Angle and Line Relationships (11-1) Notes Day 2

You can find unknown angle measurements by using an equation.

1) Identify the pairs of angles. Are they complementary, supplementary, corresponding, vertical, alternate interior, alternate exterior, etc.?

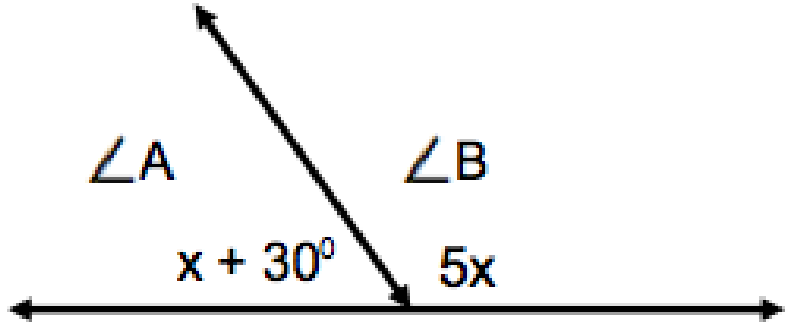
2) Write an equation based on the types of angles.
   a) sum of the angles may equal 90
   b) sum of the angles may equal 180
   c) the angles may be set equal to one another

3) Solve the equation by getting the "x" by itself.

4) Substitute the value for "x" to find the angle measures.

Solve for x, then find the measurement of the angles.

1)



Supp. $\angle A$ and $\angle B = 180$

$x + 30 + 5x = 180$

$6x + 30 = 180$

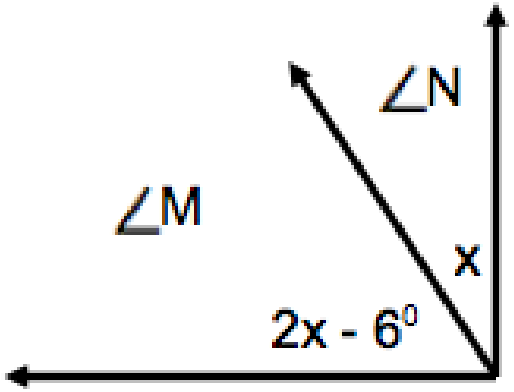
$6x = 150$

$x = 25$

$\angle A = 55°$

$\angle B = 125°$

2)



Comp. $\angle M$ and $\angle N = 90$

$2x - 6 + x = 90$

$3x - 6 = 90$

$3x = 96$

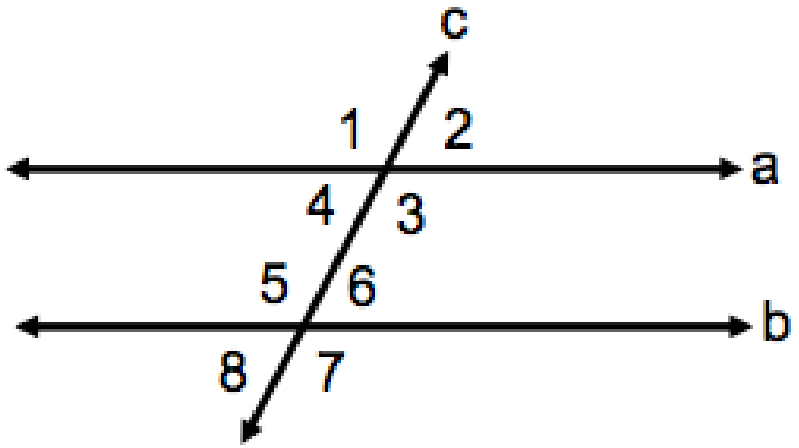
$x = 32$

$\angle M = 58°$

$\angle N = 32°$

Use the diagram to answer the following:

Given information:
Line a and line b are parallel lines.
Line c is a transversal line.



3) If the m∠2 is $7x^0$ and the m∠4 is $5x + 20^0$, what is the value of x?
What is the measure of each angle?

∠2 and ∠4 are vertical ≅

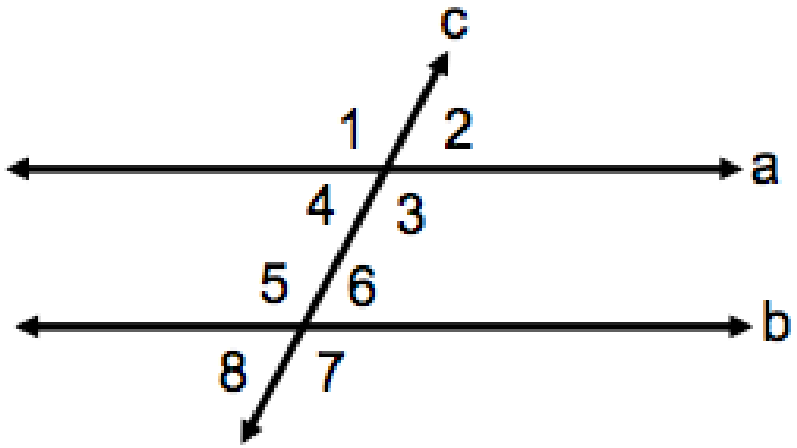
$7x = 5x + 20$
$-5x \quad -5x$

$2x = 20$
$x = 10$

∠2 and ∠4 are 70°

Use the diagram to answer the following:

Given information:
Line a and line b are parallel lines.
Line c is a transversal line.



4) If the m∠ 5 is $4x - 5^{\circ}$ and the m∠ 8 is $2x + 5^{\circ}$, what is the value of x?
What is the measure of each angle?

∠5 and ∠8 are supplementary

$4x - 5 + 2x + 5 = 180$

$6x = 180$

$x = 30$

$\angle 5 = 115^{\circ}$

$\angle 8 = 65^{\circ}$

5) ∠1 and ∠2 are complementary. ∠1 is 9 more than twice the measure of ∠2. Find the measures of angles 1 and 2.

$\angle 1 = 9 + 2x$

$\angle 2 = x$

$3x + 9 = 90$

$3x = 81$

$x = 27$

$\angle 1 = 63°$

$\angle 2 = 27°$

6) Angles A and B are supplementary angles. The ratio of their measures is 5:7. Find the measures of angles A and B.

$5x + 7x = 180$

$12x = 180$

$x = 15$

Angle A = 75^0

Angle B = 105^0