# **▶** ACTIVITY 2.3

## **Developing Concepts**

#### **GROUP ACTIVITY**

Work with a partner.

#### **MATERIALS**

- grid paper
- pencils

# **Logic Puzzle**

**QUESTION** How can deductive reasoning be used to solve a logic puzzle?

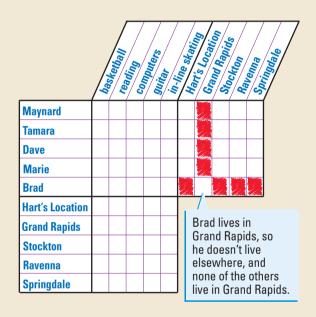
### EXPLORING THE CONCEPT

Using the clues below, determine the favorite hobbies and hometowns of five students: Maynard, Tamara, Dave, Marie, and Brad. They live in Hart's Location, Grand Rapids, Stockton, Ravenna, and Springdale. Their favorite hobbies are playing basketball, reading, playing computer games, playing the guitar, and in-line skating.

To keep track of the information given in the clues, record it in a grid like the one shown. For each clue, shade the appropriate boxes in the grid. The unshaded boxes show the solution of the puzzle.

### **CLUES**

- 1. Brad lives in Grand Rapids.
- 2. Marie does not live in Hart's Location.
- 3. If Maynard lives in Ravenna, then his favorite hobby is playing the guitar.
- 4. Tamara's favorite hobby is playing basketball.
- 5. The favorite hobby of the person who lives in Grand Rapids is in-line skating.
- 6. Tamara, Dave, and Marie do not live in Ravenna.
- 7. The person whose favorite hobby is reading does not live in Stockton or Hart's Location.
- 8. Neither Marie nor Dave lives in Stockton.



### **DRAWING CONCLUSIONS**

- **1.** Write Clue 2 as a conditional statement in if-then form. Then write the contrapositive of the statement. Explain why the contrapositive of this statement is a helpful clue.
- **2.** Using Clue 3, what additional information do you need to conclude that Maynard's favorite hobby is playing the guitar?
- **3.** Explain how you can use Clue 1 and Clue 5 to conclude that Brad's favorite hobby is in-line skating.
- **4. CRITICAL THINKING** Make up a logic puzzle similar to the one shown above. Be sure that the clues you give make the puzzle solvable. Then trade puzzles with your partner and solve each other's puzzles.