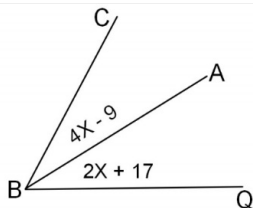


1. Write a proof.

Given: $\overline{AB}$ bisects $\angle CBQ$

Prove: $x = 13$



Statement

Reasons

$\overline{AB}$ bisects $\angle CBQ$ Given

$\angle CBA \cong \angle ABQ$ Def. of bisector.

$4x - 9 = 2x + 17$ Subst.

$2x - 9 = 17$

$2x = 26$

$x = 13$

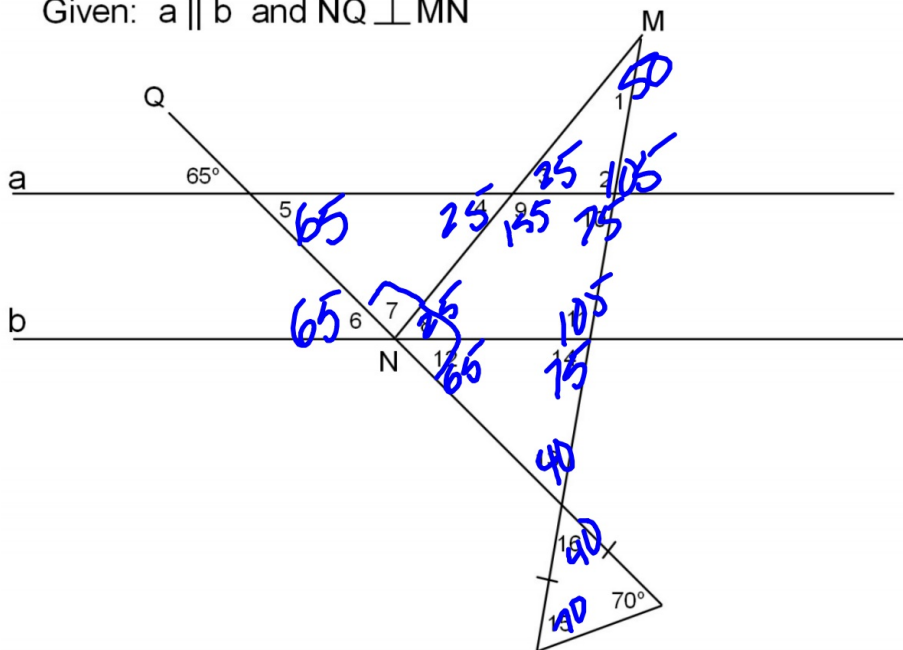
Subtr.

Add prop

Div. prop.

2. Find the measure of each numbered angle.

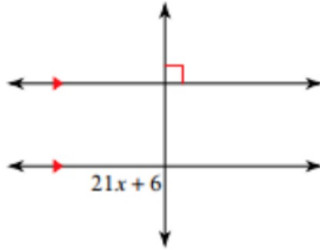
Given: $a \parallel b$ and $\overline{NQ} \perp \overline{MN}$



Now that we have learned the names and relationships of angles formed by intersecting or parallel lines, we will use that to solve equations. It may help to identify the type of angle first, so you know whether they are cong. or supp. angles.

Example 1: Find the value of x in the diagram below.

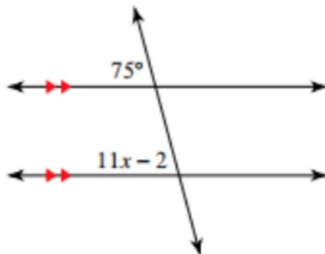
$x =$ 4



alt. ext. $\cong$
 $21x + 6 = 90$
 $21x = 84$
 $x = 4$

Example 2: Find the value of x in the diagram below.

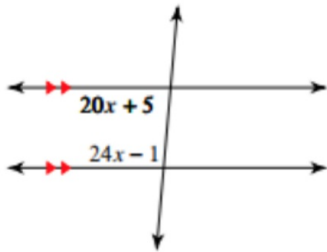
$x =$ 7



corresp. $\angle$'s $\cong$
 $75 = 11x - 2$
 $77 = 11x$
 $x = 7$

Example 3: Find the value of x in the diagram below.

$x = 4$



Same side Int

Suppl. = 180

$$44x + 4 = 180$$

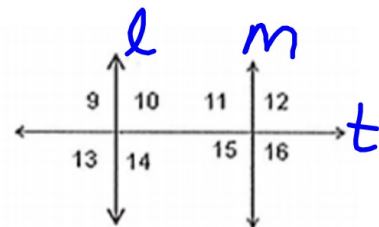
$$44x = 176$$

$$x = 4$$

Section 3.1 Cont.

Identify each angle pair from the diagram at the right. (Use this diagram for #1-10.)

