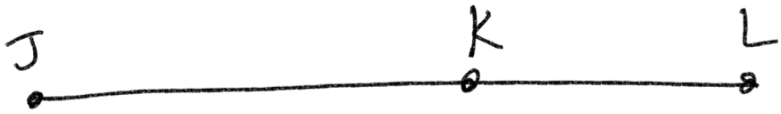
M-G Geometry Week 8 10/31

Given: $4x+3=27$

Prove: $x=6$

Statement	Reason
$4x+3=27$	Given
$\quad -3 \quad -3$	Subtract Property of Equality
$\frac{4x}{4}=\frac{24}{4}$	Division PoE
$x=6$	



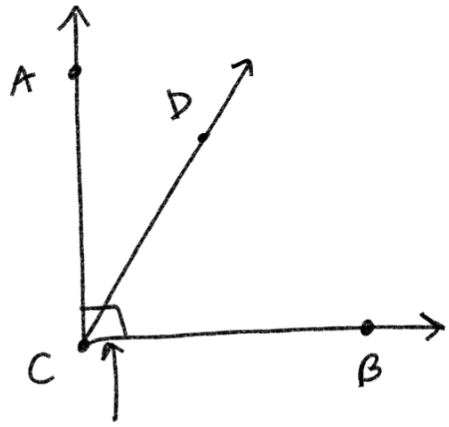
Given: $\overline{JK}=5x$

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

$\overline{JL}=62$

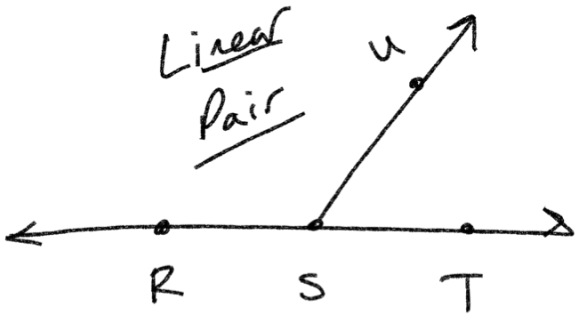
Prove: $x=5$

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



C → 90°

S → 180°



Right Angle

Perpendicular

$\measuredangle ACB = 90°$

Straight Line

$\measuredangle RST = 180°$

$\measuredangle RSU + \measuredangle UST = 180°$

Angle Addition Postulate

$\measuredangle ACD + \measuredangle DCB = 90°$

Angle Addition Postulate

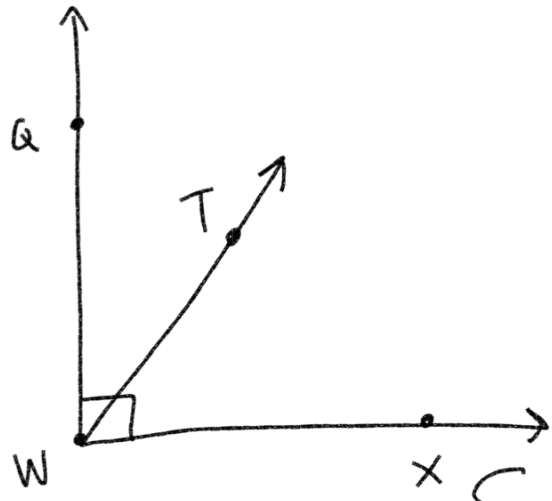
$\measuredangle ACD$ & $\measuredangle DCB$ are complementary angles

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

Given: $\measuredangle QWT = 2x$

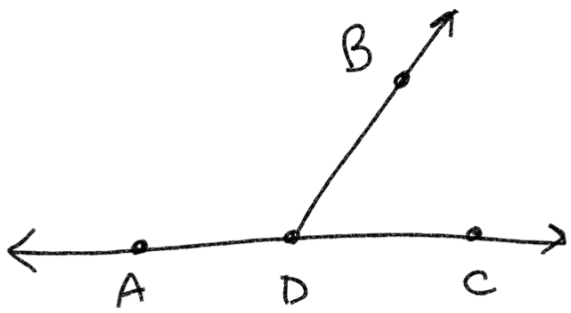
$\measuredangle TWX = x + 6$

Prove: $x = 28$



Statement	Reason
$\measuredangle QWT = 2x$	Given
$\measuredangle TWX = x + 6$	
$\measuredangle QWX = 90°$	Definition of Right Angles
$\measuredangle QWT + \measuredangle TWX = \measuredangle QWX$	Angle Addition Postulate
$2x + x + 6 = 90°$	substitution
$3x + 6 = 90°$	simplify
$-6 \quad -6$	subtract PoE
$3x = 84$	
$x = 28$	Division PoE

