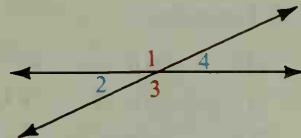


Vertical angles (vert. \angle s) are two angles such that the sides of one angle are opposite rays to the sides of the other angle. When two lines intersect, they form two pairs of vertical angles. $\angle 1$ and $\angle 3$ are vert. \angle s. $\angle 2$ and $\angle 4$ are vert. \angle s.

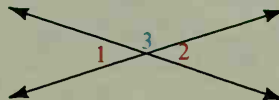


Theorem 2-3

Vertical angles are congruent.

Given: $\angle 1$ and $\angle 2$ are vertical angles.

Prove: $\angle 1 \cong \angle 2$



Proof:

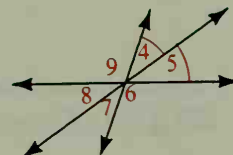
Statements

Reasons

1. $m\angle 1 + m\angle 3 = 180$; $m\angle 2 + m\angle 3 = 180$	1. Angle Addition Postulate
2. $m\angle 1 + m\angle 3 = m\angle 2 + m\angle 3$	2. Substitution Prop.
3. $m\angle 3 = m\angle 3$	3. Reflexive Prop.
4. $m\angle 1 = m\angle 2$, or $\angle 1 \cong \angle 2$	4. Subtraction Prop. of =

Example 2 In the diagram, $\angle 4 \cong \angle 5$.
Name two other angles congruent to $\angle 5$.

Solution $\angle 8 \cong \angle 5$ since vertical angles are congruent.
Since $\angle 7 \cong \angle 4$ and $\angle 4 \cong \angle 5$, $\angle 7 \cong \angle 5$
by the Transitive Property.



Classroom Exercises

Find the measures of a complement and a supplement of $\angle A$.

1. $m\angle A = 10$

2. $m\angle A = 75$

3. $m\angle A = 89$

4. $m\angle A = y$

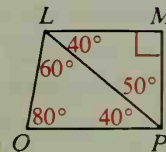
5. Name two right angles.

6. Name two adjacent complementary angles.

7. Name two complementary angles that are not adjacent.

8. a. Name a supplement of $\angle MLQ$.

b. Name another pair of supplementary angles.



9. In the diagram, $m\angle AXB = 90$. Name:

a. two congruent supplementary angles

b. two supplementary angles that are not congruent

c. two complementary angles

d. a straight angle

