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Definitions:

A plane is a two dimensional geometric object. It has infinite length and infinite width but no thickness.

Parallel lines are lines that lie in the same plane but do not intersect. (Symbol ||)

Perpendicular lines are two lines that meet to form congruent adjacent angles. (Symbol \perp)

3. $m \angle AEC \equiv m \angle CEB$ 3. $measures are \underline{are}$ 4. $\angle AEB$ is a straight angle4. $\leq traight angles$ measure 1805. $m \angle AEC + m \angle CEB = \angle AEB$ 5. $Angle addition postulate$ 6. $m \angle AEC + m \angle CEB = 180^{\circ}$ 6. $\leq ubs titution$ 7. $m \angle AEC + m \angle AEC = 180^{\circ}$ or $2(m \angle AEC) = 180^{\circ}$ 7. $\leq ubs titution$ 8. $m \angle AEC = 90^{\circ}$ 8. $Division$	Theorem1.6.1: If two lines are perpendicular	, then they meet to form <u>right angles</u> .
Prove: $\angle AEC$ is a right angleReasonsStatementsReasons1. $\overline{AB} \perp \overline{CD}$ intersecting at E.1. Give n2. $\angle AEC \cong \angle CEB$ 2. Peopen di culler times meet to form \cong angles3. $m\angle AEC \cong m\angle CEB$ 3. mcasures are \cong 4. $\angle AEB$ is a straight angle4. \leq traigut angles measure (for \leq m $\angle AEC + m\angle CEB = \angle AEB$ 5. $m\angle AEC + m\angle CEB = 180^{\circ}$ 6. \leq ubs titution7. $m\angle AEC + m\angle AEC = 180^{\circ}$ 7. \leq ubs titution8. $m\angle AEC = 90^{\circ}$ 8. $Division$	Given: $\overrightarrow{AB} \perp \overrightarrow{CD}$ intersecting at E.	
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	$2(m \angle AEC) = 180^{\circ}$	7. substitution
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r ZALA IS a right alight	9. ∠AEC is a right angle	9. Defog ngut angle

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Table 1.8		
Relation	Object Related	Example
Is equal to	numbers	2 + 3 = 5
Is greater than	numbers	7 > 5
Is perpendicular to	lines	$n\perp m$
Is complementary to	angles	$\angle 1$ is comp to $\angle 2$
Is congruent to	line segments	$\overline{AB} \equiv \overline{CD}$
Is a brother	people	Mike is brother of Tom

Properties:

Relate

Reflexive property: aRa $(5 = 5, \text{ equality of numbers has a reflexive property).$

Symmetric property: If aRb, then bRa. (If $n \perp m$, then $m \perp n$, perpendicular lines have the symmetric property). $\langle 2 \langle 3 \rangle$ Frue $3 \langle 2 \rangle$ fake $\langle 1 \rangle$ symmetric **Transitive property:** If aRb and bRc, then aRc, (If $m \angle 1 \equiv m \angle 2$ and $m \angle 2 \equiv m \angle 3$, then $m \angle 1 \equiv m \angle 3$, congruence of angle is transitive).

Example 2: Given the line segment A = B = C = Da. An example of reflexive property: AB = AB / BC = BC / CD = CDb. An example of the transitive property: suppose AB = CD = CD = DEc. An example of the symmetric property: AB = BA Example 3: Given: $\angle ABC$ and $\angle CBD$ are complementary, $\angle CBD$ and $\angle DBE$ are complements.

