Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Hour: \_\_\_\_\_\_\_\_\_\_\_

6.1 Shirts and Caps: Solving Equations with Two Variables

The 8th graders are selling T-shirts and caps to raise money for their end-of-the-year party. The profit from the fundraiser depends on the number of caps and the number of t-shirts sold.



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

1. Find the profit *P* if the students sell:
2. 15 shirts and 10 caps
3. 12 shirts and 20 caps
4. 30 shirts and 50 caps
5. *s* shirts and *c* caps
6. Solve
7. Find five pairs of numbers for shirt and cap sales that will allow the students to make a profit of exactly $600.
8. 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 5*s* + 10*c* = 600. Plot the ordered pairs on a coordinate grid like the one below.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| *s* |  |  |  |  |  |  |
| *c* |  |  |  |  |  |  |



1. Use the graph to find **three other ordered pairs** that meet the profit goal.
	1.
	2.
	3.
2. 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.

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1. For each equation, find give solutions pairs (*x*, *y*), including some with negative values
2. *x* + *y* = 10
3. *x* – 2*y* = -4
4. -2*x* + *y* = 3
5. -3*x* + 2*y* = -4