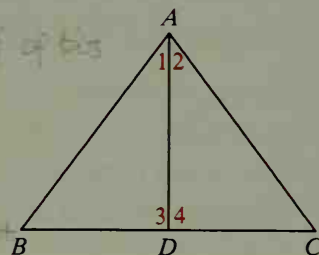## Written Exercises

Name the definition, postulate, or theorem that justifies the statement about the diagram.
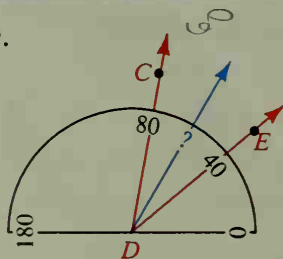
A **1.** If D is the midpoint of $\overline{BC}$, then $\overline{BD} \cong \overline{DC}$.
 2. If $\angle 1 \cong \angle 2$, then $\overrightarrow{AD}$ is the bisector of $\angle BAC$.
 3. If $\overrightarrow{AD}$ bisects $\angle BAC$, then $\angle 1 \cong \angle 2$.
 4. $m\angle 3 + m\angle 4 = 180$
 5. If $\overline{BD} \cong \overline{DC}$, then D is the midpoint of $\overline{BC}$.
 6. If D is the midpoint of $\overline{BC}$, then $BD = \frac{1}{2}BC$.
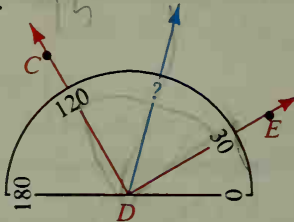 **7.** $m\angle 1 + m\angle 2 = m\angle BAC$
 8. $BD + DC = BC$

Exs. 1–8

Write the number that is paired with the bisector of $\angle CDE$.
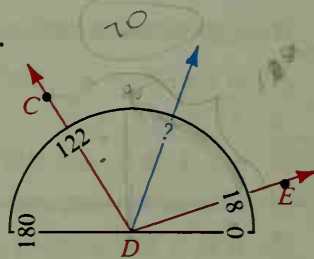
9.

10.
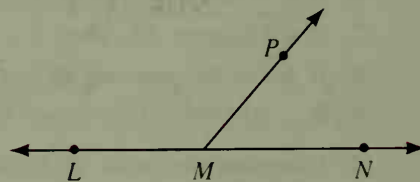

11.

12. a. Draw a diagram similar to the one shown.
  b. Use a protractor to draw the bisectors of $\angle LMP$ and $\angle PMN$.
  c. What is the measure of the angle formed by these bisectors?
  d. Explain how you could have known the answer to part (c) without measuring.

B **13.** The coordinates of points L and X are 16 and 40, respectively. N is the midpoint of $\overline{LX}$, and Y is the midpoint of $\overline{LN}$. Sketch a diagram and find:
  a. LN **b.** the coordinate of N **c.** LY **d.** the coordinate of Y
 14. $\overrightarrow{SW}$ bisects $\angle RST$ and $m\angle RST = 72$. $\overrightarrow{SZ}$ bisects $\angle RSW$, and $\overrightarrow{SR}$ bisects $\angle NSW$. Sketch a diagram and find $m\angle RSZ$ and $m\angle NSZ$.

 15. a. Suppose M and N are the midpoints of $\overline{LK}$ and $\overline{GH}$, respectively. What segments are congruent?
  b. What additional information about the figure would enable you to deduce that $LM = NH$?

 16. a. Suppose $\overrightarrow{SV}$ bisects $\angle RST$ and $\overrightarrow{RU}$ bisects $\angle SRT$. What angles are congruent?
  b. What additional information would enable you to deduce that $m\angle VSU = m\angle URV$?