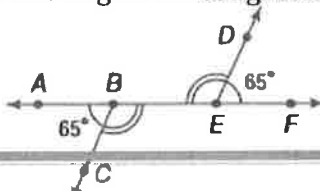
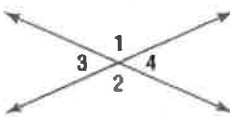
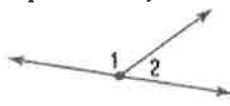
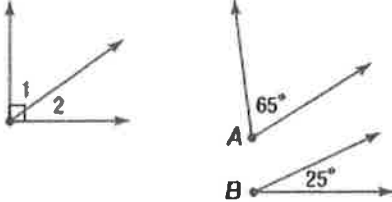
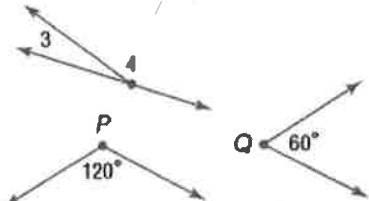
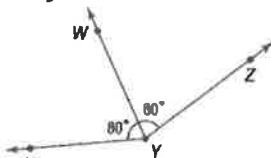
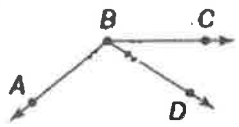
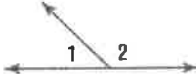
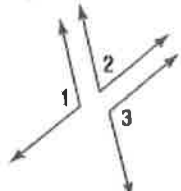
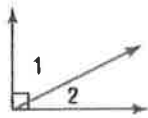
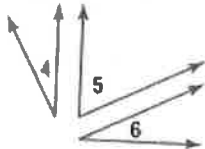
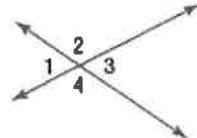
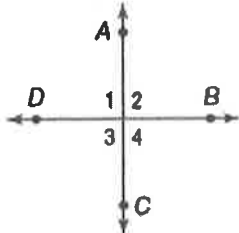
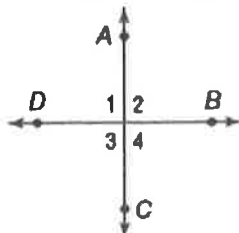


# UNIT 1 NOTES: PROVING ANGLE RELATIONSHIPS

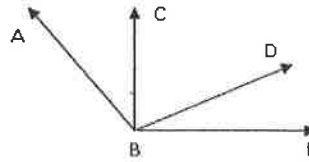
Theorem/Postulate	Definition & Example
<b>Definition of Congruent Angles</b>	<p>If two angles are congruent, then their measures are equal.</p> <p style="text-align: right;"><math>\text{If } \angle ABC \cong \angle DEF</math> Then <math>m\angle ABC = m\angle DEF</math></p> 
<b>Definition of Vertical Angles</b>	<p>Two non-adjacent angles formed by two intersecting lines.</p> <p style="text-align: right;"><math>\angle 1</math> and <math>\angle 2</math> are vertical angles <math>\angle 3</math> and <math>\angle 4</math></p> 
<b>Definition of Linear Pair</b>	<p>A pair of adjacent angles with non-common sides that are opposite rays.</p> <p style="text-align: right;"><math>\angle 1</math> and <math>\angle 2</math> form a linear pair</p> 
<b>Definition of Complementary Angles</b>	<p>Two angles with measures that have a sum of 90.</p> <p style="text-align: right;"><math>m\angle 1 + m\angle 2 = 90</math> <math>m\angle A + m\angle B = 90</math></p> 
<b>Definition of Supplementary Angles</b>	<p>Two angles with measures that have a sum of 180.</p> <p style="text-align: right;"><math>m\angle 3 + m\angle 4 = 180</math> <math>m\angle P + m\angle Q = 180</math></p> 
<b>Definition of Angle Bisector</b>	<p>A ray that divides an angle into two congruent angles.</p> <p style="text-align: right;"><math>\angle XYW \cong \angle WYZ</math></p> 
<b>Angle Addition Postulate</b>	<p style="text-align: center;"><math>m\angle ABC = m\angle ABD + m\angle CBD</math></p> <p style="text-align: center;"> <math>\uparrow</math> total      <math>\uparrow</math> small <math>\angle</math>      <math>\uparrow</math> small <math>\angle</math> </p> 

