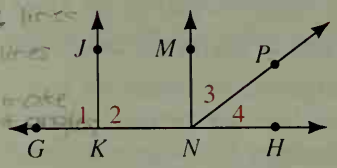
Name the definition or state the theorem that justifies the statement about the diagram.

15. If $\overrightarrow{KJ} \perp \overleftrightarrow{GH}$, then $\angle 1$ is a right angle. **2–5**

16. If $\angle 2$ is a 90° angle, then $\overrightarrow{KJ} \perp \overleftrightarrow{GH}$.

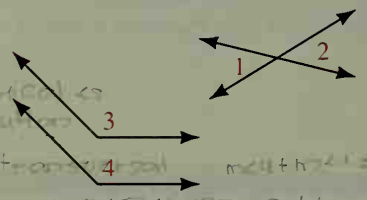
17. If $\overrightarrow{NM} \perp \overleftrightarrow{GH}$, then $\angle MNK \cong \angle MNH$.

18. If $\overrightarrow{NM} \perp \overleftrightarrow{GH}$, then $\angle 3$ and $\angle 4$ are complementary.



19. Write a plan for a proof. **2–6**
Given: $\angle 3$ is a supplement of $\angle 1$;
$\angle 4$ is a supplement of $\angle 2$.
Prove: $\angle 3 \cong \angle 4$

20. Write a proof in two-column form for Exercise 19.



Chapter Test

1. Use the conditional: Two angles are congruent if they are vertical angles.
a. Write the hypothesis. **b.** Write the converse.

2. Provide a counterexample to disprove the statement:
If $x^2 > 4$, then $x > 2$.

3. Write the biconditional as two conditionals that are converses of each other:
Angles are congruent if and only if their measures are equal.

4. Supply reasons to justify the steps:

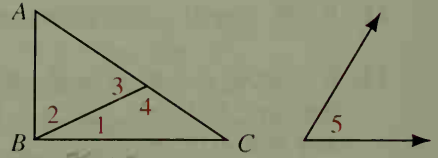
Steps	*Reasons*
1. $y = 12$	1. Given
2. $5x = 2x + y$	2. Given
3. $5x = 2x + 12$	3. ?
4. $3x = 12$	4. ?
5. $x = 4$	5. ?

5. $\overrightarrow{OB}$ is the bisector of $\angle AOC$ and $\overrightarrow{OC}$ is the bisector of $\angle BOD$. $m\angle AOC = 60$. Find $m\angle COD$.

6. S is the midpoint of $\overline{RT}$ and W is the midpoint of $\overline{ST}$. If $RT = 32$, find ST, WT, and RW.

7. In the diagram, $\overline{AB} \perp \overline{BC}$. Name:
a. two supplementary angles
b. two complementary angles

8. Given: $\angle 5$ is supplementary to $\angle 4$.
a. What can you conclude about $\angle 5$ and $\angle 3$?
b. State the theorem that justifies your conclusion.



Exs. 7–9

9. Suppose $m\angle 3 = 3x + 5$ and $m\angle 4 = 6x + 13$. Find the value of x.