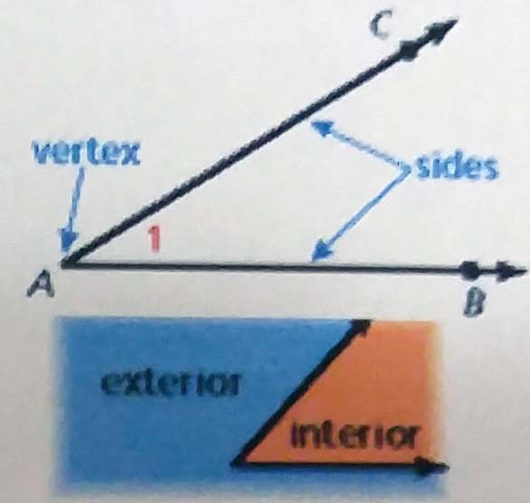
1.5 Notes: Measuring Angles Name Key Period _____

Naming Angles

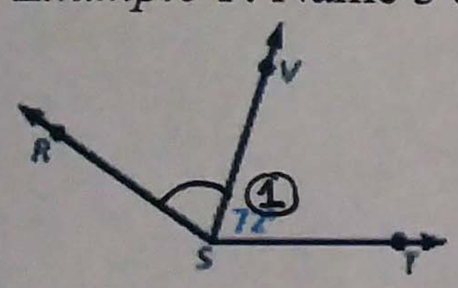
Angle: An angle is a set of points consisting of TWO RAYS that have the same ENDPOINT, called the VERTEX.

➔ The RAYS are the SIDES of the angle.



***If more than one angle has the same vertex, the name $\angle(vertex\ point)$ cannot be used!!!

Example 1: Name 3 angles in the diagram.



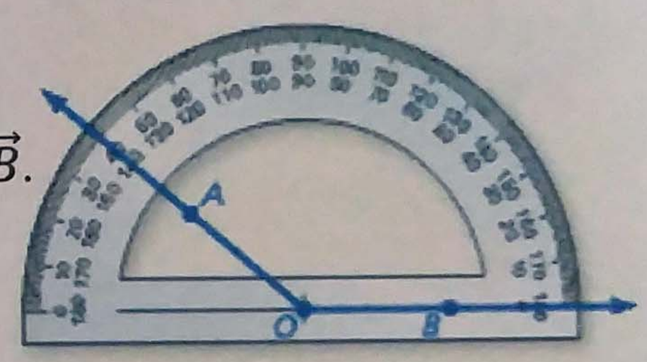
① 1 LETTER (THE VERTEX)
∠S *

☆ ② 3 LETTERS
∠RSV OR ∠VSR

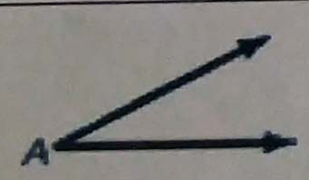
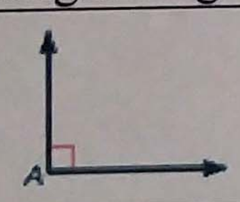
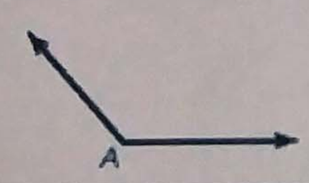
③ A # (IF THE ∠ IS NUMBERED)
∠1

Measuring Angles

Protractor Postulate: The measure of $\angle AOB$ ($|40-180| = 140°$) is equal to the difference between the real numbers matched with $\overrightarrow{OA}$ and $\overrightarrow{OB}$.



