Statement: If two angles are right angles then they are congruent.

GIVEN: $\angle 1$ IS A RT $\angle$
$\angle 2$ IS A RT $\angle$

PROVE: $\angle 1 \cong \angle 2$

STATEMENTS	REASONS (Given, Def, Post, Thm)
1. $\angle 1$ IS A RT $\angle$.	1. Given
2. $m\angle 1 = 90^\circ$ ($a = b$)	2. IF RT $\angle$ THEN $m = 90$ (1)
3. $\angle 2$ IS A RT $\angle$	3. Given
4. $m\angle 2 = 90$ ($c = b$)	4. RT $\angle \rightarrow m = 90$ (3)
5. $m\angle 1 = m\angle 2$	5. IF $a=b$ & $b=c$ THEN $a=c$ (2,4)
6. $\angle 1 \cong \angle 2$	6. IF $=$ m THEN $\cong$ (

THEOREM

Statement: If two angles form a linear pair then the angles are supplementary.

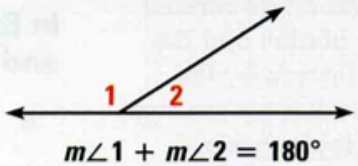
Given: 1. $\angle 1$ LINEAR PAIR $\angle 2$ **Prove:** $\angle 1$ SUPPL $\angle 2$

1. $\angle 1$ LIN PR	1. GIVEN
2. $m\angle 1 + m\angle 2 = 180$	2. IF LINEAR PAIR THEN SUM = 180 ( )
3. $\angle 1$ SUPPL $\angle 2$	3. SUM = 180 → SUPPL ( )

POSTULATE

POSTULATE 12 ***Linear Pair Postulate***

If two angles form a linear pair, then they are supplementary.



$m\angle 1 + m\angle 2 = 180°$

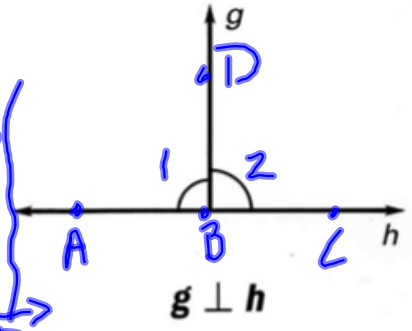
THEOREM 3.1

If two lines intersect to form a linear pair of congruent angles, then the lines are

a) ⊥ _____.

b) ∠S ARE 90

c) ∠S ARE RT ∠S



GIVEN: 1. $\angle 1 \cong \angle 2$

2. $\angle 1 \& \angle 2$ LIN PR

PROVE: $\overleftrightarrow{AC} \perp \overleftrightarrow{BD}$

1. $\angle 1 \cong \angle 2$	1. GIVEN
2. $m\angle 1 = m\angle 2$	2. $\cong \rightarrow =$ m ∠ (1)
3. $\angle 1 \& \angle 2$ LINEAR PR	3. GIVEN
4. $\angle 1$ SUPPL $\angle 2$	4. LIN PR → 2 ∠s SUPPL (3)
5. $m\angle 1 + m\angle 2 = 180$	5. SUPPL → SUM ∠s = 180 (4)
6. $m\angle 1 + m\angle 1 = 180$	6. SUBSTITUTION (2 → 5)
7. $2(m\angle 1) = 180$	7. SIMPLIFY (6)
8. $m\angle 1 = 90$ ✓	8. ÷ PROP = (7, 2 in)
9. $\angle 1$ IS A RT ∠ ✓	9. $m\angle = 90 \rightarrow$ RT ∠ (8)
10. $\overleftrightarrow{AC} \perp \overleftrightarrow{BD}$ ✓	10. LINES ⊥ AT RT ∠ → ⊥ (9)
11. $\angle 2$ IS A RT ∠	11. SUBSTITUTION (1 → 9)

$m\angle 1 = 90$

$m\angle 1 = m\angle 2$

$m\angle 2 = 90$ (SUBSTITUTION)

$\angle 1$ IS A RT ∠

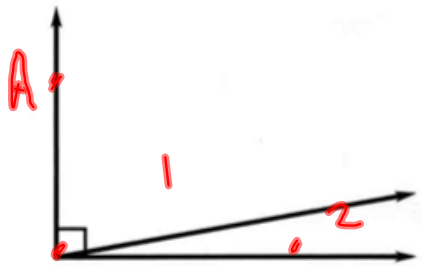
$\angle 1 \cong \angle 2$

$\angle 2$ IS A RT ∠

3.2 PROOF #2

THEOREM 3.2

If two sides of two adjacent acute angles are perpendicular, then the angles are COMPLEMENTARY.



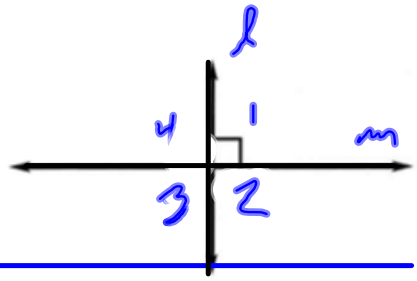
GIVEN: $\overleftrightarrow{AB} \perp \overleftrightarrow{BC}$ PROVE: $\angle 1$ COMPL $\angle 2$

1. $m\angle 1 + m\angle 2 = m\angle ABC$	1. $\angle$ + POST (D)
2. $\overleftrightarrow{AB} \perp \overleftrightarrow{BC}$	2. GIVEN
3. $m\angle ABC = 90$	3. $\perp \rightarrow$ LINES $\cap$ AT 90° $\angle$ (2)
4. $m\angle 1 + m\angle 2 = 90$	4. SUBSTITUTION (3 → 1)
5. $\angle 1$ COMPL $\angle 2$	5. SUM OF $\angle$S = 90 → COMPL (4)

3.2 Proof #3

THEOREM 3.3

If two lines are perpendicular, then they intersect to form Four Rt $\angle$s. (Four 90° $\angle$s)



1. $l \perp m$	1. Given
2. $m\angle 1 = 90$	2. $\perp \rightarrow \cong$ at 90° $\angle$s (1)
3. $m\angle 1 = m\angle 3$	3. Vert $\angle$s = m (D)
4. $m\angle 3 = 90$	4. Transitive = (2, 3)
5. $m\angle 4 + m\angle 1 = 180$	5. $\angle$ + Post (D)
6. $m\angle 4 + 90 = 180$	6. Substitution (2 → 5)
7. $m\angle 4 = 90$	7. — Prop = (6, m 90)