

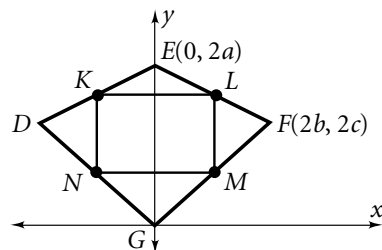
## 6-7 • Guided Problem Solving

### **GPS** Student Page 351, Exercise 11

**Prove:** The midpoints of the sides of a kite determine a rectangle.

**Given:** Kite  $DEFG$  with  $DE = EF$  and  $DG = GF$ ;  $K, L, M,$  and  $N$  are midpoints of the sides.

**Prove:**  $KLMN$  is a rectangle.



### **Read and Understand**

1. What information is given? \_\_\_\_\_
2. What are the characteristics of a kite? \_\_\_\_\_
3. What are you asked to prove? \_\_\_\_\_

### **Plan and Solve**

4. What are the coordinates of points  $D$  and  $G$ ? \_\_\_\_\_
5. Use the midpoint formula to find the coordinates of points  $L, M, N,$  and  $K$ . \_\_\_\_\_  
\_\_\_\_\_
6. Find the slopes of line segments  $\overline{KL}, \overline{NM}, \overline{KN},$  and  $\overline{LM}$ . \_\_\_\_\_  
\_\_\_\_\_
7. What can you conclude about the relationships of the pairs of opposite sides of  $KLMN$ ? What does this show about  $KLMN$ ? \_\_\_\_\_
8. What can you conclude about the pairs of adjacent sides of  $KLMN$ ? \_\_\_\_\_
9. What kind of angles are  $\angle KNM, \angle NML, \angle MLK,$  and  $\angle LKN$ ? \_\_\_\_\_

### **Look Back and Check**

10. Check your answer for reasonableness by substituting values for the variables  $a, b,$  and  $c$ .  
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### **Solve Another Problem**

11. Outline a proof that the diagonals of  $DEFG$  are perpendicular. \_\_\_\_\_  
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