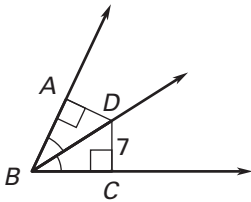


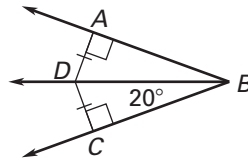
LESSON 5.3 **Practice A**
For use with pages 324–330

Use the information in the diagram to find the measure.

1. Find AD .

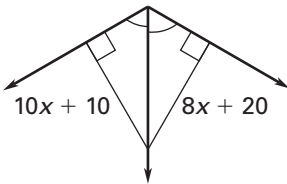


2. Find $m\angle DBA$.

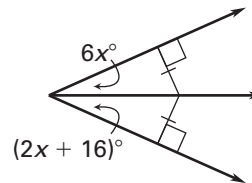


Find the value of x .

3.

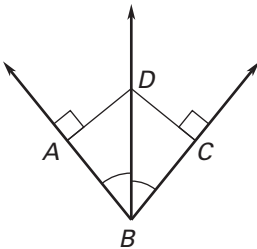


4.

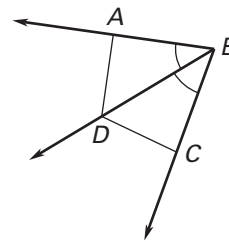


Is $DA = DC$? Explain.

5.

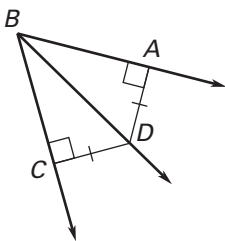


6.

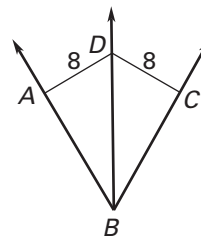


Can you conclude that \overrightarrow{BD} bisects $\angle ABC$? Explain.

7.

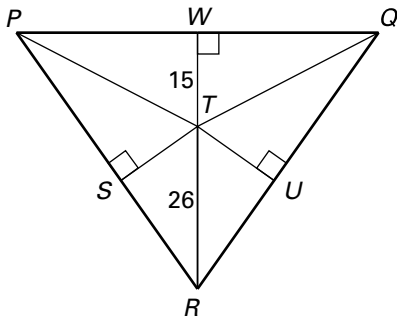


8.

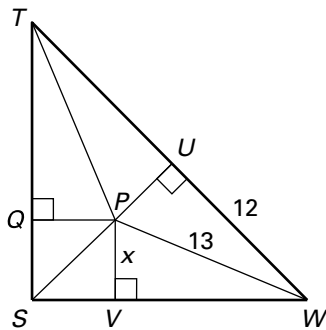


LESSON 5.3 **Practice A** *continued*
 For use with pages 324–330

9. Point T is the incenter of $\triangle PQR$. Find ST .

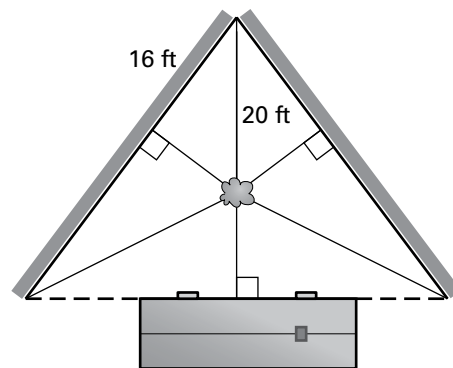


10. Find the value of x that makes P the incenter of $\triangle STW$.



11. **Bird Bath** Your neighbor is moving a new bird bath to his triangular back yard. He wants the bird bath to be the same distance from each edge of the yard. Where should your neighbor place the bird bath? *Explain.*

12. **Landscaping** You are planting a tree at the incenter of your triangular front yard. Use the diagram to determine how far the tree is from the house.



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)

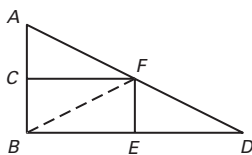
Challenge Practice

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 \overline{BC} or if \overline{DA} is perpendicular to \overline{BA} . **7.** Yes; Angle Bisector Theorem

8. No; You do not know if \overline{DC} is perpendicular to \overline{BC} or if \overline{DA} is perpendicular to \overline{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