

Sec V CST

solutions

Graphing Assignment

For each question: Define your variables and graph the equality or inequality described below.

1. A new computer costs \$3000 and decreases in value by \$500 per year.

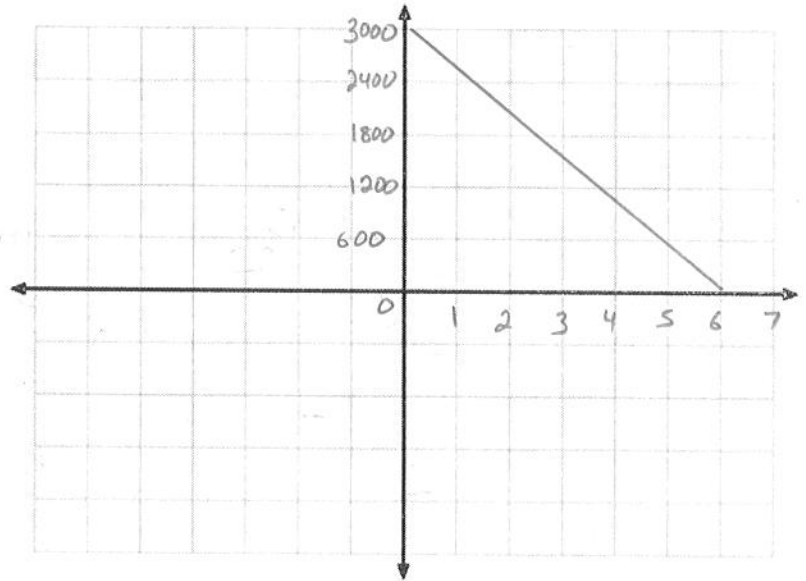
x is # years

y is value of computer

$$y = 3000 - 500x$$

x	y
0	3000
6	0

$\rightarrow y = 3000 - 500(0) = 3000$
 $\rightarrow y = 3000 - 500(6) = 0$

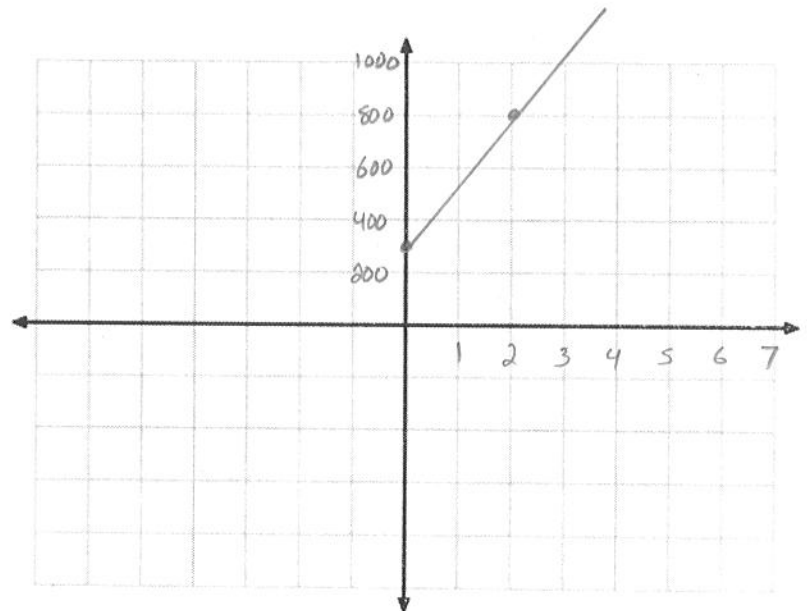


2. The salary of a salesman is \$300 per week plus a commission of \$250 per car sold.

x is # cars sold y is total salary

$$y = 300 + 250x$$

x	y
0	300
2	800

