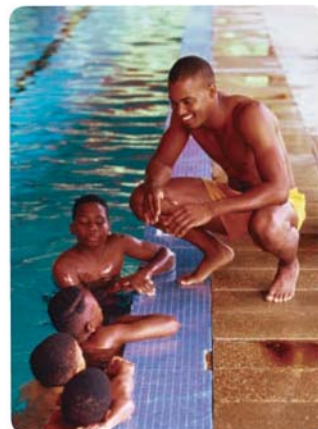


**EXAMPLE 6****TAKS REASONING: Multi-Step Problem**

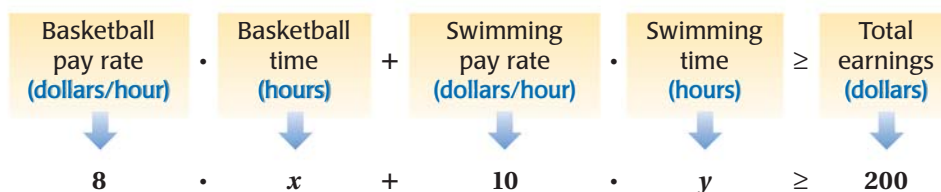
JOB EARNINGS You have two summer jobs at a youth center. You earn \$8 per hour teaching basketball and \$10 per hour teaching swimming. Let x represent the amount of time (in hours) you teach basketball each week, and let y represent the amount of time (in hours) you teach swimming each week. Your goal is to earn at least \$200 per week.



- Write an inequality that describes your goal in terms of x and y .
- Graph the inequality.
- Give three possible combinations of hours that will allow you to meet your goal.

Solution

STEP 1 Write a verbal model. Then write an inequality.



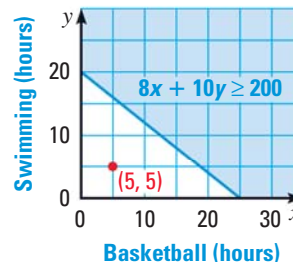
STEP 2 Graph the inequality $8x + 10y \geq 200$.

First, graph the equation $8x + 10y = 200$ in Quadrant I. The inequality is \geq , so use a solid line.

Next, test $(5, 5)$ in $8x + 10y \geq 200$:

$$8(5) + 10(5) \geq 200$$

$$90 \geq 200 \quad \times$$



Finally, shade the part of Quadrant I that does not contain $(5, 5)$, because $(5, 5)$ is not a solution of the inequality.

STEP 3 Choose three points on the graph, such as $(13, 12)$, $(14, 10)$, and $(16, 9)$. The table shows the total earnings for each combination of hours.

| | | | |
|--------------------------|-----|-----|-----|
| Basketball time (hours) | 13 | 14 | 16 |
| Swimming time (hours) | 12 | 10 | 9 |
| Total earnings (dollars) | 224 | 212 | 218 |

AVOID ERRORS

The variables can't represent negative numbers. So, the graph of the inequality does not include points in Quadrants II, III, or IV.

**GUIDED PRACTICE** for Example 6

8. **WHAT IF?** In Example 6, suppose that next summer you earn \$9 per hour teaching basketball and \$12.50 per hour teaching swimming. Write and graph an inequality that describes your goal. Then give three possible combinations of hours that will help you meet your goal.