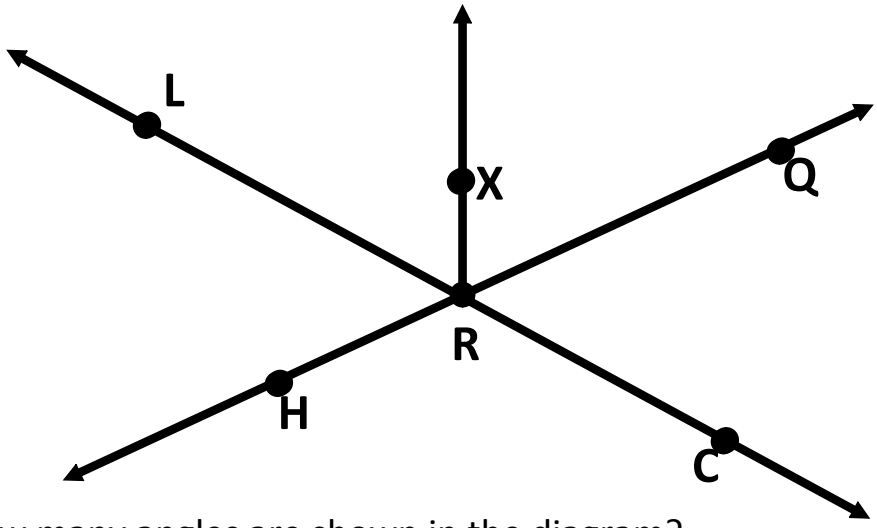
1-5 Angle Relaonships

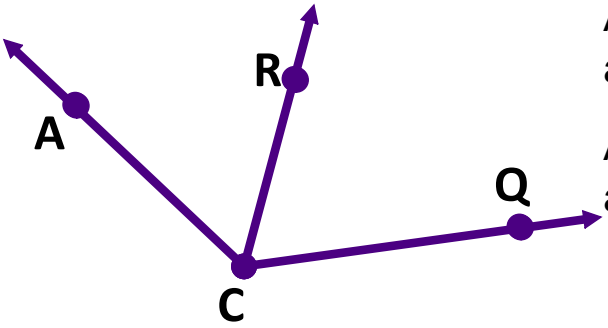


How many angles are shown in the diagram?
Name them all.

Be sure each name represents a unique angle!

As angles appear on a diagram, they have different relationships to one another based on where they are in relation to each other.

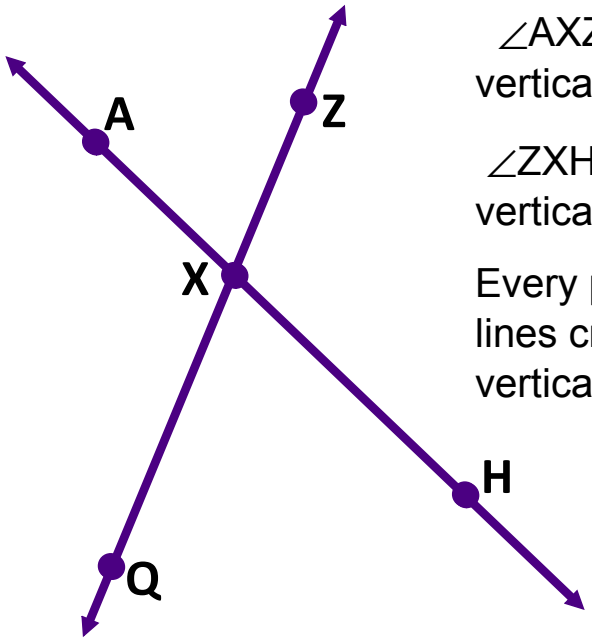
Adjacent angles are two angles that lie in the same plane, have a common vertex and a common side, but no common interior points.



Are ∠ARC and ∠RCQ adjacent angles?

Are ∠RCQ and ∠ACQ adjacent angles?

Vertical angles are two nonadjacent angles formed by two intersecting lines.

