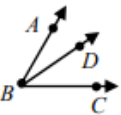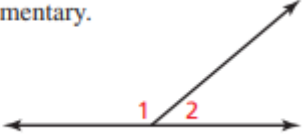# Angle Proofs Reference

Properties of Equality		Properties of Congruence
Addition Property Subtraction Property Multiplication Property Division Property Distributive Property	Substitution Property Reflexive Property Symmetric Property Transitive Property	Reflexive Property Symmetric Property Transitive Property

Definitions	
Definition of Congruence	$m\angle A = m\angle B \leftrightarrow \angle A \cong \angle B$
Definition of Angle Bisector	An angle bisector divides an angle into two equal parts.
Definition of Complementary Angles	Complementary $\leftrightarrow$ Sum is 90°.
Definition of Supplementary Angles	Supplementary $\leftrightarrow$ Sum is 180°.
Definition of Perpendicular	Perpendicular lines form right angles.
Definition of a Right Angle	A right angle = 90°.

2.5

Postulates		
Angle Addition Postulate		$m\angle ABD + m\angle DBC = m\angle ABC$

Linear Pair Postulate	If two angles form a linear pair, then they are supplementary. $\angle 1$ and $\angle 2$ form a linear pair, so $\angle 1$ and $\angle 2$ are supplementary and $m\angle 1 + m\angle 2 = 180°$.	

Theorems	
Vertical Angles Theorem	If two angles are vertical, then they are congruent.
Complement Theorem	If two angles form a right angle, then they are complementary. **Right Angle → Complementary**
Right Angles Congruence Theorem	All right angles are congruent.
Congruent Supplements Theorem	If two angles are supplementary to the same angle (or to congruent angles), then they are congruent.
Congruent Complements Theorem	If two angles are complementary to the same angle (or to congruent angles), then they are congruent.

Practice!

Justify each of the following statements using a definition, theorem or postulate.

1. If $\angle A$ is a right angle, then $m\angle A = 90°$ _____

2. If $\angle X$ is supplementary to $\angle Y$ and $\angle X$
is supplementary to $\angle Z$, then $\angle Y \cong \angle Z$. _____

3. If then, $\angle 1 \cong \angle 2$ _____

4. If $m\angle P + m\angle Q = 90°$,
then $\angle P$ and $\angle Q$ are complementary. _____

5. If $\angle M$ and $\angle N$ form a right angle, then
then $\angle M$ and $\angle N$ are complementary. _____

6. Given: If $l \perp m$, then
$\angle 1$ is a right angle. _____

7. If $\angle W$ and $\angle X$ are supplementary,
then $m\angle W + m\angle X = 180°$. _____

8. If $\angle L$ is complementary to $\angle M$ and $\angle N$
is complementary to $\angle M$, then $\angle L \cong \angle N$. _____

9. If $\angle A$ and $\angle B$ form a linear pair, then
then $\angle A$ and $\angle B$ are supplementary. _____

10. If $\angle N$ and $\angle P$ are complementary, then
$m\angle N + m\angle P = 90°$. _____

11. Given:

$m\angle JKM + m\angle MKL = m\angle JKL$ _____

12. If $m\angle R = m\angle S$, then $\angle R \cong \angle S$ _____