Statement	Reasm
$\measuredangle 1 + \measuredangle 2 = 180°$	supplemental or linear pair
$\measuredangle 2 + \measuredangle 3 = 180°$	linear pairs
$\measuredangle 1 + \measuredangle 2 = \measuredangle 2 + \measuredangle 3$	substitution or syllogism/transitive property
$-\measuredangle 2 \quad -\measuredangle 2$	
$\measuredangle 1 = \measuredangle 3$	Subtract PoE
$\measuredangle 1 \cong \measuredangle 3$	Definition of congruency

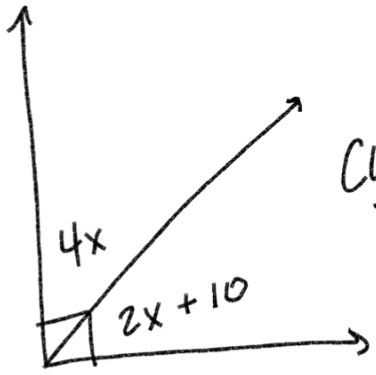


Prove: $x = 12$

statement	Reasms
$3x+6 = 42$	Vertical Angles
$-6 \quad -6$	
$3x = 36$	Subtract P.E
$\frac{3}{3} \quad \frac{}{3}$	
$x = 12$	Division P.E

Complementary
Supplementary/Linear Pair
Vertical Angles
SAP/AAP

1.)



Complementary

Not drawn to scale.

$4x + 2x + 10 = 90$

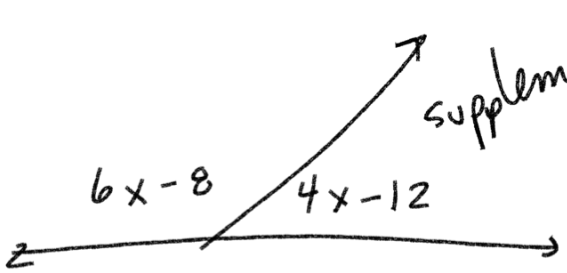
$6x + 10 = 90$

$-10 \quad -10$

$\frac{6x}{6} = \frac{80}{6}$

$\boxed{x = 13.\overline{3}}$

2.)



supplementary

$6x - 8 + 4x - 12 = 180$

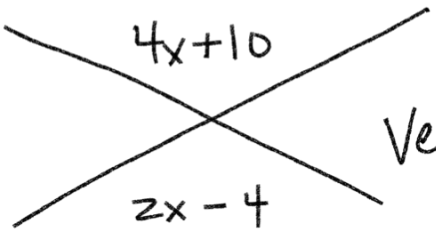
$10x - 20 = 180$

$+20 \quad +20$

$\frac{10x}{10} = \frac{200}{10}$

$\boxed{x = 20}$

3.)



Vertical Angles

$4x + 10 = 2x - 4$

$-2x \quad -2x$

$2x + 10 = 4$

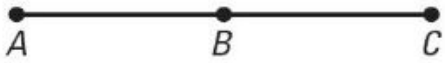
$-10 \quad -10$

$\frac{2x}{2} = \frac{-14}{2}$

$\boxed{x = -7}$

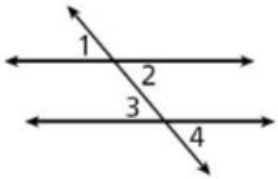
Geometry Proof Supplemental

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



Statement	Reason
AB + AB = AC	Given
AB + BC = AC	Angle Addition Post
AB + BC = AB + AB	substitution or Syllogism/ Transitive Property
-AB -AB	subtract P of E
BC = AB	

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



Statement	Reason
$\angle 1 \cong \angle 2$	vertical angles
$\angle 3 \cong \angle 4$	vertical angles
$\angle 1 \cong \angle 4$	given
$\angle 2 \cong \angle 3$	substitute