Name ______________________ Date ______________

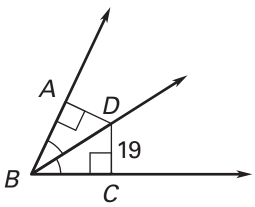
LESSON 5.3

Practice B

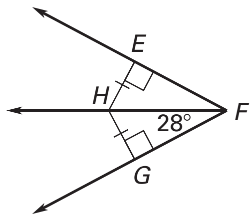
For use with pages 324–330

Use the information in the diagram to find the measure.

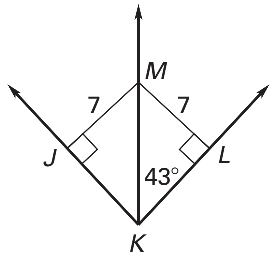
1. Find AD.



2. Find $m\angle EFH$.

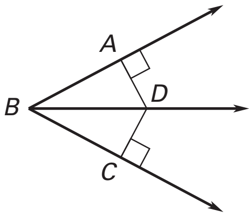


3. Find $m\angle JKL$.

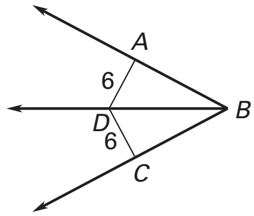


Can you conclude that $\overrightarrow{BD}$ bisects $\angle ABC$? *Explain.*

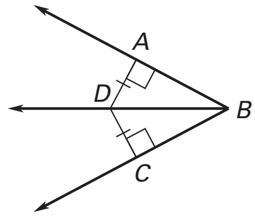
4.



5.

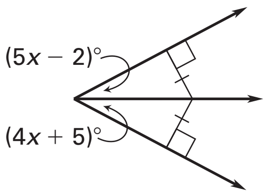


6.

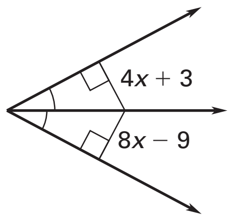


Find the value of *x*.

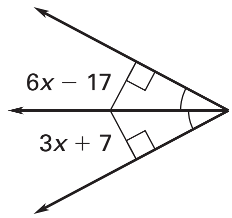
7.



8.

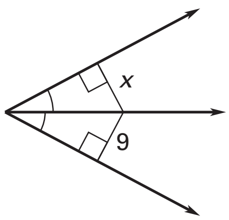


9.

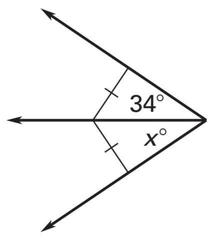


Can you find the value of *x*? *Explain.*

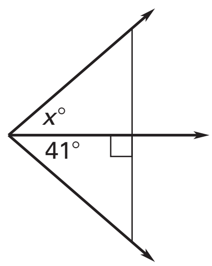
10.



11.



12.



LESSON 5.3

Name ______________________ Date ______________

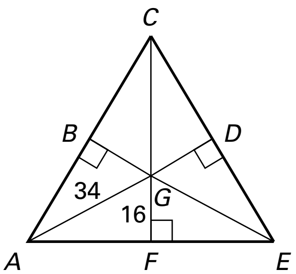
LESSON 5.3

Practice B *continued*

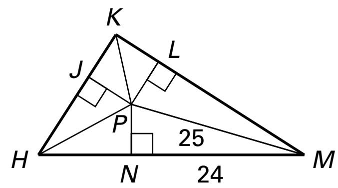
For use with pages 324–330

Find the indicated measure.

13. Point G is the incenter of $\triangle ACE$. Find BG.

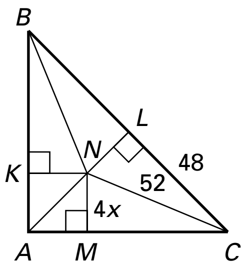


14. Point P is the incenter of $\triangle HKM$. Find JP.

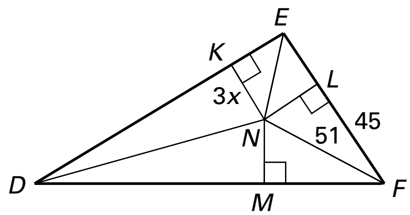


Find the value of *x* that makes *N* the incenter of the triangle.

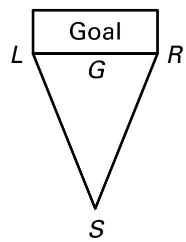
15.



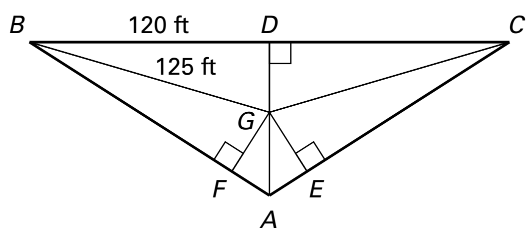
16.



17. Hockey You and a friend are playing hockey in your driveway. You are the goalie, and your friend is going to shoot the puck from point S. The goal extends from left goalpost L to right goalpost R. Where should you position yourself (point G) to have the best chance to prevent your friend from scoring a goal? *Explain.*



18. Monument You are building a monument in a triangular park. You want the monument to be the same distance from each edge of the park. Use the figure with incenter G to determine how far from point D you should build the monument.



