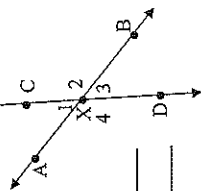




Name: \_\_\_\_\_ Date: \_\_\_\_\_

**Supplementary and Complementary Angles Homework**

Name the figures described. Use the figure for 1-6.



- Two acute angles. \_\_\_\_\_
- Two obtuse angles. \_\_\_\_\_
- Two pairs of vertical angles. \_\_\_\_\_
- Four pairs of adjacent angles. \_\_\_\_\_
- Four pairs of supplementary angles. \_\_\_\_\_
- Two supplements of  $\square AXD$ . \_\_\_\_\_
- Suppose  $\angle 1$  and  $\angle 2$  are known to be complementary. If  $m\angle 1 = 20$ , then  $m\angle 2 =$  \_\_\_\_\_.
- Suppose  $\angle 3$  and  $\angle 4$  are known to be supplementary. If  $m\angle 3 = 40$ , then  $m\angle 4 =$  \_\_\_\_\_.

For problems 9-12, if  $\angle 1$  and  $\angle 2$  are complementary angles, state the numerical value of  $x$ .

9. $m\angle 1 = 2x, m\angle 2 = 3x$	10. $m\angle 1 = x, m\angle 2 = x + 20$
11. $m\angle 1 = 2m\angle 2, m\angle 2 = x$	12. $m\angle 1 = 30 + x, m\angle 2 = 40 + x$

For problems 13-16, if  $\angle 3$  and  $\angle 4$  are supplementary angles, state the numerical value of  $y$ .

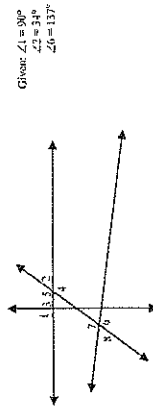
13. $m\angle 3 = 2y, m\angle 4 = 3y - 15$	14. $m\angle 3 = y + 10, m\angle 4 = 3y - 10$
15. $m\angle 3 = 5m\angle 4, m\angle 4 = y$	16. $m\angle 3 = 160 - y, m\angle 4 = 170 - y$

<p>17. Two angles are supplementary. The measure of one is five times the measure of the other angle. Find each angle. _____</p>	<p>18. Two angles are complementary. The measure of one is <math>\frac{4}{5}</math> the measure of the other. Find each angle. _____</p>
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Solve.

- The measure of an angle is 30 more than its complement. Find the measure of the angle and its complement. \_\_\_\_\_
- The measure of an angle is the same as the measure of its complement. Find the measure of the angle. \_\_\_\_\_
- The measure of an angle is 20 less than the measure of its supplement. Find the measure of the angle, the measure of its supplement, and the measure of its complement. \_\_\_\_\_
- The measure of an angle is twice that of its supplement. Find the measure of the angle and its supplement. \_\_\_\_\_
- $\angle D$  and  $\angle E$  form a linear pair and  $m\angle E = 3m\angle D$ . Find the measure of each angle and the measure of the complement of  $\angle D$ . \_\_\_\_\_

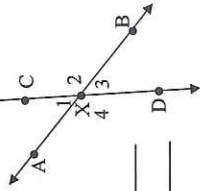
24. Find all the missing angles.



Name: \_\_\_\_\_ Date: \_\_\_\_\_

Supplementary and Complementary Angles Homework

Name the figures described. Use the figure for 1-6.



- Two acute angles.  $\angle 1, \angle 3$
- Two obtuse angles.  $\angle 2, \angle 4$
- Two pairs of vertical angles.  $\angle 1, \angle 3, \angle 2, \angle 4$
- Four pairs of adjacent angles.  $\angle 1, \angle 2, \angle 2, \angle 3, \angle 3, \angle 4, \angle 4, \angle 1$
- Four pairs of supplementary angles.  $\angle 1, \angle 2, \angle 2, \angle 3, \angle 3, \angle 4, \angle 4, \angle 1$
- Two supplements of  $\angle AXC$ .  $\angle CXB$

- Suppose  $\angle 1$  and  $\angle 2$  are known to be complementary. If  $m\angle 1 = 20$ , then  $m\angle 2 = 70$ .
- Suppose  $\angle 3$  and  $\angle 4$  are known to be supplementary. If  $m\angle 3 = 40$ , then  $m\angle 4 = 140$ .