Classifying Angles

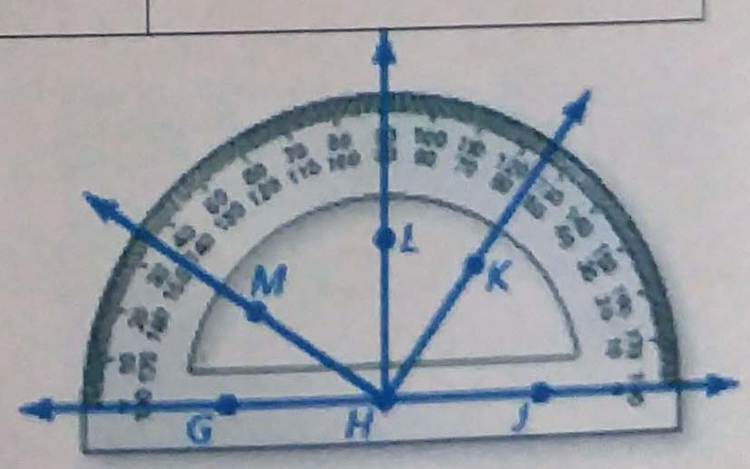
Acute Angle	Right Angle	Obtuse Angle	Straight Angle
			
$0° < m\angle A < 90°$	$m\angle A = 90°$	$90° < m\angle A < 180°$	$m\angle A = 180°$

Example: 2. Find the measure of each angle. Then classify each angle.

a. $\angle GHK$
125°
OBTUSE

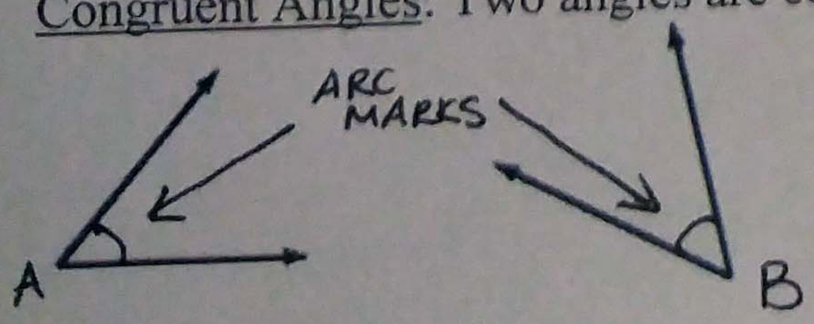
b. $\angle JHL$
90°
RIGHT

c. $\angle LHK$
35°
ACUTE



Identifying Congruent Angles

Congruent Angles: Two angles are congruent when they have the SAME ANGLE MEASURE.

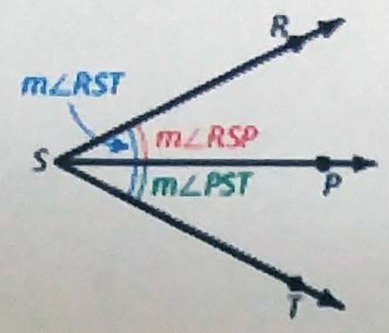


MEASURES of angles are EQUAL

$\angle A \cong \angle B$

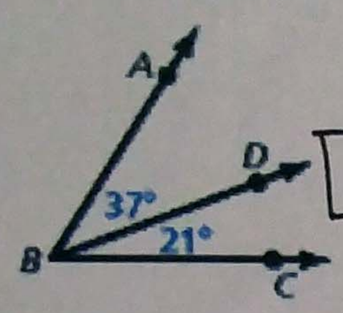
$m\angle A = m\angle B$

Angle Addition Postulate

Words	Symbols
If P is in the INSIDE of $\angle RST$, then the measure of $\angle RST$ is equal to the SUM of the measures of $\angle RSP$ and $\angle PST$.	If P is in the INSIDE of $\angle RST$, then  $m\angle RST =$ $m\angle RSP + m\angle PST$

Example:

3. Find $m\angle ABC$.

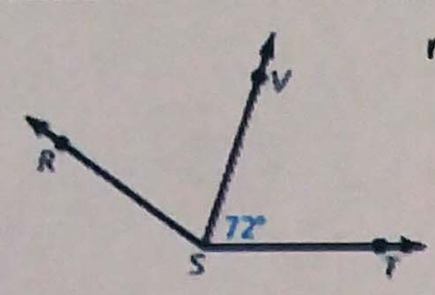


$m\angle ABC = m\angle ABD + m\angle DBC$

$m\angle ABC = 37 + 21$

$\boxed{m\angle ABC = 58^\circ}$

4. $m\angle RST = 114°$. Find $m\angle RSV$.



