EXAMPLE 2   **Approximate a real-world solution**

CELL PHONES Your cell phone plan costs $49.99 per month for a given number of minutes. Each additional minute or part of a minute costs $.40. You budgeted $55 per month for phone costs. What are the possible additional minutes x that you can afford each month?

Solution

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

Rate for additional time (dollars/minute)	·	Additional time (minutes)	+	Cost of phone plan (dollars)	≤	Amount budgeted (dollars)
0.40	·	x	+	49.99	≤	55

Write the inequality in the form $ax + b \leq 0$.

$0.40x + 49.99 \leq 55$ **Write original inequality.**

$0.40x - 5.01 \leq 0$ **Subtract 55 from each side.**

STEP 2 **Write** the related equation $y = 0.40x - 5.01$.

STEP 3 **Graph** the equation $y = 0.40x - 5.01$ on a graphing calculator.

Use the *trace* feature of the graphing calculator to find the x-intercept of the graph.

X=12.525   Y=0
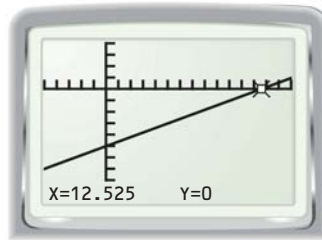
The inequality in Step 1 is in the form $ax + b \leq 0$, and the x-intercept is about 12.5. Because a part of a minute costs $.40, round 12.5 down to 12 to be sure that you stay within your budget.

▶ You can afford up to 12 additional minutes.

PRACTICE

Solve the inequality graphically.

1. $2x + 5 > 11$

2. $\frac{1}{2}x + 6 \leq 13$

3. $0.2x - 15.75 < 27$

4. CABLE COSTS Your family has a cable television package that costs $40.99 per month. Pay-per-view movies cost $3.95 each. Your family budgets $55 per month for cable television costs. What are the possible numbers of pay-per-view movies that your family can afford each month?