6-4

Angle Vocabulary

Congruence:
To say that two angles are Congruent we write this as ∠BAC ≅ ∠DEF. This tell us that the measure of the two angles are equal. We write the measure of an angle m∠BAC. The measure tells us the Size of an angle.

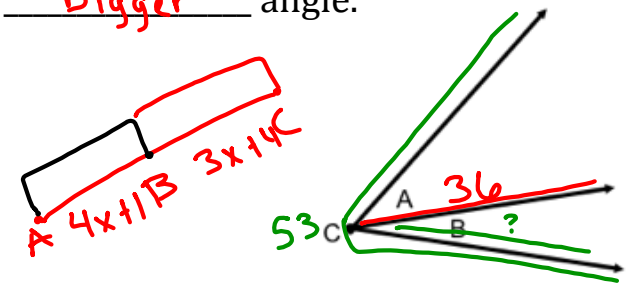
Measures are equal
m∠BAC = m∠DEF
"is equal to"

Angles are congruent
∠BAC ≅ ∠DEF
"is congruent to"

If m∠BAC = m∠DEF, then ∠BAC ≅ ∠DEF.

If ∠BAC ≅ ∠DEF, then m∠BAC = m∠DEF.

Angle Addition Postulate: Where two angles add to give you a _____bigger_____ angle.



EX. If m∠A=45° and m∠B=20°, find m∠C.

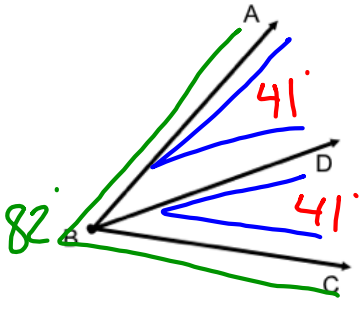
45+20=65°

EX. If m∠A=36 and m∠C=53, find m∠B.

m∠A + m∠B = m∠C
36 + x = 53
−36 −36
x = 17

Angle Bisector: A ray that divides an _____angle_____ in 2 equal parts.

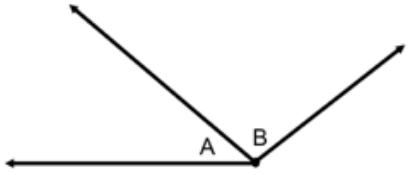
If BD bisects ∠ABC, then ∠ABD ≅ ∠DBC.



EX: If m∠ABD=30, find m∠DBC.

EX: If m∠ABC=82, find m∠ADB and m∠DBC.

Adjacent Angles: Two angles that share a common side and common vertex (two angles that are right next to each other)



∠A and ∠B are adjacent angles.

Non-Examples:

Complimentary Angles: Two angles whose measures add to 90°

EX: ∠A and ∠B are complimentary angles. If m∠A=24, find m∠B.

$m\angle A + m\angle B = 90°$

$24 + x = 90$

$-24 \quad -24$

$x = 66$

Supplementary Angles: Two angles whose measures add to 180°

EX: ∠A and ∠B are supplementary angles. If m∠A = 2x + 5 and m∠B = x - 7, find the value of x.

$m\angle A + m\angle B = 180°$

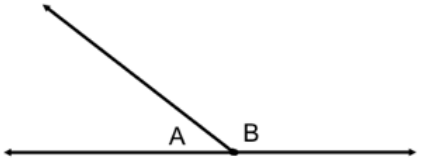
$2x + 5 + x - 7 = 180°$

$3x - 2 = 180 + 2$

$\frac{3x}{3} = \frac{182}{3} = 60.6$

$x = 60.6$

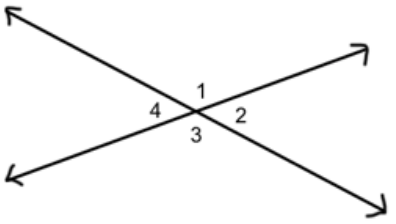
Linear Pair: Two angles that are adjacent and supplementary (two angles that form a line)



∠A and ∠B are a Linear Pair

If ∠A and ∠B form a linear pair, then m∠A + m∠B = 180°

Vertical Angles: Two angles non-adjacent each other when two lines intersect (angles across from each other). Vertical angles are congruent.



∠1 and ∠3 are vertical angles

∠2 and ∠4 are vertical angles

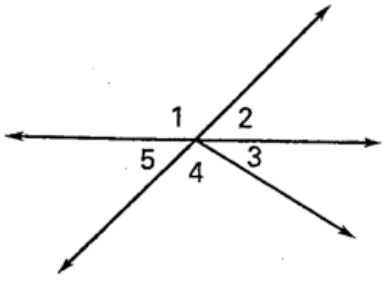
∠1 ≅ ∠3

∠4 ≅ ∠2

Use the figure at the right:

a. Are ∠1 and ∠2 adjacent?

Yes



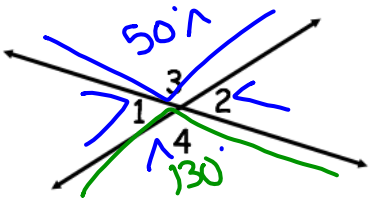
b. Are ∠3 and ∠4 a linear pair?

no

c. Are ∠1 and ∠4 a vertical angles?

no

Decide whether the statement is *always, sometimes,* or *never* true.



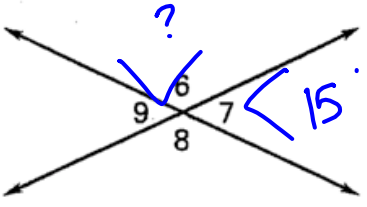
a. If m∠4=130, then m∠3 = 50.

Never true

b. m∠1 + m∠3 = m∠2 + m∠4.

Always true

Use the figure at the right:



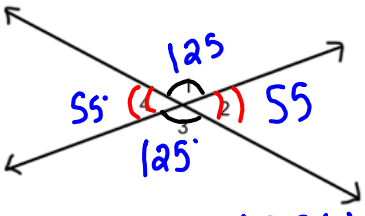
a. If m∠8 = 94, then m∠6 = 94°

b. If m∠7 = 47, then m∠9 = 47°

c. If m∠7 = 15, then m∠6 = 165° 180-15=

To show that angles are equal or congruent in a diagram, we can mark them. We can only say that angles are equal or congruent if they are marked the same.

Example:

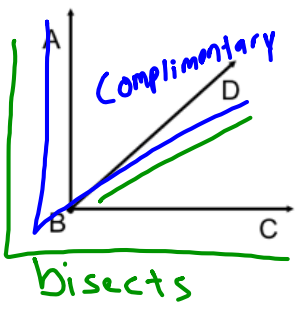


a. Mark all congruent angles and explain how you know they are congruent

$m\angle 3 = 125^\circ$ by vertical pair
$m\angle 4 = 55^\circ$ by linear pair
$m\angle 2 = 55^\circ$ by vertical pair

Given $m\angle 1 = 125$, find the measures of the other 3 angles and write you how you know that.

$m\angle 1 \cong \angle 3$ by vertical angles
$m\angle 2 \cong \angle 4$ by vertical angles



Write what you know from each of the given statements? **How** do you know that?

∠ABD and ∠DBC are complimentary angles
BD bisects ∠ABC.

∠ABD + ∠DBC are complimentary

∠ABD + ∠DBC = 90° are complimentary

BD bisects ∠ABC by bisector

ABD ≅ DBC by congruence