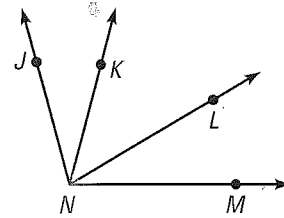


# GUIDED PRACTICE

**Vocabulary Check** ✓ 1. Name the property that makes the following statement true:  
 “If  $m\angle 3 = m\angle 5$ , then  $m\angle 5 = m\angle 3$ .”

**Concept Check** ✓ Use the diagram at the right.

- Explain how the addition property of equality supports this statement: “If  $m\angle JNK = m\angle LNM$ , then  $m\angle JNL = m\angle KNM$ .”
- Explain how the subtraction property of equality supports this statement: “If  $m\angle JNL = m\angle KNM$ , then  $m\angle JNK = m\angle LNM$ .”



**Skill Check** ✓ In Exercises 4–8, match the conditional statement with the property of equality.

- |  |                            |
|--|----------------------------|
| 4. If $JK = PQ$ and $PQ = ST$ , then $JK = ST$ .                       | A. Addition property       |
| 5. If $m\angle S = 30^\circ$ , then $5^\circ + m\angle S = 35^\circ$ . | B. Substitution property   |
| 6. If $ST = 2$ and $SU = ST + 3$ , then $SU = 5$ .                     | C. Transitive property     |
| 7. If $m\angle K = 45^\circ$ , then $3(m\angle K) = 135^\circ$ .       | D. Symmetric property      |
| 8. If $m\angle P = m\angle Q$ , then $m\angle Q = m\angle P$ .         | E. Multiplication property |
9. **WIND-CHILL FACTOR** If the wind is blowing at 20 miles per hour, you can find the wind-chill temperature  $W$  (in degrees Fahrenheit) by using the equation  $W = 1.42T - 38.5$ , where  $T$  is the actual temperature (in degrees Fahrenheit). Solve this equation for  $T$  and write a reason for each step. What is the actual temperature if the wind chill temperature is  $-24.3^\circ\text{F}$  and the wind is blowing at 20 miles per hour?

# PRACTICE AND APPLICATIONS

**STUDENT HELP**

Extra Practice  
to help you master  
skills is on p. 806.

**COMPLETING STATEMENTS** In Exercises 10–14, use the property to complete the statement.

- Symmetric property of equality: If  $m\angle A = m\angle B$ , then  $\underline{\quad?}$ .
- Transitive property of equality: If  $BC = CD$  and  $CD = EF$ , then  $\underline{\quad?}$ .
- Substitution property of equality: If  $LK + JM = 12$  and  $LK = 2$ , then  $\underline{\quad?}$ .
- Subtraction property of equality: If  $PQ + ST = RS + ST$ , then  $\underline{\quad?}$ .
- Division property of equality: If  $3(m\angle A) = 90^\circ$ , then  $m\angle A = \underline{\quad?}$ .
- Copy and complete the argument below, giving a reason for each step.

$2(3x + 1) = 5x + 14$	Given
$6x + 2 = 5x + 14$	$\underline{\quad?}$
$x + 2 = 14$	$\underline{\quad?}$
$x = 12$	$\underline{\quad?}$

**STUDENT HELP**

HOMEWORK HELP

- Example 1: Exs. 10–23
- Example 2: Exs. 15–23
- Example 3: Exs. 29–31
- Example 4: Exs. 24–27
- Example 5: Ex. 28

**SOLVING EQUATIONS** In Exercises 16–23, solve the equation and state a reason for each step.

16.  $p - 1 = 6$

17.  $q + 9 = 13$

18.  $2r - 7 = 9$

19.  $7s + 20 = 4s - 13$

20.  $3(2t + 9) = 30$

21.  $-2(-w + 3) = 15$

22.  $26u + 4(12u - 5) = 128$

23.  $3(4v - 1) - 8v = 17$

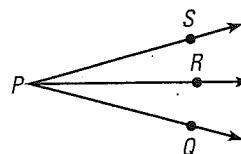
24. **LOGICAL REASONING** In the diagram,  $m\angle RPQ = m\angle RPS$ . Verify each step in the argument that shows  $m\angle SPQ = 2(m\angle RPQ)$ .

$m\angle RPQ = m\angle RPS$

$m\angle SPQ = m\angle RPQ + m\angle RPS$

$m\angle SPQ = m\angle RPQ + m\angle RPQ$

$m\angle SPQ = 2(m\angle RPQ)$



25. **LOGICAL REASONING** In the diagram,  $m\angle ABF = m\angle BCG$  and  $m\angle ABF = 90^\circ$ . Verify each step in the argument that shows  $\overleftrightarrow{GK} \perp \overleftrightarrow{AD}$ .

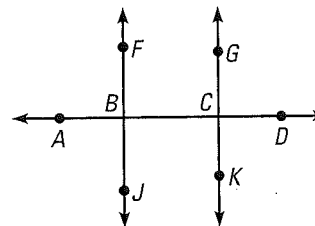
$m\angle ABF = 90^\circ$

$m\angle ABF = m\angle BCG$

$m\angle BCG = 90^\circ$

$\angle BCG$  is a right angle.

$\overleftrightarrow{GK} \perp \overleftrightarrow{AD}$



**DEVELOPING ARGUMENTS** In Exercises 26 and 27, give an argument for the statement, including a reason for each step.

26. If  $\angle 1$  and  $\angle 2$  are right angles, then they are supplementary.

27. If  $B$  lies between  $A$  and  $C$  and  $AB = 3$  and  $BC = 8$ , then  $AC = 11$ .

28. **AUTO RACING** Some facts about the maximum banking angles of Daytona International Speedway at corners 1, 2, 3, and 4 are at the right. Find  $m\angle 3$ . Explain your steps. (Banked corners are described on page 98.)

$m\angle 1 + m\angle 3 + m\angle 4 = 93^\circ$

$m\angle 2 + m\angle 4 = 62^\circ$

$m\angle 2 = m\angle 3$

$m\angle 1 = m\angle 2$

29. **PAY RAISES** In Exercises 29–31, suppose you receive a raise at work. You can calculate your percent increase by using the pay raise formula  $c(r + 1) = n$ , where  $c$  is your current wage (in dollars per hour),  $r$  is your percent increase (as a decimal), and  $n$  is your new wage (in dollars per hour).

29. Solve the formula for  $r$  and write a reason for each step.

30. Use the result from Exercise 29 to find your percent increase if your current wage is \$10.00 and your new wage will be \$10.80.

31. Suppose Donald gets a 6% pay raise and his new wage is \$12.72. Find Donald's old wage. Explain the steps you used to find your answer.

**FOCUS ON PEOPLE**



**BILL ELLIOTT** holds the qualifying record at Daytona International Speedway with a speed of 210.364 miles per hour.