

Congruence & Similarity

Radical Functions

Quadratic Functions

quadratic Functions

Transformations

Angle Relationships

Complementary

Angles

Supplementary

Angles

Adjacent

Angles

Vertical

Angles

VERTICAL ANGLES

Two angles **across** from each other on intersecting lines. They are always **congruent!**

Example:



ADJACENT ANGLES

Two angles that are **next to** each other and share a **common side**.

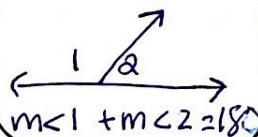
Example:



LINEAR PAIR

Two angles that are **adjacent** and **supplementary**. They form a **straight line!**

Example:

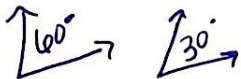


ANGLE Relationships

COMPLEMENTARY ANGLES

Any two angles whose **sum is 90°**

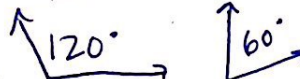
Example:



SUPPLEMENTARY ANGLES

Any two angles whose **sum is 180°**

Example:



Complementary

Angles

Supplementary

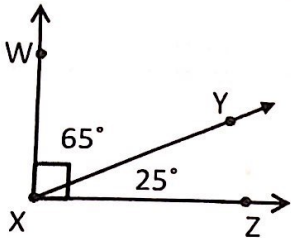
Angles

Adjacent

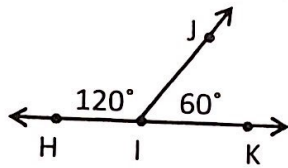
Angles

Vertical

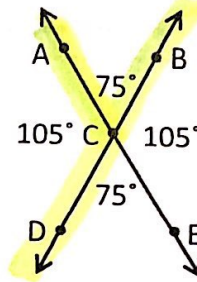
Angles



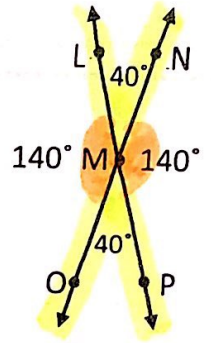
$\angle WXY$ is Complementary to $\angle YXZ$.
(adjacent)



$\angle HIJ$ is Supplementary to $\angle JIK$.
(linear pair) (adjacent)



$\angle ACB$ and $\angle ACD$ are adjacent.
(linear pair)

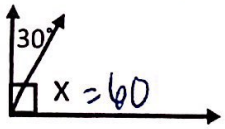


$\angle LMN$ and $\angle OMP$ are AND
 $\angle LMO$ and $\angle NMP$ are Vertical.

• Two angles whose measures have a sum of 90°

Example:

These angles are complementary.



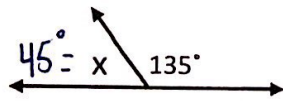
$$90^\circ - 30^\circ = 60^\circ$$

$$x = 60^\circ$$

• Two angles whose measures have a sum of 180°

Example:

These angles are supplementary.



$$180^\circ - 135^\circ = 45^\circ$$

$$x = 45^\circ$$

• Two angles that are side by side

• Have a common vertex and ray
C CA

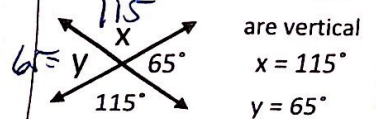
• May or may not be congruent

• Two angles formed by two intersecting lines

• Always congruent

• Have the same angle measures (vertex)

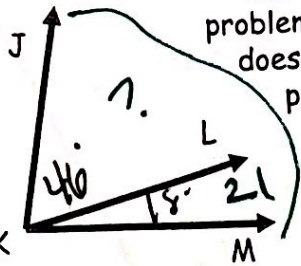
Example: These angles



are vertical
 $x = 115^\circ$
 $y = 65^\circ$

Practice!

Use the same diagram for problems A and B. Information does NOT carry over from problem to problem.