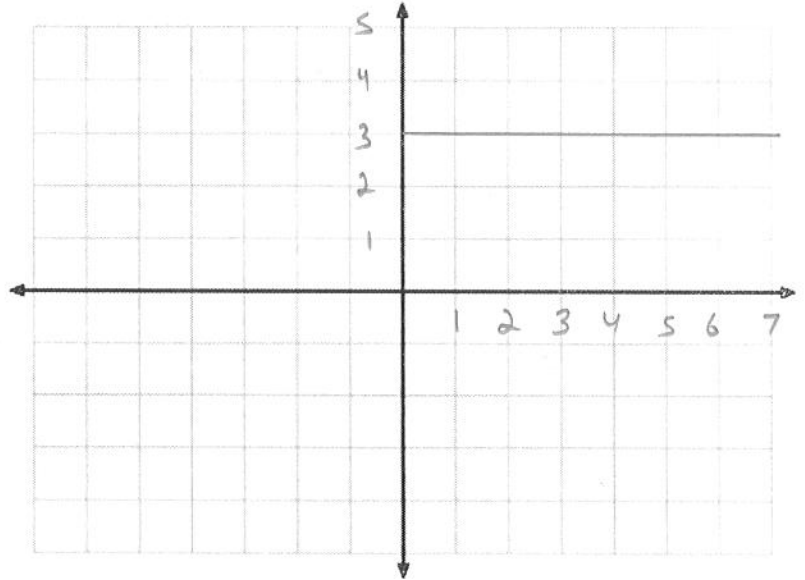


3. You take the bus for a certain number of km's and are charged \$3.00 when you get on.

$x = \# \text{ km's travelled}$ $y = \text{cost}$

$$y = 3$$

x	y
1	3
5	3



4. A box of cookies contains both chocolate and oatmeal cookies. The box contains a maximum of 30 cookies.

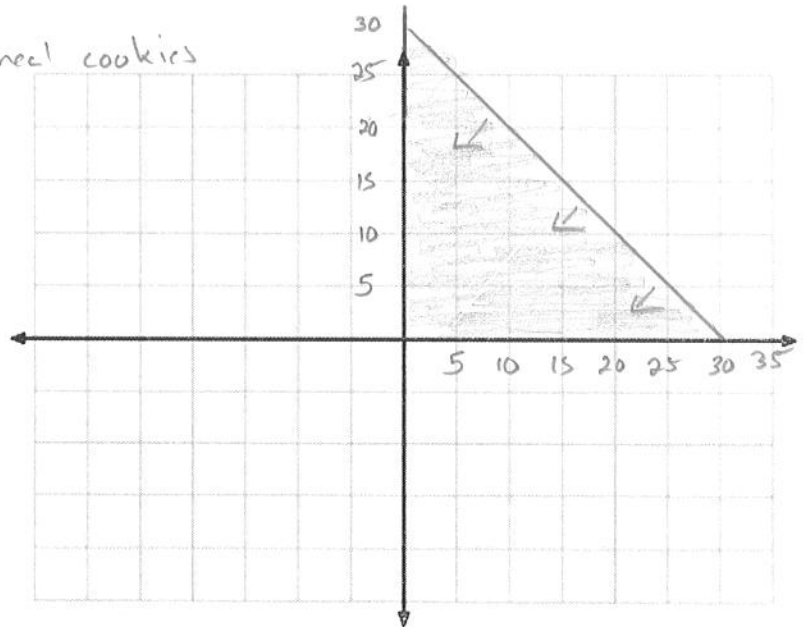
$x = \# \text{ choc. cookies}$ $y = \# \text{ oatmeal cookies}$

$$x + y \leq 30 \rightarrow y = 30 - x$$

x	y
0	30
30	0

$$y = 30 - 0 = 30$$

$$y = 30 - 30 = 0$$



Test point (0,0)

$$x + y \leq 30$$

$$0 + 0 \leq 30$$

$0 \leq 30 \rightarrow$ true, shade toward (0,0)

