3-4 ▶ Solving Multi-Step Inequalities

OBJECTIVE: I can solve multi-step inequalities

Warm-Up

Math Club members are selling Pi Day T-shirts for $7.50 each. The goal is to raise $500 by Friday. The figure at the right shows how much they have raised by Wednesday. What is the minimum number of T-shirts they must still sell in order to reach their goal? Explain your reasoning

Goal | $500
$337.50
$0

Essential Understanding You solve a multi-step inequality in the same way you solve a one-step inequality. You use the properties of inequality to transform the original inequality into a series of simpler, equivalent inequalities.

Example #1 Using More Than One Step

What are the solutions of 9 + 4t > 21? Check the solutions.

1. What are the solutions of the inequality? Check your solutions.
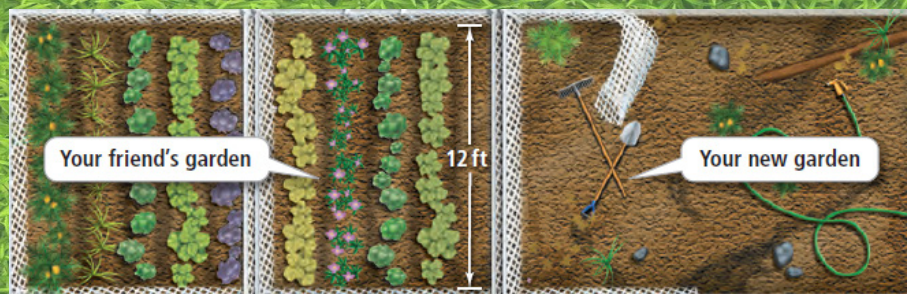
A $-6a - 7 \leq 17$

B $-4 < 5 - 3n$

Example #2 Writing and Solving a Multi-Step Inequality

Geometry In a community garden, you want to fence in a vegetable garden that is adjacent to your friend's garden. You have at most 42 ft of fence. What are the possible lengths of your garden?

Your friend's garden

12 ft

Your new garden

2. You want to make a rectangular banner that is 18 ft long. You have no more than 48 ft of trim for the banner. What are the possible widths of the banner?

#3 Using the Distributive Property

Multiple Choice Which is a solution of $3(t + 1) - 4t \geq -5$?

(A) 8
(B) 9
(C) 10
(D) 11

3. What are the solutions of $15 \leq 5 - 2(4m + 7)$? Check your solutions.

#4 Solving an Inequality With Variables on Both Sides

What are the solutions of 6n − 1 > 3n + 8?

4. What are the solutions of 3b + 12 > 27 − 2b? Check your solutions.