A) $m\angle JKL = 46$

$m\angle LKM = 18$

$m\angle JKM = 64$

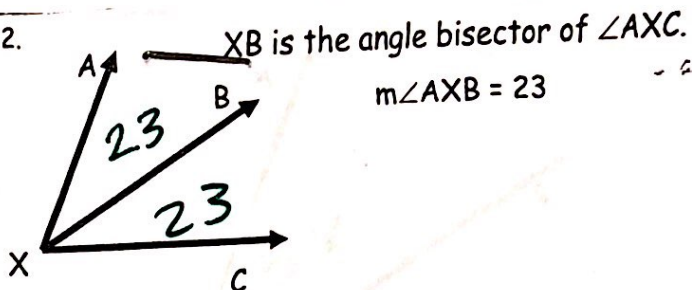
88

B) $m\angle JKL = 67$

$m\angle LKM = 21$

$m\angle JKM = 88$

2.



XB is the angle bisector of $\angle AXC$.

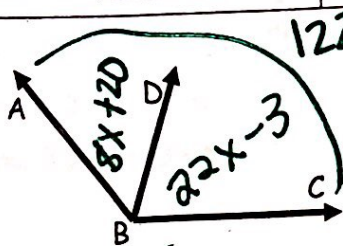
$m\angle AXB = 23$

Find the following:

$m\angle BXC = 23$

$m\angle AXC = 46$

3.



$m\angle ABC = 122$

$m\angle ABD = 8x + 20$

$m\angle DBC = 22x - 3$

$(8x + 20) + (22x - 3) = 122$
 $30x + 17 = 122$

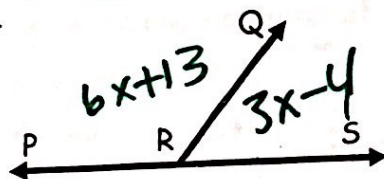
Find the following:

$x = 3.5$

$m\angle ABD = 48$

$m\angle DBC = 74$

4.



$m\angle PRS = 180$

$m\angle PRQ = 6x + 13$

$m\angle QRS = 3x - 4$

$6x + 13 + 3x - 4 = 180$

Find the following:

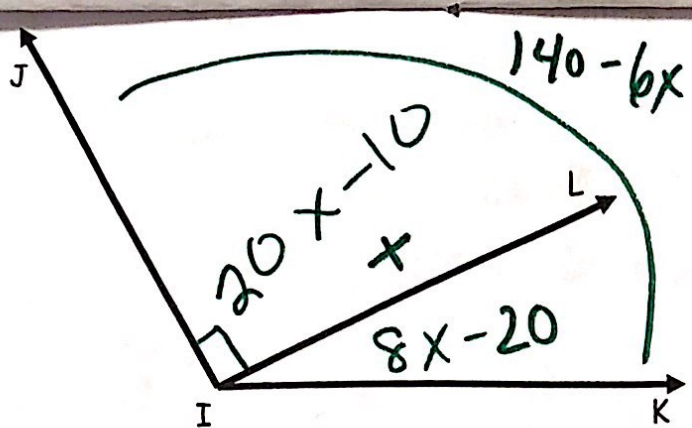
$x = 19$

$m\angle PRQ = 127$

$m\angle QRS = 53$

$180 - 125 = 55$

* angle bisector: divide our angle in half \rightarrow two equal parts.

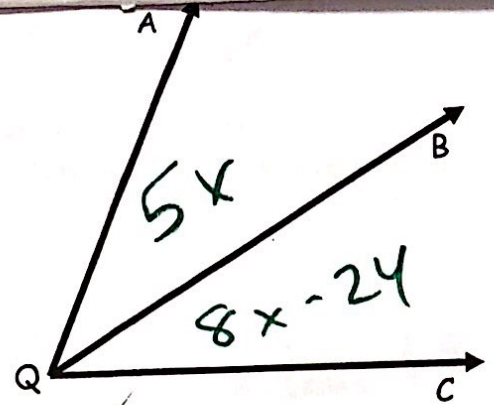


$m\angle JIL = 20x - 10$
 $m\angle LIK = 8x - 20$
 $m\angle JIK = 140 - 6x$

$20x - 10 + 8x - 20 = 140 - 6x$

Find the following:

$x = \underline{5}$ $m\angle JIL = \underline{90}$
 $m\angle LIK = \underline{20}$ $m\angle JIK = \underline{110}$



QB is the angle bisector of $\angle AQC$.