1. $\angle 9$ and $\angle 10$ linear pair
2. $\angle 12$ and $\angle 13$ alt. ext.
3. $\angle 9$ and $\angle 12$ same-side ext.
4. $\angle 11$ and $\angle 16$ vert.
5. $\angle 14$ and $\angle 11$ alt. int.
6. $\angle 10$ and $\angle 12$ corresp.
7. $\angle 14$ and $\angle 15$ same side int.

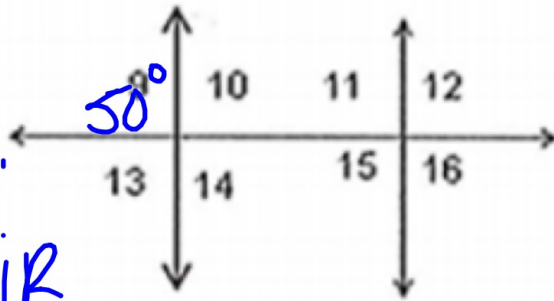


Using the diagram above, if $\angle 9 = 50^\circ$, find the angle measures below.

8. $m\angle 11 = \underline{50^\circ}$ because CORRESP.

9. $m\angle 16 = \underline{50}$ because alt. ext.

10. $m\angle 13 = \underline{130}$ because linear pair



Use the diagram at the right for questions 11 and 12.

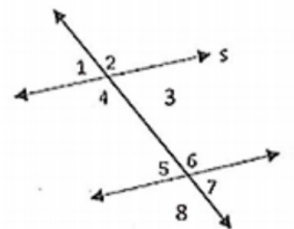
11. Assume $s \parallel t$. Solve for x if $m\angle 4 = 77^\circ$ and $m\angle 8 = 4x + 57$

CORRESP.

$$77 = 4x + 57$$

$$20 = 4x$$

$$\boxed{x = 5}$$



12. Assume $s \parallel t$. Solve for x if $m\angle 1 = 6x - 5$ and $m\angle 8 = 115^\circ$

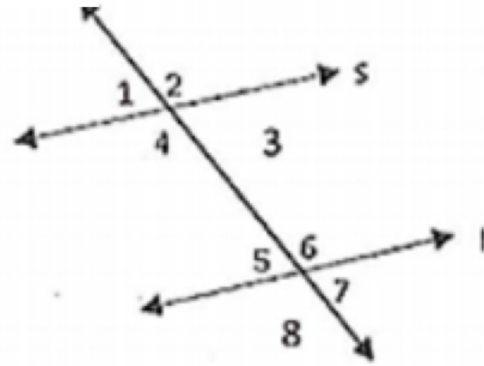
SS E $\angle$'s

$$6x - 5 + 115 = 180$$

$$6x + 110 = 180$$

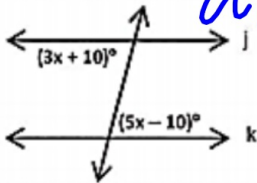
$$6x = 70$$

$$x = 11.6$$



Find the value of x that makes $j \parallel k$.

13.



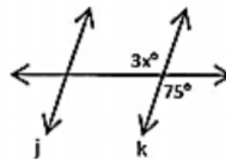
alt. int.

$$3x + 10 = 5x - 10$$

$$-2x = -20$$

$$x = 10$$

14.

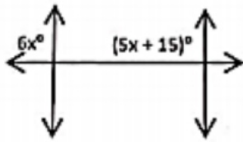


vertical

$$3x = 75$$

$$x = 25$$

15.

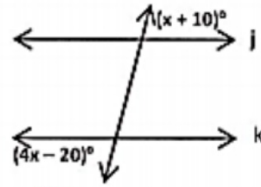


CORRES.

$$6x = 5x + 15$$

$$x = 15$$

16.



alt. ext.

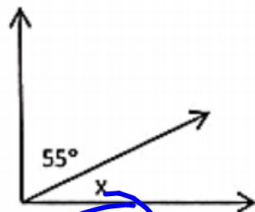
$$4x - 20 = x + 10$$

$$3x = 30$$

$$x = 10$$

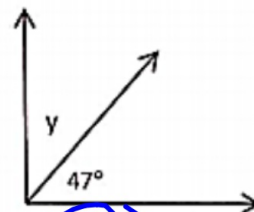
Determine the missing angles.

17.



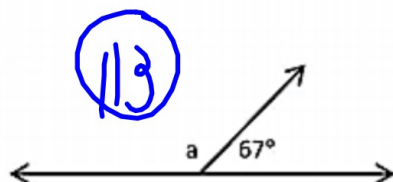
$$35$$

18.



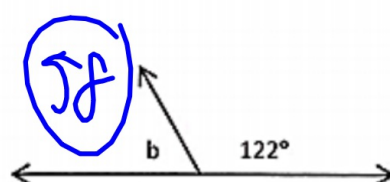
$$43$$

19.



$$113$$

20.



$$58$$