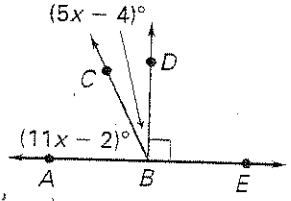
H. Geometry Sec. 1.5 Name key

∠1 and ∠2 are complementary angles and ∠2 and ∠3 are supplementary angles. Given the measure of ∠1, find $m\angle 2$ and $m\angle 3$.

1. $m\angle 1 = 43°$ $m\angle 2 = 47°$ $m\angle 3 = 133°$

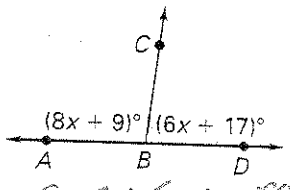
2. $m\angle 1 = 28°$ $m\angle 2 = 62°$ $m\angle 3 = 118$

Find $m\angle ABC$ and $m\angle CBD$.

5. 

$5x-4+11x-2=90$

$16x-6=90$ $16x=96$ $x=6$

6. 

$8x+9+6x+17=180$

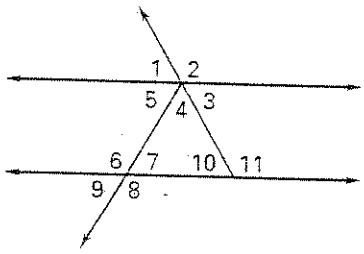
$14x+26=180$ $x=11$

(5) $m\angle ABC = 64°$ $m\angle CBD = 36°$

(6) $m\angle ABC = 97°$ $m\angle CBD = 83°$

In Exercises 8–15, use the diagram. Tell whether the angles are *vertical angles*, a *linear pair*, or *neither*.

8. ∠1 and ∠2 Linear pair
9. ∠1 and ∠3 Vertical
10. ∠2 and ∠4 Neither
11. ∠4 and ∠5 neither
12. ∠6 and ∠8 Vertical
13. ∠8 and ∠9 Linear pair
14. ∠7 and ∠10 Neither
15. ∠10 and ∠11 Linear pair

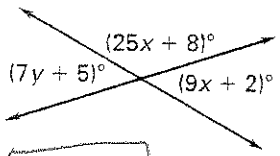


16. The measure of one angle is 7 times the measure of its complement. Find the measure of each angle. $x = 7y$ $8x = 90$ $x = \frac{90}{8} = \frac{45}{4}$ $y = \frac{45}{4}$ $x = \frac{315}{4}$

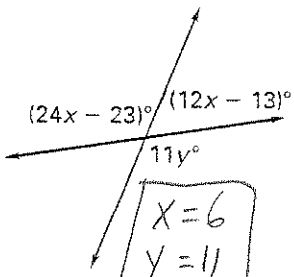
17. Two angles form a linear pair. The measure of one angle is 15 times the measure of the other angle. Find the measure of each angle. $x = 15y$ $x + y = 180$ $15y + y = 180$ $16y = 180$ $y = \frac{180}{16} = \frac{90}{8} = \frac{45}{4}$ $x = \frac{675}{4}$

18. The measure of one angle is 47° less than the measure of its supplement. Find the measure of each angle. $x + y = 180$ $x = y - 47$ $y - 47 + y = 180$ $2y - 47 = 180$ $2y = 227$ $y = \frac{227}{2}$ $x = \frac{227}{2} - \frac{94}{2} = \frac{133}{2}$

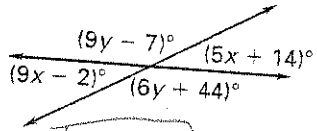
Find the values of *x* and *y*.

19. 

$x = 5$ $y = 6$

20. 

$x = 6$ $y = 11$

23. 

$x = 4$ $y = 17$

Tell whether the statement is *always*, *sometimes*, or *never* true. *Explain* your reasoning.

25. Two vertical angles are adjacent. Never they don't share any sides

26. Two supplementary angles consist of one acute angle and one obtuse angle. Sometimes $90° + 90° = 180°$

27. An angle that has a complement also has a supplement. always any angle w/ a complement is acute,

$\angle A$ and $\angle B$ are complementary angles. Find $m\angle A$ and $m\angle B$.

28. $m\angle A = 5x°$ $= 20°$
$m\angle B = (17x + 2)°$ $= 70°$

29. $m\angle A = (16x - 13)°$ $= 83°$
$m\angle B = (2x - 5)°$ $= 7°$

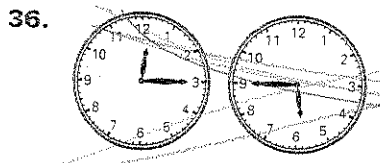
$\angle A$ and $\angle B$ are supplementary angles. Find $m\angle A$ and $m\angle B$.

32. $m\angle A = (x + 11)°$ $= 103°$
$m\angle B = (x - 15)°$ $= 77°$

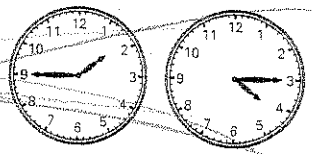
33. $m\angle A = (9x - 12)°$ $= 24°$
$m\angle B = (24x + 60)°$ $= 156°$

Tell whether the two angles shown are *complementary*, *supplementary*, or *neither*.

36.



37.



Bad Questions

Challenge Practice

For use with pages 35–41

1. Let $\angle A$ and $\angle B$ be complementary angles and let $m\angle A = (2x^2 + 35)°$ and $m\angle B = (x + 10)°$. What is (are) the value(s) of x? What are the measures of the angles?

when $x = -5$: $m\angle A = 85°$, $m\angle B = 5°$

when $x = 4.5$: $m\angle A = 75.5°$, $m\angle B = 14.5°$

2. Let $\angle A$ and $\angle B$ be supplementary angles and let $m\angle A = (x^2 + 12x)°$ and $m\angle B = (3x^2 + 20)°$. What is the value of x? What are the measures of the angles?

when $x = 5$, $m\angle A = 85°$, $m\angle B = 95°$

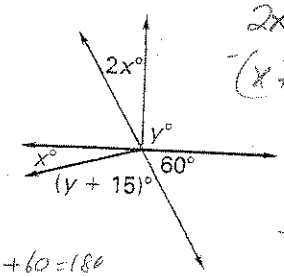
3. The sum of the measures of two supplementary angles exceeds the difference of their measures by 116°. Find the measure of each angle.

58° 122°

$$\begin{cases} a+b=180 \\ a+b-116 = a-b \end{cases}$$

In Exercises 9–12, find the values of x and y shown in the diagram.

10.



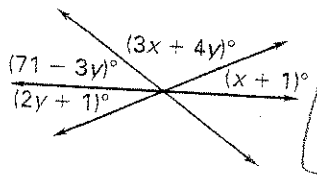
$2x + y + 60 = 180$
$(x + y + 75 = 180)$

$2x + y + 60 = 180$
$-x - y - 75 = 180$

$x - 15 = 0$
$x = 15$

$2(15) + y + 60 = 180$
$30 + y + 60 = 180$
$y = 90$

11.



$x = 24$
$y = 12$