Alt Reason Complementary Angles

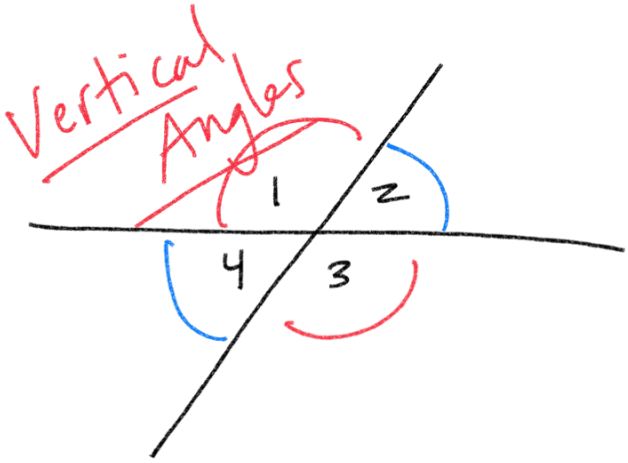


Given: $\measuredangle ADB = 3x+6$

$\measuredangle BDC = 2x+4$

Prove: $x = 34$

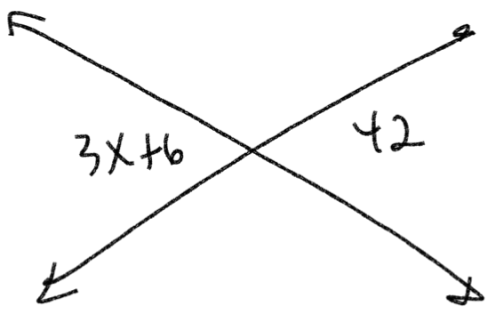
Statement	Reason
$\measuredangle ADB = 3x+6$	Given
$\measuredangle BDC = 2x+4$	
$\measuredangle ADB + \measuredangle BDC = \measuredangle ADC$	Angle Addition Post
$\measuredangle ADC = 180°$ Def of Line	
$\measuredangle ADB + \measuredangle BDC = 180°$	or Linear Pair or Supplemental Angles
$3x+6 + 2x+4 = 180°$	Substitution
$5x + 10 = 180°$	Simplify
$-10 \quad -10$	Subtract PoE
$\frac{5x}{5} = \frac{120}{5}$	Div PoE
$x = 34$	



Prove: $\angle 1 \cong \angle 3$

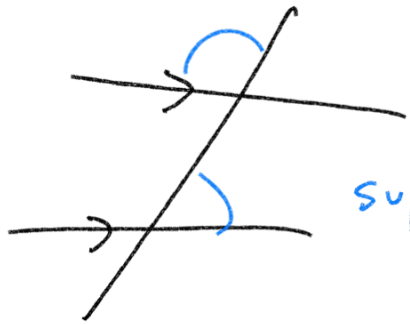
$\cong$ congruent
same as equal

Statement	Reason
$\angle 1 + \angle 2 = \boxed{180^\circ}$	Linear Pair
$\angle 2 + \angle 3 = \boxed{180^\circ}$	Linear Pair
$\angle 1 + \angle 2 = \angle 2 + \angle 3$	Syllogism/ Transitive Property or Substitution
$-\angle 2 \quad -\angle 2$	
$\angle 1 = \angle 3$	subtract PoE
$\angle 1 \cong \angle 3$	Definition of Congruency



Prove: $x = 12$

Statement	Reason
$3x+6 = 42$	Vertical Angles
$-6 \quad -6$	
$\frac{3x}{3} = \frac{36}{3}$	Sub PoE
$x = 12$	Div PoE



supplemental angles
not
linear pairs