For problems 9-12, if  $\angle 1$  and  $\angle 2$  are complementary angles, state the numerical value of  $x$ .

- $m\angle 1 = 2x, m\angle 2 = 3x$   
 $2x + 3x = 90$   
 $5x = 90$   
 $x = 18$
- $m\angle 1 = 2m\angle 2, m\angle 2 = x$   
 $2x + x = 90$   
 $3x = 90$   
 $x = 30$
- $m\angle 1 = x, m\angle 2 = x + 20$   
 $x + x + 20 = 90$   
 $2x + 20 = 90$   
 $x = 35$
- $m\angle 1 = 30 + x, m\angle 2 = 40 + x$   
 $30 + x + 40 + x = 90$   
 $2x + 70 = 90$   
 $2x = 20$   
 $x = 10$

For problems 13-16, if  $\angle 3$  and  $\angle 4$  are supplementary angles, state the numerical value of  $y$ .

- $m\angle 3 = 2y, m\angle 4 = 3y - 15$   
 $3y - 15 + 2y = 180$   
 $5y - 15 = 180$   
 $5y = 195$   
 $y = 39$
- $m\angle 3 = 5m\angle 4, m\angle 4 = y$   
 $5y + y = 180$   
 $6y = 180$   
 $y = 30$
- $m\angle 3 = y + 10, m\angle 4 = 3y - 10$   
 $y + 10 + 3y - 10 = 180$   
 $4y = 180$   
 $y = 45$
- $m\angle 3 = 160 - y, m\angle 4 = 170 - y$   
 $160 - y + 170 - y = 180$   
 $-2y + 330 = 180$   
 $-2y = -150$   
 $y = 75$

17. Two angles are supplementary. The measure of one is five times the measure of the other angle. Find each angle.  
 $x + 5x = 180$   
 $6x = 180$   
 $x = 30$

18. Two angles are complementary. The measure of one is  $\frac{4}{5}$  the measure of the other. Find each angle.  
 $\frac{4}{5}x = \frac{180}{5}$   
 $4x = 90$   
 $x = 22.5$

Solve.

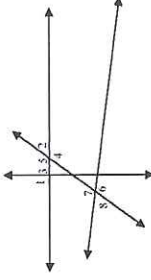
- The measure of an angle is 30 more than its complement. Find the measure of the angle and its complement.  
 $x + x + 30 = 90$   
 $2x + 30 = 90$   
 $2x = 60$   
 $x = 30$   
 $y = 60$
- The measure of an angle is the same as the measure of its complement. Find the measure of the angle.  
 $x = 45$   
 $y = 45$

21. The measure of an angle is 20 less than the measure of its supplement. Find the measure of the angle, the measure of its supplement, and the measure of its complement.  
 $x + x - 20 = 180$   
 $2x - 20 = 180$   
 $2x = 200$   
 $x = 100$

22. The measure of an angle is twice that of its supplement. Find the measure of the angle and its supplement.  
 $x + 2x = 180$   
 $3x = 180$   
 $x = 60$   
 $y = 120$

23.  $\angle D$  and  $\angle E$  form a linear pair and  $m\angle E = 3m\angle D$ . Find the measure of each angle and the measure of the complement of  $\angle D$ .

24. Find all the missing angles.



Given:  $\angle 1 = 99^\circ$   
 $\angle 2 = 34^\circ$   
 $\angle 6 = 137^\circ$

- $\angle 3 = 90$   
 $\angle 5 = 180 - 34 = 146$   
 $\angle 4 = 180 - 34 = 146$
- $\angle 6 = 137 = 137$   
 $\angle 8 = 17 - 180 = 137 - 180 = -143$