Name _____ Date _____

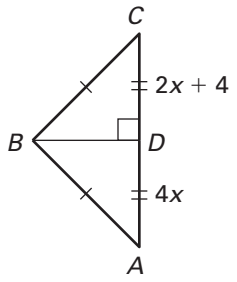
LESSON 5.2

Practice A

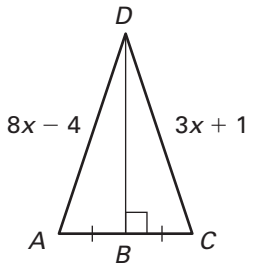
For use with pages 317–323

Find the length of $\overline{CD}$.

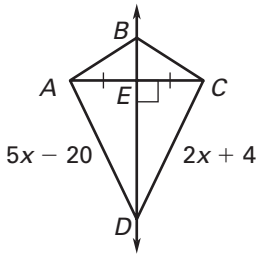
1.



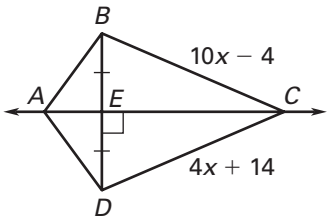
2.



3.



4.



In the diagram, the perpendicular bisectors of $\triangle MNP$ meet at point O and are shown dashed. Find the indicated measure.

5. Find MO.

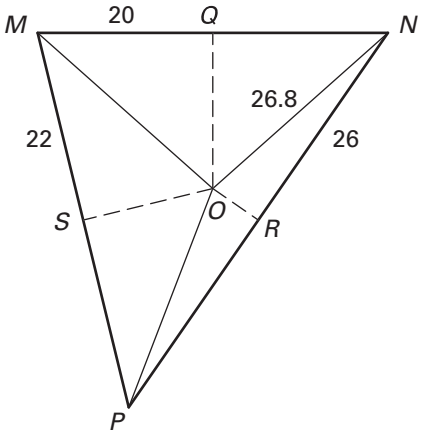
6. Find PR.

7. Find MN.

8. Find SP.

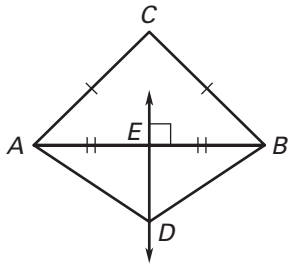
9. Find QN.

10. Find MP.

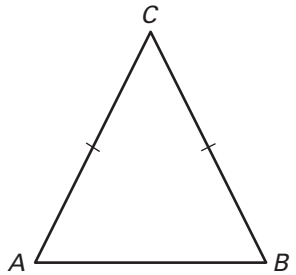


Tell whether the information in the diagram allows you to conclude that C is on the perpendicular bisector of $\overline{AB}$. *Explain*.

11.



12.



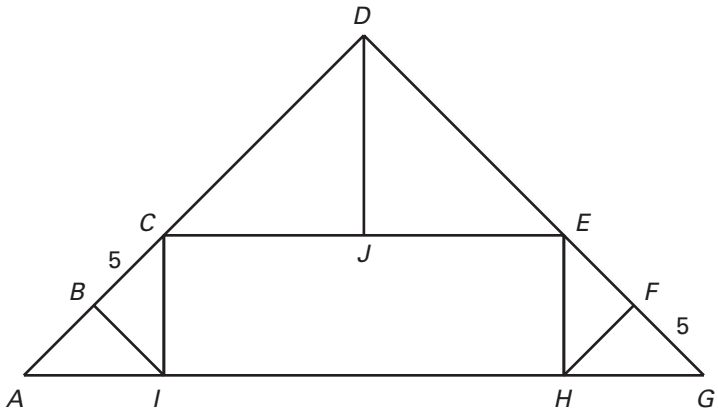
Name _____ Date _____

LESSON 5.2

Practice A *continued*

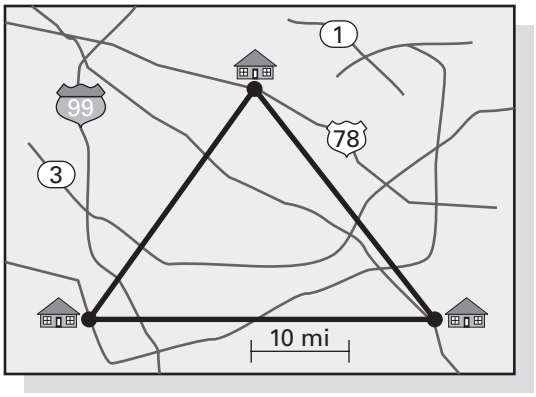
For use with pages 317–323

13. Roof Trusses Some roofs are built with wooden trusses. An attic truss provides storage space within the roof. Let $\overline{BI}$, $\overline{FH}$, and $\overline{DJ}$ be perpendicular bisectors. If $CI = 7$, $JE = 10$, and $EH = 7$, find the length of $\overline{AG}$.



In Exercises 14 and 15, use the following information.

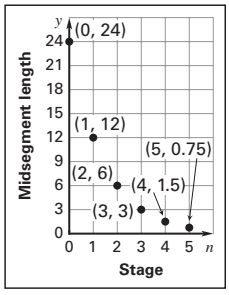
Construction A restaurant chain is planning to build a distribution center that is convenient to its three restaurants. The diagram shows the locations of the restaurants. The locations form a triangle.