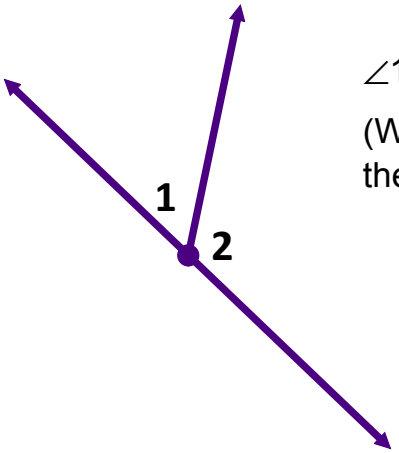


∠AXZ and ∠QXH are vertical angles.

∠ZXH and _____ are vertical angles.

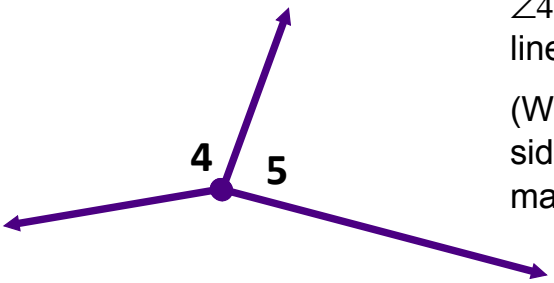
Every pair of 2 intersecting lines creates ____ pairs of vertical angles.

A linear pair is a pair of adjacent angles with noncommon sides that are opposite rays.



∠1 and ∠2 are a linear pair.

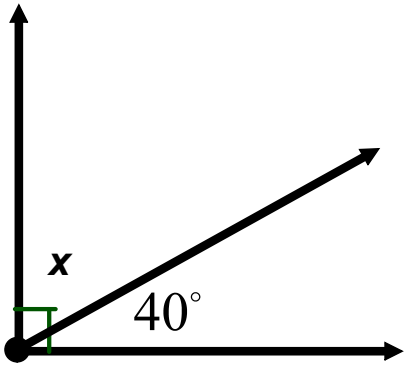
(When they are side-by-side, they make a straight line.)



∠4 and ∠5 are NOT a linear pair.

(When they are side-by-side, they do not make a straight line.)

Definition: Two angles with measures that have a sum of 90 are called complementary angles.



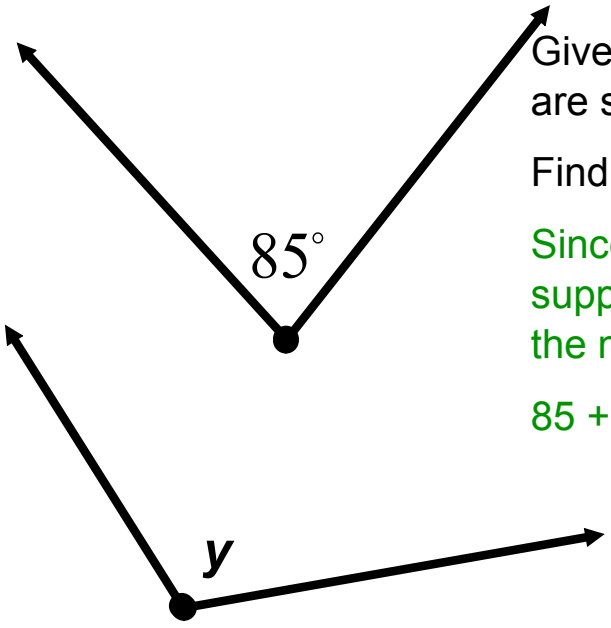
Find *x*.

The diagram shows that the two angles are complementary, because the box in the corner of the angle says that the "outside" angle measures 90.

x + 40 = 90

x = 50.

Definition: Two angles with measures that have a sum of 180 are called supplementary angles.



Given: the two angles shown are supplementary.

Find the value of *y*.

