

Notes: SPECIAL ANGLE PAIRS

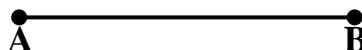
Content Objective: *I will be able to identify the relationship between angle pairs such as adjacent, vertical and linear.*

TERM	DESCRIPTION	EXAMPLE
PERPENDICULAR LINES	Two lines that intersect to form four _____ . Represented symbolically with this notation: \perp	

Note: *Use a different color for each construction.*



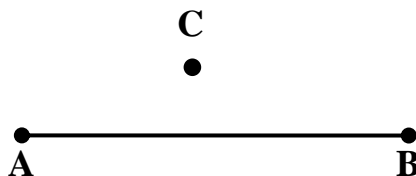
CONSTRUCTION:
Construct the perpendicular bisector of \overline{AB} .



CONSTRUCTION:
Construct a perpendicular line to \overline{AB} through point C.

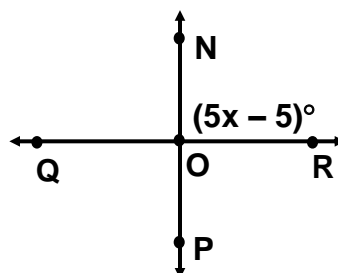


CONSTRUCTION:
Construct a perpendicular line to \overline{AB} through point C.



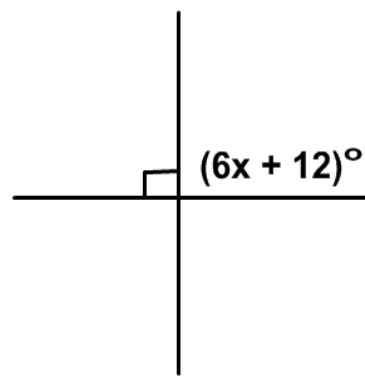
EXAMPLE 1: \overleftrightarrow{NP} and \overleftrightarrow{QR} are perpendicular lines intersecting at O . Write an equation in terms of x . Use an algebraic proof to solve for x .

1.	1. given
2.	2. addition
3.	3. division

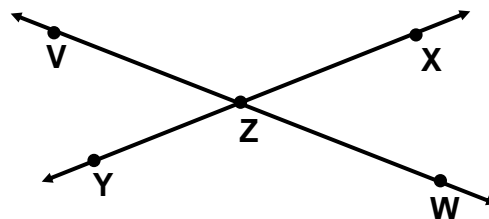


QUICK CHECK: Write an equation in terms of x . Use an algebraic proof to solve for x .

1. $6x + 12$	1.
2.	2. subtraction
3.	3.



For items a. – d., use the diagram on the right to name examples of each of the special angle pair relationships formed by intersecting lines.



	NAME	DESCRIPTION	EXAMPLES
a.	ADJACENT ANGLES	Angles that have a common _____ and a _____, but no common interior points.	
b.	NON- ADJACENT ANGLES	Angles that may have a common _____ but do not have a common _____ or common interior points.	
c.	VERTICAL ANGLES	Two non-adjacent angles formed by two _____ lines. Vertical angles are always _____.	
d.	LINEAR PAIR	Two adjacent angles whose non-common sides are _____. The sum of the measures of the angles in a linear pair is _____.	

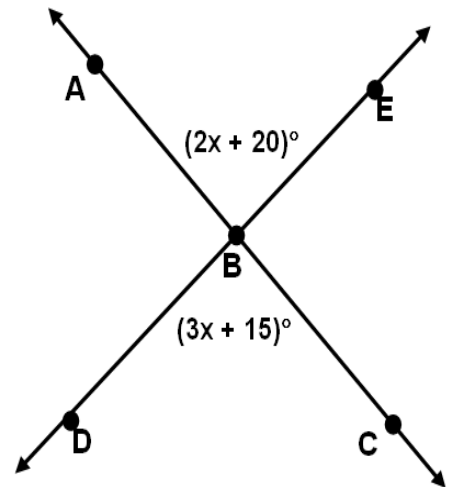
Vertical angles are congruent, which means that their measures are equal.

The sum of the measures of the angles in a linear pair is 180° .

EXAMPLE 2: \overleftrightarrow{AC} and \overleftrightarrow{DE} intersect at **B**. Write an equation in terms of x . Use an algebraic proof to find the value of x . Then find the measure of $\angle EBC$.

1. $2x + 20 = 3x + 15$	1.
2.	2.subtraction
3.	3.subtraction
4.	4.

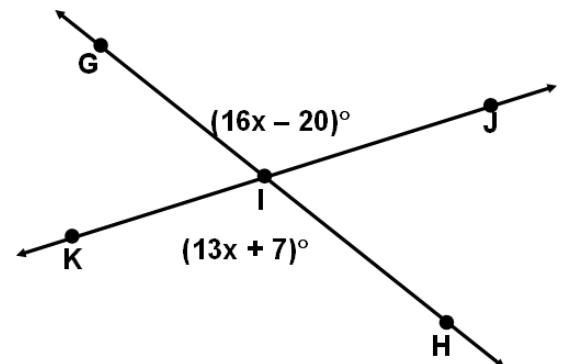
$m\angle EBC =$ _____



QUICK CHECK: \overleftrightarrow{GH} and \overleftrightarrow{JK} intersect at **I**. Find the value of x and the measure of $\angle JIH$.

1.	1.
2.	2.
3.	3.
4.	4.