5. A bouquet of flowers is made up of roses and carnations. The bouquet must have a minimum of 12 flowers.

x is # roses, y is # carnations

$$x + y \geq 12 \rightarrow y = 12 - x$$

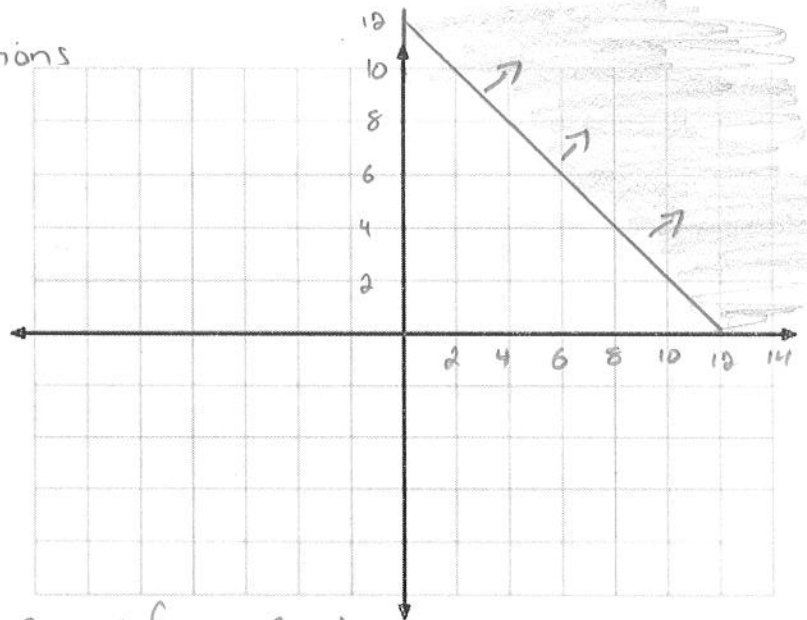
x	y
0	12
12	0

$y = 12 - 0 = 12$
 $y = 12 - 12 = 0$

Test point (0,0)

$$x + y \geq 12$$

$$0 + 0 \geq 12 \quad \underline{\text{False}}, \text{ so we shade away from } (0,0)$$



6. At a local florist shop, yellow roses cost \$2 and red roses cost \$3. Steven wants to spend no more than \$25 on a bouquet that includes both yellow and red roses.

x is # of yellow roses, y is # of red roses

$$2x + 3y \leq 25 \rightarrow y = \frac{25 - 2x}{3}$$

We want numerator to be divisible by 3

x	y
2	7
5	5

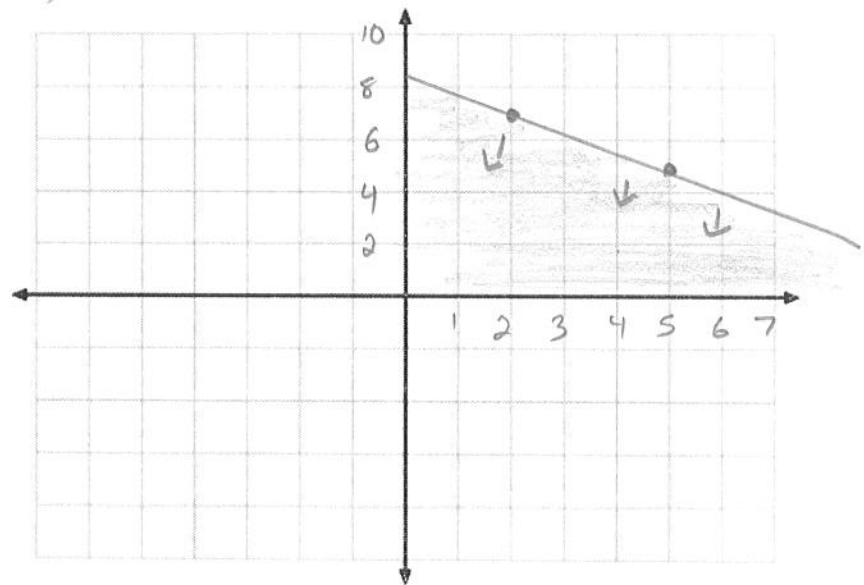
$\rightarrow y = \frac{25 - 2(2)}{3} = 7$
 $\rightarrow y = \frac{25 - 2(5)}{3} = 5$

Test point (0,0)

$$2x + 3y \leq 25$$

$$2(0) + 3(0) \leq 25$$

$$0 \leq 25 \quad \underline{\text{true}} \text{ so we shade } \underline{\text{toward}} (0,0)$$



9. There are at most twice as many blue marbles as red marbles.

x is # blue, y is # of red

(Note: Which is more? Blue, so we add to red to make equal)

$$x \leq 2y \rightarrow y = \frac{x}{2}$$

x	y
0	0
8	4

$$y = \frac{0}{2} = 0$$

$$y = \frac{8}{2} = 4$$

Test Point (Not (0,0) because on line)

$$x \leq 2y \quad (2, 2)$$

$$2 \leq 2(2)$$

$$2 \leq 4 \quad \text{True so we shade toward } (2, 2)$$

10. John spends at least 3 times as many hours playing the guitar as playing piano.

x is # hours of guitar

y is # hours of piano

(Note: Which is more? Guitar, so we add to piano to make equal)

$$x \geq 3y \rightarrow y = \frac{x}{3}$$

x	y
0	0
6	2

$$y = \frac{0}{3} = 0$$

$$y = \frac{6}{3} = 2$$

Test point: Not (0,0) because it's on the line

$$(2, 2) \quad x \geq 3y$$

$$2 \geq 3(2)$$

$$2 \geq 6 \quad \text{False, so we shade away from } (2, 2)$$

