SS Problem 1.1: Shirts and Caps (notes)

Name _____ **Date** _____ **Class** _____

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: $5 profit per T-shirt and $10 profit per cap. Their goal is to raise $600.

A. Find the profit, *P*, if the students sell:

1) 15 shirts and 10 caps

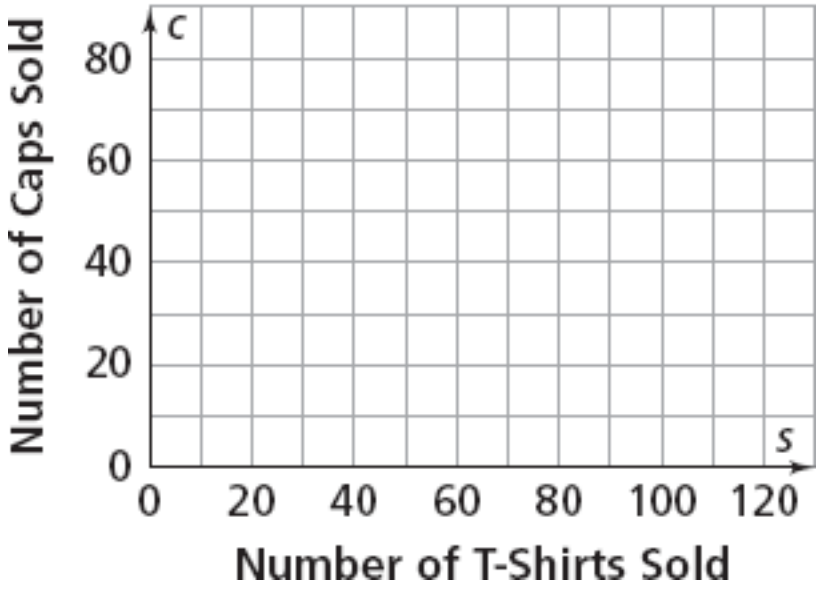
2) 12 shirts and 20 caps

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 five ordered pairs from part (1) on the coordinate grid below.



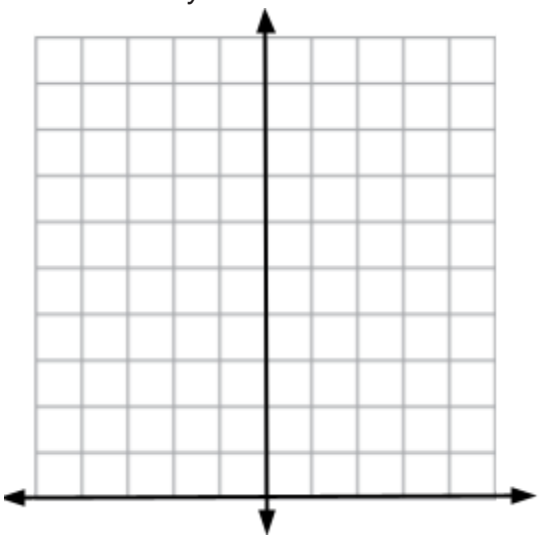
3. Use the graph to find three other ordered pairs that meet the profit goal.

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.**

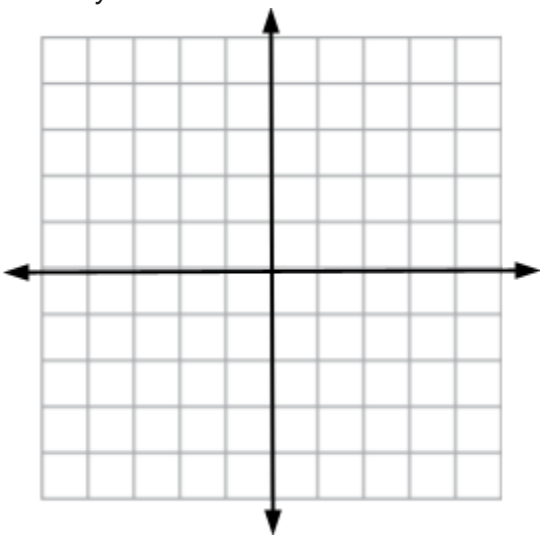
C. For each equation:

- Find five solution pairs (*x, y*), with x-values: -2, -1, 0, 1, 2.
- Plot the solutions then draw the graph to show all possible solutions.

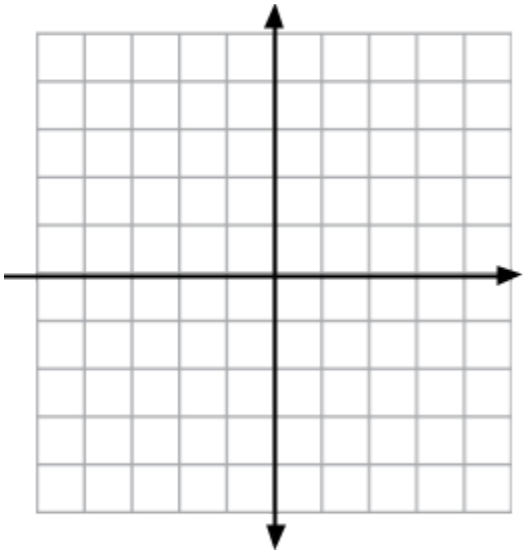
1. $x + y = 10$



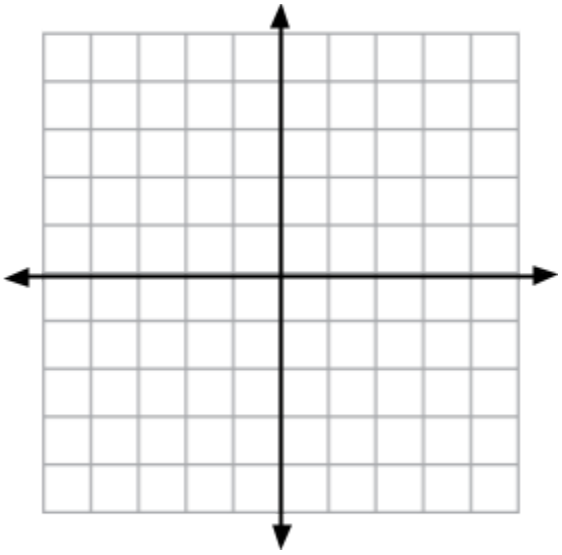
2. $x - 2y = -4$



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.