

# Warm Up

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Solve the following for x:

$$-4(x + 2) - 3x = 20$$

$$x = -4$$

$$\begin{array}{r} -4x + -8 - 3x = 20 \\ \quad +8 \quad \quad +8 \end{array}$$



$$\hline -4x - 3x = 28$$

$$\rightarrow x = 28$$

$$\hline \rightarrow \quad \rightarrow$$

$$x = -4$$

$$3(x - 2) - 1(x + 5) = 17$$

$$x = 14$$

$$3x - 6 - x - 5 = 17$$



$$2x - 11 = 17$$

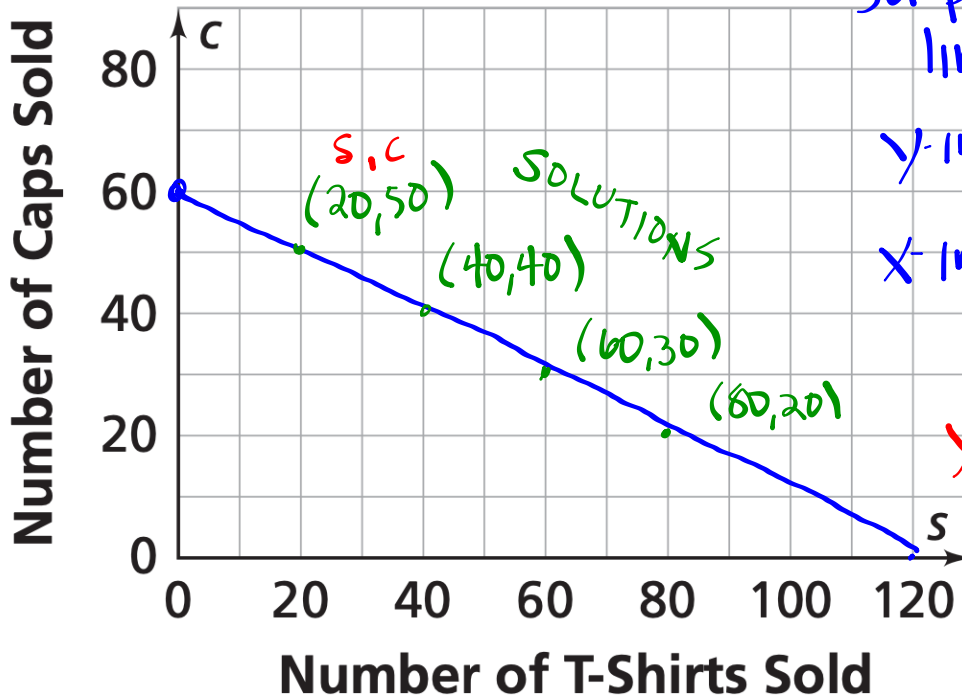
$$\quad +11 \quad +11$$

$$\hline 2x = 28$$

$$\frac{2}{2} \quad \frac{28}{2}$$

$$x = 14$$

What did your graph look like for Problem 1.1 B?



"Mine was surprisingly linear"  $s, c$

y-int: (0, 60)

x-int: (120, 0)