$m\angle JIH =$ _____ $^\circ$



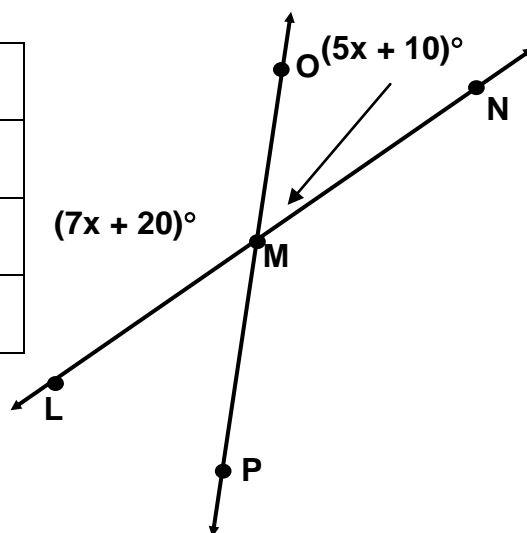
TERM	DESCRIPTION	EXAMPLE
	Two angles that have a sum of 180° .	
	Two angles that have a sum of 90° .	

EXAMPLE 3: \overleftrightarrow{LN} and \overleftrightarrow{OP} intersect at **M**. Find the value of x using an algebraic proof and then find the measures of $\angle LMO$ and $\angle OMN$.

1.	1.given
2.	2.combine like terms
3.	3.subtraction property
4.	4.division

$$m\angle LMO = \underline{\hspace{2cm}}^\circ$$

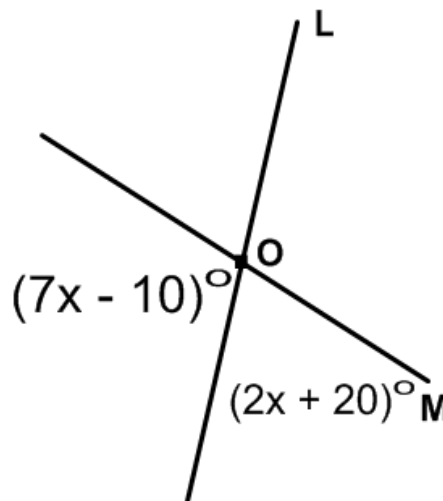
$$m\angle OMN = \underline{\hspace{2cm}}^\circ$$



QUICK CHECK: Line **L** and line **M** intersect at point **O**. Use an algebraic proof to solve for x and then find $m\angle MOL$.

1.	1.
2.	2.
3.	3.
4.	4.

$$m\angle MOL = \underline{\hspace{2cm}}$$



EXAMPLE 4: If $\angle 1$ and $\angle 2$ are complements with $m\angle 1 = (2x + 20)^\circ$ and $m\angle 2 = (3x + 15)^\circ$, find the value of x using an algebraic proof.

1.	1.
2.	2.
3.	3.
4.	4.

QUICK CHECK: If $\angle 1$ and $\angle 2$ are a linear pair with $m\angle 1 = (2x + 5)^\circ$ and $m\angle 2 = (8x + 5)^\circ$, find the value of x using an algebraic proof.

1.	1.
2.	2.
3.	3.
4.	4.

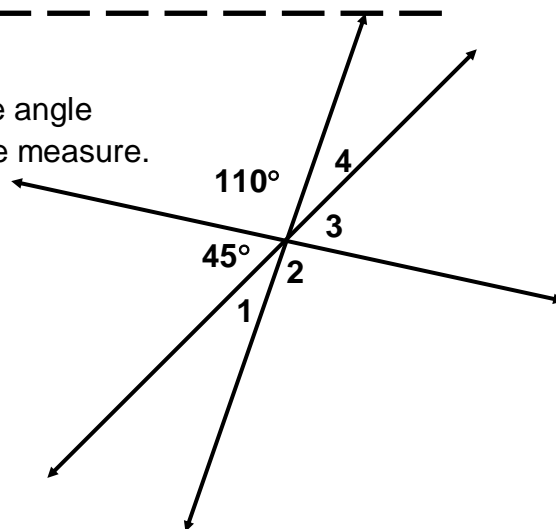
EXAMPLE 5: Find all of the missing angles and describe the angle pair relationship that you used to determine the measure.

$$m\angle 1 = \underline{\hspace{2cm}}^\circ$$

$$m\angle 2 = \underline{\hspace{2cm}}^\circ$$

$$m\angle 3 = \underline{\hspace{2cm}}^\circ$$

$$m\angle 4 = \underline{\hspace{2cm}}^\circ$$



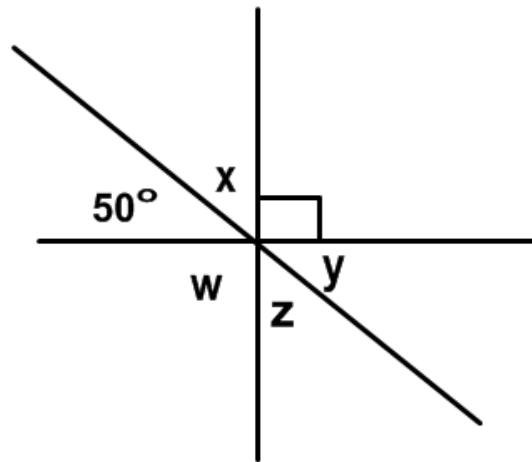
QUICK CHECK: Find all of the missing angles and describe the angle pair relationship that you used to determine the measure.

$m\angle x =$ _____

$m\angle y =$ _____

$m\angle z =$ _____

$m\angle w =$ _____



EXAMPLE6: $\overrightarrow{CD} \perp \overleftrightarrow{AB}$, $m\angle 1 = (6x - 3)^\circ$, $m\angle 2 = (7x - 11)^\circ$.
Find the value of x .

$x =$ _____