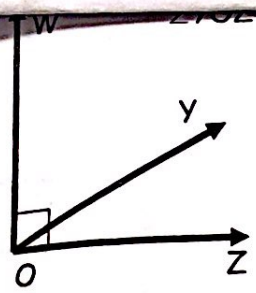
$m\angle AQB = 5x$
 $m\angle BQC = 8x - 24$ $5x = 8x - 24$

Find the following:

$x = \underline{8}$ $m\angle AQB = \underline{40}$
 $m\angle BQC = \underline{40}$ $m\angle AQC = \underline{80}$

$150 - 125 = 25$

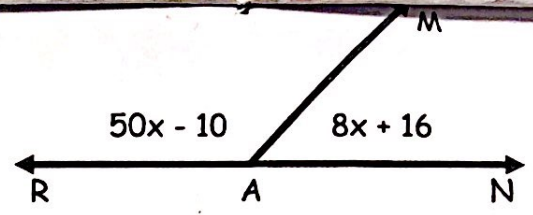
* angle bisector: a line that divides an angle in half \rightarrow two equal parts.



$m\angle WOY = 19x - 26$
 $m\angle YOZ = 10x$
 $19x - 26 + 10x = 90$
 $29x - 26 = 90$

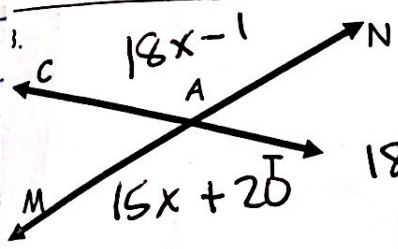
Find the following:

$x = \underline{4}$
 $m\angle YOZ = \underline{40}$
 $m\angle WOY = \underline{50}$
 $m\angle WOZ = \underline{90}$



Find the following:

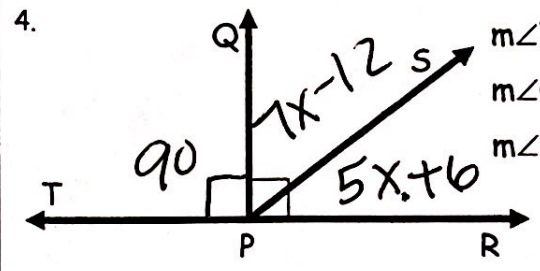
$x = \underline{3}$
 $m\angle MAN = \underline{40}$
 $m\angle RAM = \underline{140}$
 $m\angle RAN = \underline{180}$



$m\angle CAN = 18x - 1$
 $m\angle MAT = 15x + 20$
 $18x - 1 = 15x + 20$
 $3x = 21$
 $x = 7$

Find the following:

$x = \underline{7}$
 $m\angle MAC = \underline{55}$
 $m\angle MAT = \underline{125}$
 $m\angle CAN = \underline{125}$
 $m\angle TAN = \underline{55}$
 $m\angle MAN = \underline{180}$



$m\angle TPQ = 90^\circ$
 $m\angle QPS = 7x - 12$
 $m\angle SPR = 5x + 6$

Find the following:

$x = \underline{8}$
 $m\angle QPS = \underline{44}$
 $m\angle QPR = \underline{90}$
 $m\angle TPR = \underline{180}$
 $m\angle SPR = \underline{46}$
 $m\angle SPT = \underline{134}$

$180 - 125 = 55$

* angle bisector: a line or ray that divides an angle into two equal parts.