Solving Equations Practice 1

The eighth-graders are selling T-shirts and caps to raise money for their end-of-year party. The profit from the fundraiser depends on the number of caps and the number of T-shirts sold.
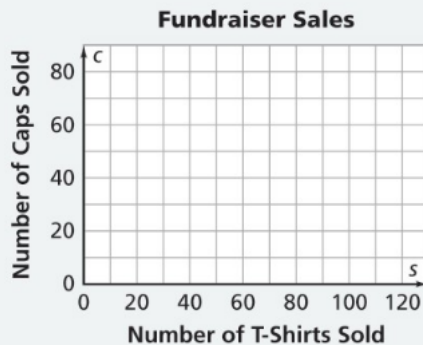
PROFIT
- $5 profit per T-shirt
- $10 profit per cap

GOAL
- Raise $600

To plan for the fundraiser, class officers need to know how many T-shirts and caps to order and sell.

A Find the profit P if the students sell

    1. 15 shirts and 10 caps.

    2. 12 shirts and 20 caps.

    3. 30 shirts and 50 caps.

    4. s shirts and c caps.

B   **1.** Find five pairs of numbers for shirt and cap sales that will allow the students to make a profit of exactly $600.

    2. Each answer from part (1) can be written as an ordered pair of numbers (s, c). The ordered pairs (s, c), which represent points on a graph, are *solutions* of the equation $5s + 10c = 600$. Plot the ordered pairs on a coordinate grid like the one below.

Fundraiser Sales

Number of Caps Sold (vertical axis: 0, 20, 40, 60, 80)
Number of T-Shirts Sold (horizontal axis: 0, 20, 40, 60, 80, 100, 120)

    3. Use the graph to find three other ordered pairs that meet the profit goal.

    4. Suppose the number of T-shirts sold was on the vertical axis and the number of caps sold was on the horizontal axis. Would the solutions change? Explain.
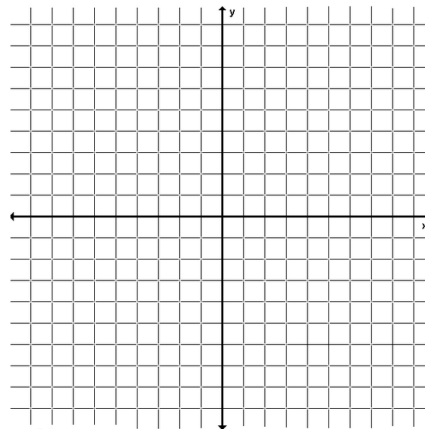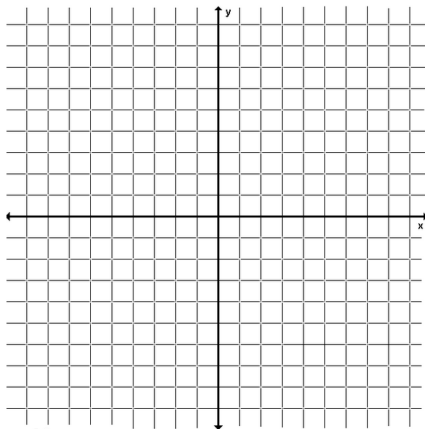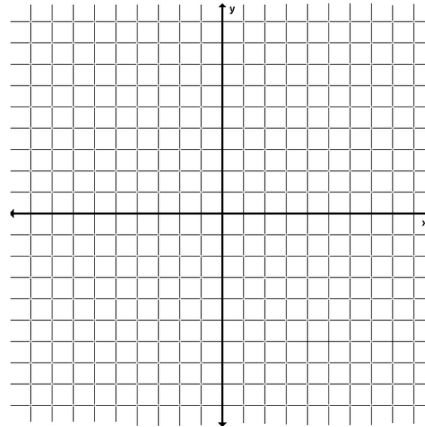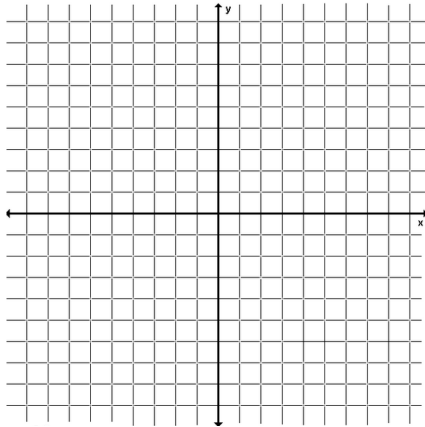
C For each equation

- find five solution pairs (x, y), including some with negative values.

- plot the solutions on a coordinate grid and draw the graph showing all possible solutions.

1. $x + y = 10$ **2.** $x - 2y = -4$

3. $-2x + y = 3$ **4.** $-3x + 2y = -4$

D Make a conjecture about the shape of the graph for any equation in the form $Ax + By = C$, where A, B, and C are fixed numbers. Explain why your conjecture is true.