$m\angle RST = m\angle RSV + m\angle VST$

$114 = m\angle RSV + 72$

$\boxed{42^\circ = m\angle RSV}$

Using Algebra with the Angle Addition Postulate

Example 5: Given that $m\angle LKN = 145°$, find $m\angle LKM$ and $m\angle MKN$.

$m\angle LKN = m\angle LKM + m\angle MKN$

$145 = (2x+10) + (4x-3)$

$145 = 6x + 7$

$138 = 6x$

$23 = x$

$m\angle LKM = 2x+10$

$m\angle LKM = 2(23)+10$

$m\angle LKM = 46+10$

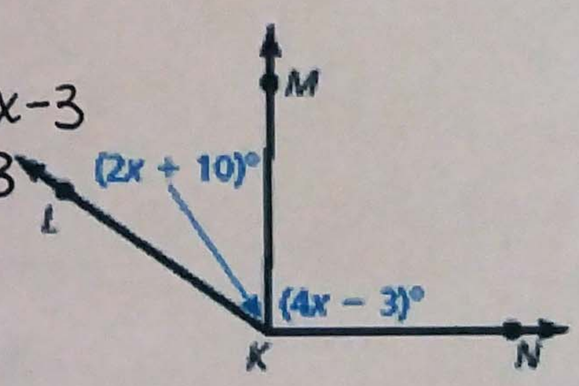
$\boxed{m\angle LKM = 56^\circ}$

$m\angle MKN = 4x-3$

$= 4(23)-3$

$= 92-3$

$\boxed{= 89^\circ}$



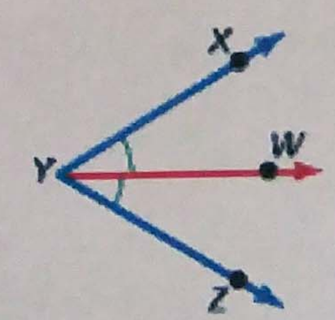
Bisecting Angles

Angle Bisector: An angle bisector is a RAY that divides an angle into TWO ≅ ANGLES.

$\overrightarrow{YW}$ BISECTS $\angle XYZ$

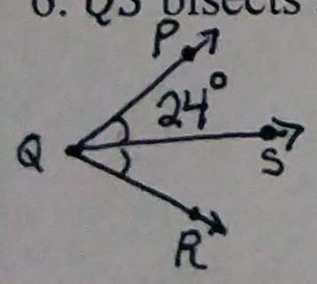
$\angle XYW \cong \angle WYZ$

$m\angle XYW = m\angle WYZ$



Examples:

6. $\overrightarrow{QS}$ bisects $\angle PQR$. $m\angle PQS = 24°$. Draw a diagram and find $m\angle PQR$.

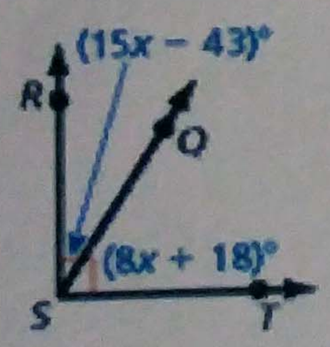


$m\angle PQR = m\angle PQS + m\angle SQR$

$m\angle PQR = 24 + 24$

$\boxed{m\angle PQR = 48^\circ}$

7. Find $m\angle RSQ$ and $m\angle TSQ$.



$m\angle RST = m\angle RSQ + m\angle QST$

$90^\circ = (15x-43) + (8x+18)$

$90 = 23x - 25$

$115 = 23x$

$5 = x$

$m\angle RSQ = 15x-43$

$= 15(5)-43$

$= 75-43$

$\boxed{= 32^\circ}$

$m\angle QST = 8x+18$

$= 8(5)+18$

$= 40+18$

$\boxed{= 58^\circ}$