Lesson 5.2, continued

16. Perpendicular Bisector Theorem; $\overline{AC} \perp \overline{DB}$ and $\overline{AB} \cong \overline{CB}$, so $\overline{DB}$ is the perpendicular bisector of $\overline{AC}$. Since D is on the perpendicular bisector of $\overline{AC}$, it is equidistant from A and C. Therefore, $AD = CD$ and $\overline{AD} \cong \overline{CD}$.

Review for Mastery

1. 23 **2.** 10 **3.** $\overleftrightarrow{PQ}$ bisects $\overline{RS}$, so $PR = PS$. Because Q is on the perpendicular bisector of $\overline{RS}$, $QR = QS$ by Theorem 5.2. **4.** No; If T were on $\overleftrightarrow{PQ}$, then T would be equidistant from R and S. T is 14 units from R and 15 units from S. **5.** 9

Problem Solving Workshop: Worked Out Example

1. (4.5, 3.5) **2.** (4.5, 6.1)

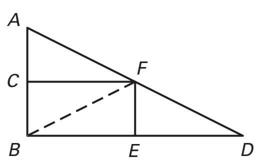
Challenge Practice

1. $x = 2, y = 3$ **2.** $x = 3, y = 2$ **3.** $x = 12, y = 8$ **4.** $x = 7, y = 13$

5.

Statements	Reasons
1. $\overline{GJ}$ is $\perp$ bisector of $\overline{HK}$.	1. Given
2. $\overline{HJ} \cong \overline{JK}$	2. Definition of segment bisector
3. $\overline{MH} \cong \overline{MK}$, $\overline{GH} \cong \overline{GK}$	3. Perpendicular Bisector Theorem
4. $\overline{GM} \cong \overline{GM}$	4. Reflexive Property of Congruence
5. $\triangle GHM \cong \triangle GKM$	5. SSS Congruence Postulate
6. $\angle GHM \cong \angle GKM$	6. Corresp. parts of $\cong \triangle$ are $\cong$.

6. Begin by drawing a line segment from point B to point F as shown. You are given $\overline{FC}$ is the perpendicular bisector of $\overline{AB}$ and $\overline{FE}$ is the perpendicular bisector of $\overline{BD}$. By the Perpendicular Bisector Theorem, you know that $AF = FB$ and $FD = FB$. Using the Transitive Property of Equality, you can conclude that $AF = FD$. By the definition of congruent segments you know that $\overline{AF} \cong \overline{FD}$.



7.

Statements	Reasons
1. $\overline{UW} \cong \overline{UY}$, $\overline{UV} \cong \overline{UZ}$	1. Given
2. $\overline{UX}$ is $\perp$ bisector of $\overline{WY}$.	2. Given
3. $\overline{WX} \cong \overline{XY}$	3. Definition of segment bisector
4. $\angle UXW$ and $\angle UXY$ are right angles.	4. Definition of $\perp$ lines
5. $\triangle UVX$ and $\triangle UZX$ are right triangles.	5. Def. of right triangles
6. $\overline{UX} \cong \overline{UX}$	6. Reflexive Property of Congruence
7. $\triangle UVX \cong \triangle UZX$	7. HL Congruence Theorem
8. $\overline{VX} \cong \overline{XZ}$	8. Corresp. parts of $\cong \triangle$ are $\cong$.
9. X is the midpoint of $\overline{VZ}$.	9. Definition of midpoint

Lesson 5.3

Practice Level A

1. 7 **2.** 20° **3.** 5 **4.** 4 **5.** Yes; Angle Bisector Theorem **6.** No; You do not know if $\overline{DC}$ is perpendicular to $\overrightarrow{BC}$ or if $\overline{DA}$ is perpendicular to $\overrightarrow{BA}$. **7.** Yes; Angle Bisector Theorem

8. No; You do not know if $\overline{DC}$ is perpendicular to $\overrightarrow{BC}$ or if $\overline{DA}$ is perpendicular to $\overrightarrow{BA}$. **9.** 15 **10.** 5

11. The incenter of the triangular back yard because the incenter of a triangle is equidistant from the sides of the triangle. **12.** 12 ft

Practice Level B

1. 19 **2.** 28° **3.** 86° **4.** No; you don't know if $\overline{DA} \perp \overline{BA}$ or if $\overline{DC} \perp \overline{BC}$. **5.** No; you don't know if $DA = DC$. **6.** Yes; Converse of Angle Bisector Theorem **7.** 7 **8.** 3 **9.** 8

10. Yes; $x = 9$ by Angle Bisector Theorem.

11. No; you need to know that the congruent segments are $\perp$ to the rays. **12.** No; you need to know that the two segments are congruent.

13. 16 **14.** 7 **15.** 5 **16.** 8 **17.** Directly between points L and R so that $\overline{SG}$ bisects $\angle LSR$; the distance between you and each goalpost is equal which minimizes the amount you have to move in either direction. **18.** 35 ft