14. In the diagram, how could you find a point that is equidistant from each location? *Explain* your answer.

15. Make a sketch of the situation. Find the best location for the distribution center.

e.



f. $y = 24\left(\frac{1}{2}\right)^n$

4. You are given $\triangle ABC \cong \triangle DEF$. Because corresponding parts of congruent triangles are congruent, you can conclude $\overline{AB} \cong \overline{DE}$, $\overline{BC} \cong \overline{EF}$, and $\overline{CA} \cong \overline{FD}$. By the definition of congruent segments, you can also conclude $AB = DE$, $BC = EF$, and $CA = FD$. You are also given that T, U, and V are the midpoints of $\triangle ABC$ and X, Y, and Z are the midpoints of $\triangle DEF$. So, $TV = \frac{1}{2}BC$ and $XZ = \frac{1}{2}EF$. By the Substitution Property of Equality, you have $TV = \frac{1}{2}EF$ and $TV = XZ$. You know $UV = \frac{1}{2}AB$ and $YZ = \frac{1}{2}DE$. So, by the Substitution Property of Equality, you have $UV = \frac{1}{2}DE$ and $UV = YZ$. Finally, you know $TU = \frac{1}{2}CA$ and $XY = \frac{1}{2}FD$. So, by the Substitution Property of Equality, you have $TU = \frac{1}{2}FD$ and $TU = XY$. By the definition of congruent segments you can conclude $\overline{TV} \cong \overline{XZ}$, $\overline{UV} \cong \overline{YZ}$, and $\overline{TU} \cong \overline{XY}$. By the SSS Congruence Postulate, you can conclude $\triangle TUV \cong \triangle XYZ$.

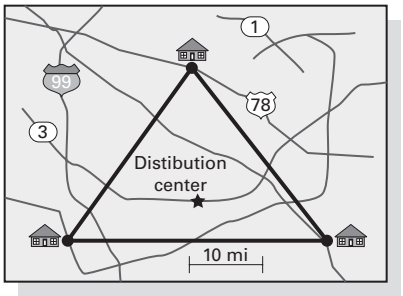
Lesson 5.2

Practice Level A

1. 8 **2.** 4 **3.** 20 **4.** 26 **5.** 26.8 **6.** 26 **7.** 40 **8.** 22 **9.** 20 **10.** 44 **11.** yes **12.** yes **13.** 34

14. The perpendicular bisectors of a triangle intersect at a point that is equidistant from the vertices of the triangle.

15.



Practice Level B

1. 4 **2.** 26 **3.** 35 **4.** yes **5.** no **6.** yes **7.** 44 **8.** 44 **9.** 36 **10.** 36 **11.** 31 **12.** 62 **13.** 25 **14.** 20 **15.** 24 **16.** 25 **17.** 15 **18.** 48

19. Check student's drawing.

20. Check student's drawing.

21. Check student's drawing.

22. Because a point on the $\perp$ bisector is equidistant to the endpoints, $\overline{AC} \cong \overline{BC}$. By the Reflexive Property of $\cong$, $\overline{CD} \cong \overline{CD}$. By the definition of bisector, $\overline{AD} \cong \overline{BD}$. By the SSS Congruence Postulate, $\triangle ACD \cong \triangle BCD$.

23. Because corresponding parts of $\cong \triangle$'s are $\cong$, $\overline{GJ} \cong \overline{FJ}$ and $\angle GJH \cong \angle FJH$. By the Vertical $\angle$'s Theorem, $\angle GJH \cong \angle EJF$ and $\angle FJH \cong \angle EJG$. By the Transitive Property, $\angle EJF \cong \angle EJG$. By the Reflexive Property, $\overline{EJ} \cong \overline{EJ}$. By the SAS $\cong$ Postulate, $\triangle EJG \cong \triangle EJF$. Because corresponding parts of $\cong \triangle$'s are $\cong$, $\overline{EF} \cong \overline{EG}$.

24. The post is the $\perp$ bisector of the segment between the ends of the wires.

Practice Level C

1. 17 **2.** 39 **3.** 51 **4.** 54 **5.** 40 **6.** 76 **7.** 54 **8.** 80 **9.** 76 **10.** Check student's drawing. **11.** Check student's drawing. **12.** Check student's drawing.

13. You cannot determine that B is equidistant from A and C with the given information. Because of the Perpendicular Bisector Theorem, you cannot conclude that $\overleftrightarrow{DE}$ will pass through B.

14. Because N is on the perpendicular bisector of $\overline{MO}$, you know $\overline{MN} \cong \overline{NO}$ by the Perpendicular Bisector Theorem. $\overline{NR} \cong \overline{NR}$ by the Reflexive Property of Congruence. Because R is on the perpendicular bisector of $\overline{MO}$, you know that $\overline{MR} \cong \overline{RO}$. So, by SSS Congruence Postulate, $\triangle NMR \cong \triangle NOR$.

15. Because corresponding parts of $\cong \triangle$'s are $\cong$, $\overline{GJ} \cong \overline{IJ}$ and $\angle FJG \cong \angle FJI$. By the Vertical $\angle$'s Theorem, $\angle FJG \cong \angle IJH$ and $\angle FJI \cong \angle GJH$. By the Transitive Property, $\angle GJH \cong \angle IJH$. By the Reflexive Property, $\overline{JH} \cong \overline{JH}$. By the SAS $\cong$ Postulate, $\triangle HJG \cong \triangle HJI$. Because corresponding parts of $\cong \triangle$'s are $\cong$, $\overline{HI} \cong \overline{HG}$.