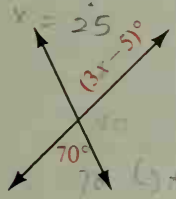
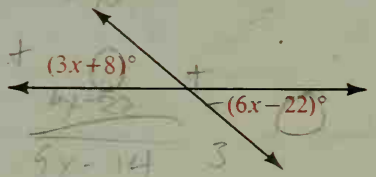
Find the value of x.

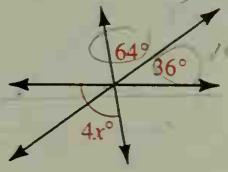
19.



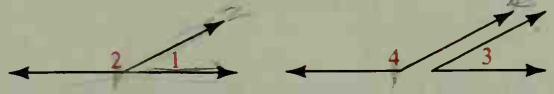
20.



21.



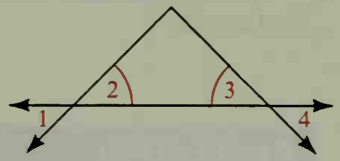
22. $\angle 1$ and $\angle 2$ are supplements.
$\angle 3$ and $\angle 4$ are supplements.



a. If $m\angle 1 = m\angle 3 = 27$, find $m\angle 2$ and $m\angle 4$.
b. If $m\angle 1 = m\angle 3 = x$, find $m\angle 2$ and $m\angle 4$ in terms of x.
c. If two angles are congruent, must their supplements be congruent?

23. Copy everything shown. Complete the proof.

Given: $\angle 2 \cong \angle 3$
Prove: $\angle 1 \cong \angle 4$



Proof:

Statements	Reasons
1. $\angle 1 \cong \angle 2$	1. ?
2. $\angle 2 \cong \angle 3$	2. ?
3. $\angle 3 \cong \angle 4$	3. ?
4. ?	4. Transitive Property (used twice)

If $\angle A$ and $\angle B$ are supplementary, find the value of x, $m\angle A$, and $m\angle B$.

B **24.** $m\angle A = 2x$, $m\angle B = x - 15$ **25.** $m\angle A = x + 16$, $m\angle B = 2x - 16$

If $\angle C$ and $\angle D$ are complementary, find the value of y, $m\angle C$, and $m\angle D$.

26. $m\angle C = 3y + 5$, $m\angle D = 2y$ **27.** $m\angle C = y - 8$, $m\angle D = 3y + 2$

Use the given information to write an equation and solve the problem.

28. Find the measure of an angle that is twice as large as its supplement.

29. Find the measure of an angle that is half as large as its complement.

30. The measure of a supplement of an angle is 12 more than twice the measure of the angle. Find the measures of the angle and its supplement.

31. A supplement of an angle is six times as large as a complement of the angle. Find the measures of the angle, its supplement, and its complement.