y-int value of y when x=0

$$600 = 5s + 10c$$

$$600 = 5(0) + 10c$$

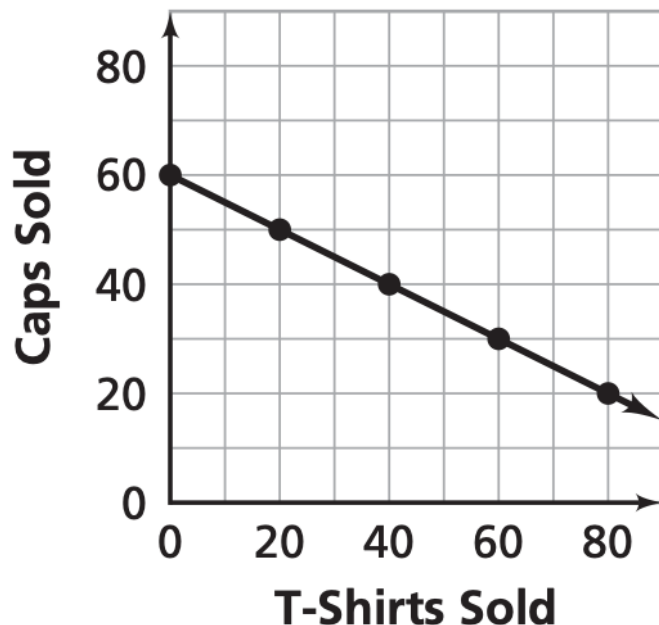
$$\frac{600}{10} = \frac{10c}{10}$$

$$60 = c$$

substitute 0 in for x

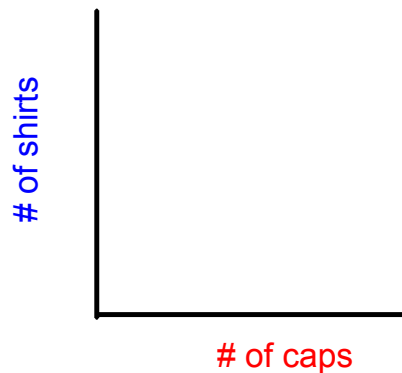
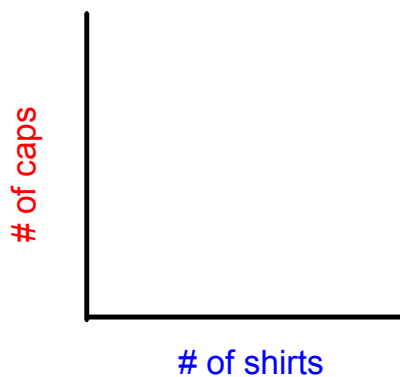
y-int  
(0, 60)

## Fundraiser Sales



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

*we need large graphs*



*Solutions are written:*

$(s, c)$

$(c, s)$

$(0, 60)$

$(60, 0)$

# Classwork

## 1.1C 1 - 4, and 1.1D

Ⓢ 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.  $x - 2y = -4$

Ⓒ. 1.  $x + y = 10$

x	y
7	3
8	2
5	5
1	9
9	1

2.  $x - 2y = -4$

$6 - 2(5) = -4$

$-2 - 2(1) = -4$  ✓

x	y
2	3
6	5
0	2
<del>3</del>	<del>-5</del>
-2	1

- 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.

Linear Equation

$$x + y = 10$$

$$Ax + By = C$$

$$A=1 \quad B=1 \quad C=10$$

$$x - 2y = -4$$

$$Ax + By = C$$

$$A=1 \quad B=-2 \quad C=-4$$

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Find three pairs of values  $(x, y)$  that satisfy each equation. ~~Write those points and use the pattern to find two more solution pairs.~~  
(Hint: What is  $y$  if  $x = 0$ ? What is  $x$  if  $y = 0$ ?)

5.  $6 = 3x - 2y$

6.  $10 = x + 2y$

7.  $2x + y = 6$

8.  $-3x + 4y = -4$

# Homework

## Page 13, # 1

1. For a fundraiser, students sell calendars and posters.
  - a. What equation shows how the income  $I$  for the fundraiser depends on the number of calendars  $c$  and the number of posters  $p$  that are sold?
  - b. What is the income if students sell 25 calendars and 18 posters?
  - c. What is the income if students sell 12 calendars and 15 posters?
  - d. What is the income if students sell 20 calendars and 12 posters?
  - e. Find three combinations of calendar sales and poster sales that will give an income of exactly \$100.
  - f. Each answer in part (e) can be written as an ordered pair  $(c, p)$ . Plot the ordered pairs on a coordinate grid.
  - g. Use your graph to estimate three other  $(c, p)$  pairs that would meet the \$100 goal.