# UNIT 1 NOTES: PROVING ANGLE RELATIONSHIPS

<p><b>Supplement Theorem</b></p>	<p>If two angles form a linear pair, then they are supplementary angles.</p> 
<p><b>Congruent Supplement Theorem</b></p>	<p>Angles supplementary to the same angle are congruent.</p>  <p>If <math>m\angle 1 + m\angle 2 = 180^\circ</math>          And <math>m\angle 2 + m\angle 3 = 180^\circ</math>          Then <math>\angle 1 \cong \angle 3</math></p>
<p><b>Complement Theorem</b></p>	<p>If two adjacent angles form a right angle, then the angles are complementary angles.</p> 
<p><b>Congruent Complement Theorem</b></p>	<p>Angles complementary to the same angle are congruent.</p>  <p>If <math>m\angle 4 + m\angle 5 = 90</math> And <math>m\angle 5 + m\angle 6 = 90</math>, Then <math>\angle 4 \cong \angle 6</math></p>
<p><b>Vertical Angles Theorem</b></p>	<p>If two angles are vertical angles, then they are congruent.</p>  <p><math>\angle 1 \cong \angle 3</math>  <math>\angle 2 \cong \angle 4</math></p>
<p><b>Definition of Perpendicular Lines</b></p>	<p>Lines that intersect to form four right angles.</p>  <p>If <math>\vec{AB} \perp \vec{CB}</math> then <math>\angle 1, \angle 2, \angle 3,</math> and <math>\angle 4</math> are right angles</p>
<p><b>Definition of Right Angle</b></p>	<p>If an angle is a right angle, then the measure of the angle is 90.</p>  <p>If <math>\angle 2</math> is a right angle, Then <math>m\angle 2 = 90</math>.</p>

# UNIT 1 NOTES: PROVING ANGLE RELATIONSHIPS

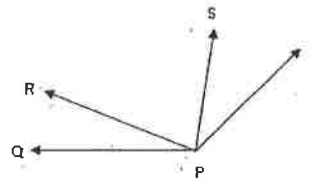
**Given:**  $\angle ABC$  and  $\angle CBD$  are complementary  
 $\angle DBE$  and  $\angle CBD$  form a right angle



**Prove:**  $\angle ABC \cong \angle DBE$

Statements	Reasons
1. $\angle ABC$ and $\angle CBD$ are complementary $\angle DBE$ and $\angle CBD$ form a right angle	1. Given
2. $\angle DBE$ and $\angle CBD$ are complementary	2. Complement Theorem
3. $\angle ABC \cong \angle DBE$ <i>Angles comp to same angle are cong.</i>	3. Congruent Complement Thm.

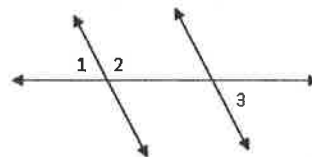
**Given:**  $\angle QPS \cong \angle TPR$



**Prove:**  $\angle QPR \cong \angle TPS$

Statements	Reasons
1. $\angle QPS \cong \angle TPR$	1. Given
2. $m\angle QPS = m\angle TPR$	2. Def. of Cong. Angles
3. $m\angle QPS = m\angle QPR + m\angle RPS$ $m\angle TPR = m\angle TPS + m\angle RPS$	3. Angle Addition Postulate
4. $m\angle QPR + m\angle RPS = m\angle TPS + m\angle RPS$ <i>- m∠RPS                      - m∠RPS</i>	4. Substitution
5. $m\angle QPR = m\angle TPS$	5. Subtraction
6. $\angle QPR \cong \angle TPS$	6. Def. of Cong. Angles

**Given:**  $\angle 1$  and  $\angle 2$  form a linear pair  
 $\angle 2$  and  $\angle 3$  are supplementary



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

Statements	Reasons
1. $\angle 1$ and $\angle 2$ form a linear pair $\angle 2$ and $\angle 3$ are supplementary	1. Given
2. $\angle 1$ and $\angle 2$ are supplementary.	2. Supplement Thm
3. $\angle 1 \cong \angle 3$	3. Cong. Supplement Thm

