Name _____ Date _____

LESSON 1.2

Challenge Practice

For use with pages 9–14

1. In the diagram at the right, $AB = CD$. Use the Segment Addition Postulate to show that $AC = BD$.

2. In the diagram at the right, $\overline{QR} \cong \overline{ST} \cong \overline{UV}$ and $\overline{RS} \cong \overline{TU}$. Use the Segment Addition Postulate to determine what other segments must be congruent.

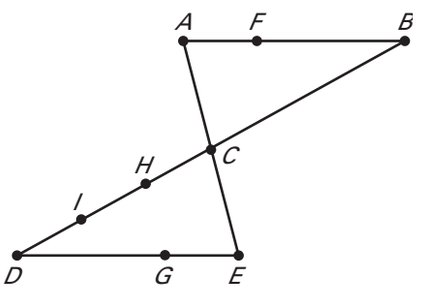
In Exercises 3–5, let *A*, *B*, *C*, *D*, and *F* be five points in the plane. Determine whether the given condition is sufficient to conclude that *AD* + *DF* + *FC* + *CB* = *AB*. *Justify* your answer using the Segment Addition Postulate and/or by making a sketch.

3. D is between A and C, and F is between D and B.

4. F is between D and C, A is between D and F, and B is between F and C.

5. C, D, and F are all between A and B.

6. In the diagram, $\overline{AF} \cong \overline{GE}$, $\overline{CD} \cong \overline{CB}$, $\overline{CH} \cong \overline{HI} \cong \overline{ID}$, $CE = \frac{1}{2}AE$, $AB = CB = 12$, $DG = 8$, and $CE = 6$.



a. Find the lengths of all the segments in the diagram.

b. Suppose you choose one of the segments at random. What is the probability that the measure of the segment is greater than 8? *Explain* how you obtained your answer.

In Exercises 7–9, point *M* is between *L* and *N* on $\overline{LN}$. Use the given information to write an equation in terms of *x*. Solve the equation (disregard any answers that do not make sense in the context of the problem). Then find *LM* and *MN*.

7. $LM = x^2$
$MN = x$
$LN = 12$

8. $LM = x^2 - 6x$
$MN = x$
$LN = 50$

9. $LM = x^2$
$MN = x^2 + 9x$
$LN = 56$

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