Name_____ _____ Date_____

Chapter 2

Write the if-then form of the conditional statement.

1. It is time for dinner if it is 6 P.M. IF IT IS 6PM THEN IT IS TIME FOR DINNER.
2. The measure of a right angle is 90°. IF IT IS A RIGHT ANGLE, THEN IT MEASURES 90°

Write the converse of the conditional statement. If the converse is false, provide a counterexample.

3. If two angles are not adjacent, then they are vertical angles. IF TWO ANGLES ARE VERTICAL, THEN THEY ARE NOT ADJACENT
4. If x is odd, then $3x$ is odd. IF $3x$ IS ODD THEN x IS ODD

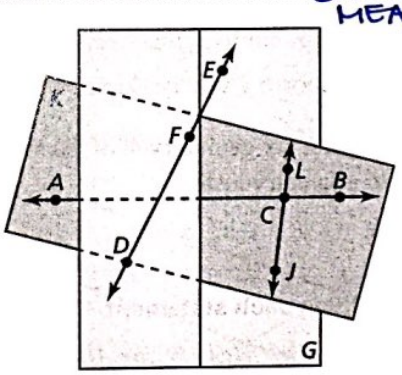
Write the inverse of the conditional statement.

5. If an angle measures 30°, then it is acute. IF AN ANGLE DOES NOT MEASURE 30°, THE IT IS NOT ACUTE
6. If two angles are supplementary, then their sum is 180°. IF TWO ANGLES AREN'T SUPP, THEN THEIR SUM IS NOT 180°.

Write the contrapositive of the conditional statement.

7. If an animal is a panther, then it lives in the forest. IF AN ANIMAL DOES NOT LIVE IN THE FOREST THEN IT IS NOT A PANTHER
8. If two angles have the same measure, then they are congruent. IF TWO ANGLES AREN'T ≅, THEN THEY DO NOT HAVE THE SAME MEASURE

Use the diagram to determine whether the statement is true or false.



9. Points A, B, and L are coplanar.
10. $\overline{JL}$ lies on plane K.
11. $\overline{DF}$ intersects $\overline{AC}$.
12. Points D, F, and E are collinear.

Solve the equation. Justify each step.

13. $-8x + 7 = -33$
$-7 \quad -7$ SUBTRACTION PROP OF =
$\frac{-8x}{-8} = \frac{-40}{-8}$ DIVISION PROP OF =

14. $9x - 5 = 3x + 7$
$-3x \quad -3x$ SUBTRACTION PROP OF =
$6x - 5 = 7$
$+5 \quad +5$ ADDITION PROP OF =
$\frac{6x}{6} = \frac{12}{6}$ DIV PROP OF =

15. $2(4x - 3) - 8 = 4 + 2x$
$8x - 6 - 8 = 4 + 2x$ DISTRIBUTION
$8x - 14 = 4 + 2x$ SIMPLIFY
$-2x \quad -2x$ SUBTRACTION PROP OF =
$6x - 14 = 4$
$+14 \quad +14$ ADD PROP OF =
$\frac{6x}{6} = \frac{18}{6}$ DIV PROP OF =
$x = 3$

Answers

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. 1
9. TRUE
10. TRUE
11. FALSE
12. TRUE
13. $x = 5$
14. See left. $x = 2$
15. See left. $x = 3$

See left.

Name _____ Date _____

Chapter 2

16. A gardener has 26 feet of fencing for a garden. To find the width of the rectangular garden, the gardener uses the formula $P = 2\ell + 2w$, where P is the perimeter, ℓ is the length, and w is the width of the rectangle. The gardener wants to fence a garden that is 8 feet long and plans on using all of the available fencing. How wide is the garden? Solve the equation for w, and justify each step.

$P = 2\ell + 2w$

$-2\ell \quad -2\ell$ SUBTRACT

$P - 2\ell = 2w$

$\frac{P}{2} - \frac{2\ell}{2}$ DIVIDE

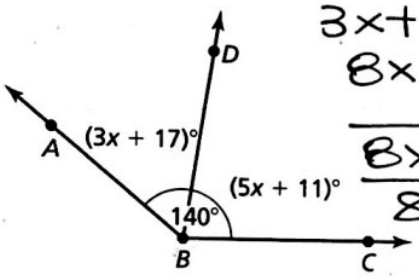
$\frac{P}{2} - \ell = w$ SIMPLIFY

$\frac{26}{2} - 8 = w$

$13 - 8 = w$

$5 = w$

17. Use the diagram to find the value of x and the measure of each angle. Write a justification for each step.



$3x + 17 + 5x + 11 = 140$ ANGLE ADDITION POSTULATE

$8x + 28 = 140$ SIMPLIFY

$-28 \quad -28$ SUBTRACT

$\frac{8x}{8} = \frac{112}{8}$ DIVISION

$x = 14$

Decide whether inductive reasoning or deductive reasoning is used to reach the conclusion.

18. Because today is Friday, tomorrow will be Saturday.

19. Sandy earned A's on her first six geometry tests, so she concludes that she will always earn A's on geometry tests.

20. If $5x = 25$, then $x = 5$.

Identify the property that justifies each statement.

21. If $m\angle ABC = m\angle DEF$, then $m\angle DEF = m\angle ABC$.

22. If $AB = CD$ and $CD = EF$, then $AB = EF$.

23. $x = y$; If $y = 9$, then $x = 9$.

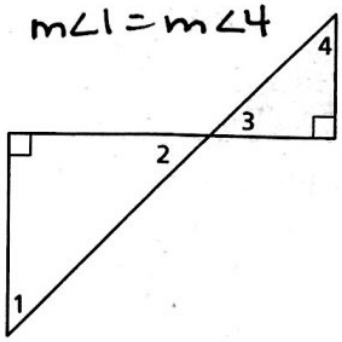
24. $W = W$

Write a proof using any format.

25. **Given** $m\angle 1 + m\angle 2 = 90°$, $m\angle 3 + m\angle 4 = 90°$

Prove $m\angle 1 = m\angle 4$

STATEMENTS	REASONS
$m\angle 1 + m\angle 2 = 90$	GIVEN
$m\angle 3 + m\angle 4 = 90$	GIVEN
$m\angle 2 \cong m\angle 3$	VERT $\angle$s $\cong$
$m\angle 1 + m\angle 3 = 90$	SUBS
$m\angle 1 + m\angle 3 = m\angle 3 + m\angle 4$	TRANS
$m\angle 1 = m\angle 4$	SUBTRACTION



Answers

16. $\frac{P}{2} - \ell = w$; $w = 5$; See left.
17. $x = 14$
18. See left.
19.
20.
21. SYMMETRIC
22. TRANSITIVE
23. SUBS OR TRANS
24. REFLEXIVE
25. See left.