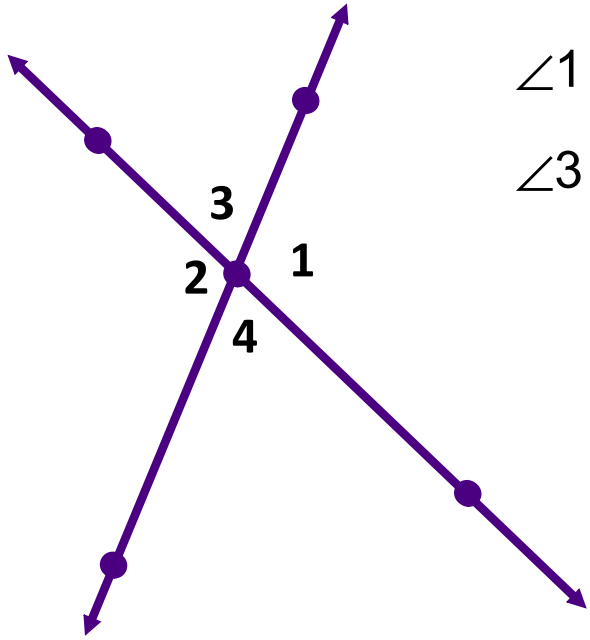
Since they are said to be supplementary, then the sum of the measures must be 180.

85 + y = 180

y = 180 - 85

y = 95

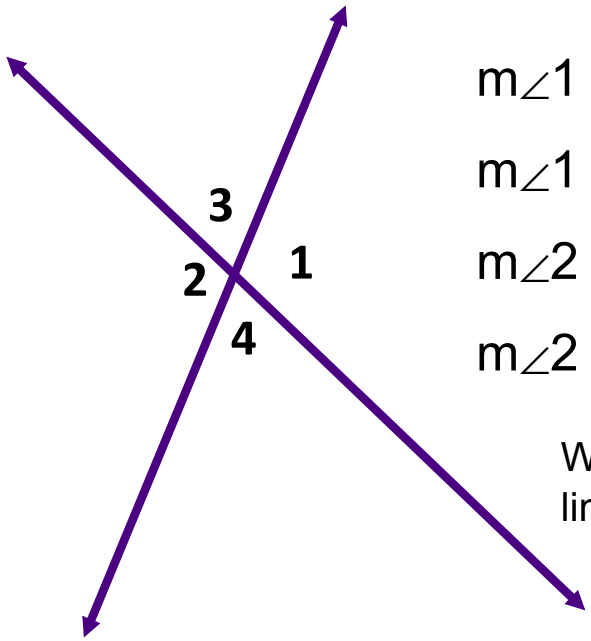
Key concept: Vertical angles are congruent.



$\angle 1 \cong \angle 2$

$\angle 3 \cong \angle 4$

Key concept: The angles that make up a linear pair are supplementary.



$m\angle 1 + m\angle 3 = 180$

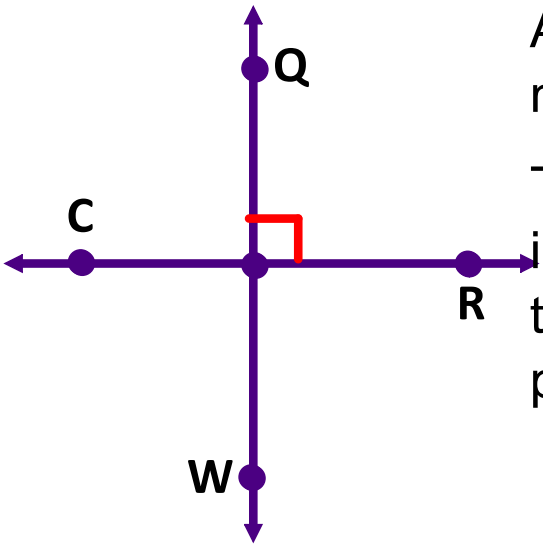
$m\angle 1 + m\angle 4 = 180$

$m\angle 2 + m\angle 3 = 180$

$m\angle 2 + m\angle 4 = 180$

When two lines cross, 4 linear pairs are created!

Key concept: Perpendicular lines intersect to form 4 right angles.



All 4 angles shown measure 90 degrees.

The right angle symbol in the figure indicates that the lines are perpendicular.

$$\overleftrightarrow{QW} \perp \overleftrightarrow{CR}$$

IMPORTANT TO REMEMBER!!!!

The only things we can "assume" from a diagram, if we are not told directly, are:

1. Points are coplanar/noncoplanar.
2. Points are collinear/noncollinear.
3. The location of the intersection of lines/ segments/planes.
4. The "betweeness" of points.
5. The location of points relative to angles - on, interior, exterior.
6. Adjacent angles, linear pairs, vertical angles.