Proving Statements about Angles

Properties of Angle Congruence

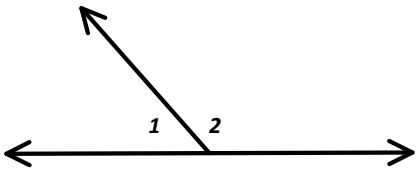
Reflexive - For any angle A, $\measuredangle A \cong \measuredangle A$.

Symmetric - If $\measuredangle A \cong \measuredangle B$, then $\measuredangle B \cong \measuredangle A$.

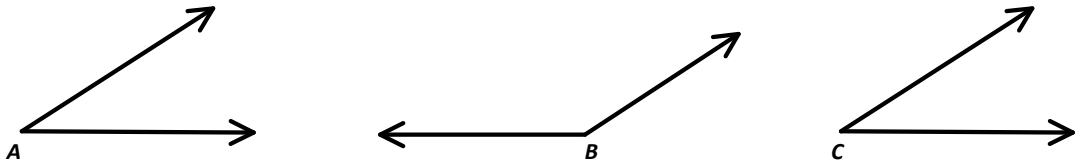
Transitive - If $\measuredangle A \cong \measuredangle B$ and $\measuredangle B \cong \measuredangle C$ then $\measuredangle A \cong \measuredangle C$.

Linear Pair Postulate - If two angles form a linear pair, then they are supplementary.

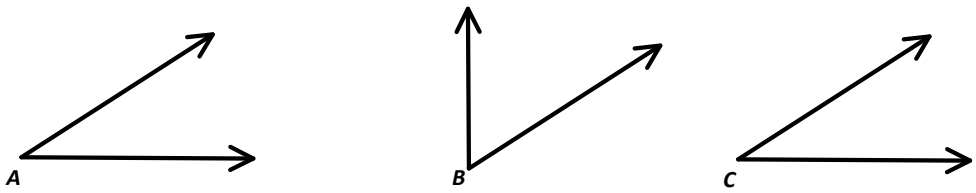
If $\measuredangle 1$ and $\measuredangle 2$ form a linear pair and $m\measuredangle 1 = 65^\circ$, find $m\measuredangle 2$.



Congruent Supplements Theorem - If two angles are supplementary to the same angle or to congruent angles, then they are congruent.

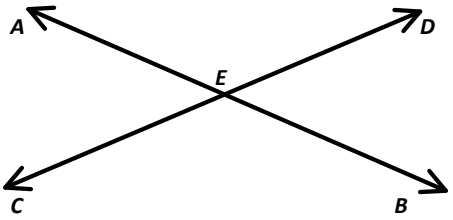


Congruent Complements Theorem - If two angles are complementary to the same angle or to congruent angles, then they are congruent.



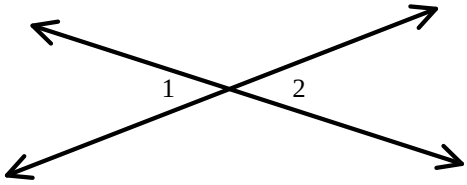
Right Angle Congruence Theorem - All right angles are congruent.

Vertical Angles Theorem - Vertical angles are congruent.

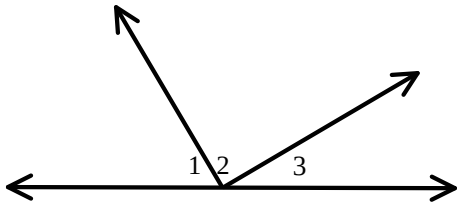


Directions: Find the measure of each numbered angle.

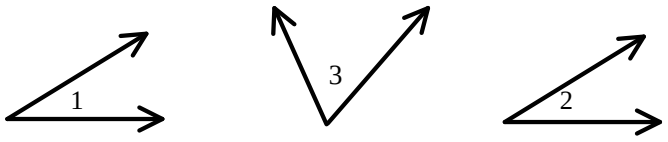
1. $m\angle 1 = 3x - 14$
   $m\angle 2 = 2x - 7$



2. $m\angle 1 = 5x$
   $m\angle 2 = 3x + 30$
   $m\angle 3 = 2x + 10$



3. $\angle 1$ and $\angle 3$ are complementary
   $\angle 2$ and $\angle 3$ are complementary
   $m\angle 1 = 2x + 2$
   $m\angle 2 = x + 32$



Directions: Write a two-column proof.

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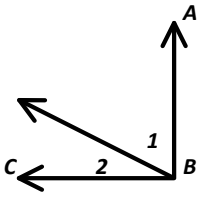
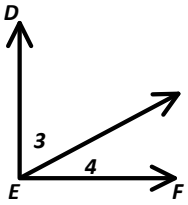
4. Given: $m\angle ABC = m\angle DEF$

$m\angle 1 = m\angle 3$

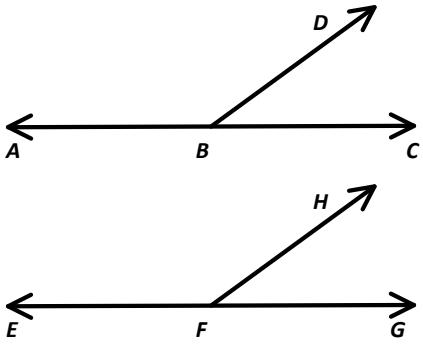
Prove: $m\angle 2 = m\angle 4$





Statement	Reason
1. $m\angle ABC = m\angle DEF$ $m\angle 1 = m\angle 3$	1. Given

5. Given: $\measuredangle ABD$ and $\measuredangle CBD$ form a linear pair
$\measuredangle EFH$ and $\measuredangle GFH$ form a linear pair
$\measuredangle ABD \cong \measuredangle EFH$
Prove: $\measuredangle CBD \cong \measuredangle GFH$



Statement	Reason
1. $\measuredangle ABD$ and $\measuredangle CBD$ form a linear pair $\measuredangle EFH$ and $\measuredangle GFH$ form a linear pair $\measuredangle ABD \cong \measuredangle EFH$	1. Given