

# Solving Systems of Equations

6. Shawn  $y = 5x + 20$

Curtis  $y = 6x$

① Set up the equation

② Substitute

$$y = 6x \rightarrow y = 5x + 20$$

$$6x = 5x + 20$$

③ Solve.

$$6x = 5x + 20$$

$$\underline{-5x - 5x}$$

$$x = 20$$

④ Plug that value in to either equation

$$y = 6(20)$$

$$y = 120 \text{ seconds}$$

1. ① Set up 2 equations

$$60x + 110y = 265$$

$$120x + 90y = 270$$

$x =$  candy bars

$y =$  drinks

② The question is asking how many candy bars, so solve for  $x$ . To do this you must use elimination (#'s are too big to graph and if you tried to use substitution you would end up w/ fractions - no fun!)

③ What number can you easily multiply each equation by to cancel out a value?

-2!

$$-2(60x + 110y = 265)$$

$$\underline{-120x - 220y = -530}$$

$$120x + 90y = 270$$

$$\underline{-130y = -260} \quad y = 2$$

⑤ Plug in  $y=2$  to either equation

$$60x + 110(2) = 265$$

$$60x + 220 = 265$$

$$- 220 = -220$$

$$\frac{60x}{60} = \frac{45}{60}$$

$$x = .75$$

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2. What is the y-int? 5. Slope = -2  
Write out an equation for each letter to see if it matches the graph. Will need to rearrange from standard form to slope-intercept form first!

A.  $y - 2x \leq 5$   
 $\frac{+2x \quad +2x}{y \leq 2x + 5}$  slope is NOT 2, it's -2

B.  $y - \frac{1}{2}x \leq 5$   
 $\frac{+\frac{1}{2}x \quad +\frac{1}{2}x}{y \leq \frac{1}{2}x + 5}$  - slope NOT  $\frac{1}{2}$ , it's -2

**C.**  $y + 2x \leq 5$   
 $\frac{-2x \quad -2x}{y \leq -2x + 5}$  ✓ slope + y-int match!

D.  $y + \frac{1}{2}x \leq 5$   
 $\frac{-\frac{1}{2}x \quad -\frac{1}{2}x}{y \leq -\frac{1}{2}x + 5}$  - slope not  $-\frac{1}{2}$

28. Chunk this up! There are 3 parts.

① What is the cost per pound of almonds?  
 If 4 pounds cost 22, then divide  
 $22/4$  to get the cost per pound = 5.50

② Figure out cost of cashews by multiplying  
 60% or .60 by cost/pound of almonds  
 $5.50 \times .60 = 3.30$ , since it's  
 60% more than the cost for almonds, you  
 need to add the two  $3.30 + 5.50 = 8.80$

③  $5.50 \times 4 + 8.80y = 6.50$

Annotations:  
 -  $5.50$ : Cost per #lbs. of pound of almonds almonds  
 -  $4$ : 4 lbs of alm.  
 -  $8.80y$ : + ? lbs of cashews  
 -  $6.50$ : total cost  
 -  $4+y$ : # lbs of almonds + cashews

$$\cancel{(4+y)} \frac{22 + 8.8y}{\cancel{4+y}} = 6.5(4+y)$$

$$22 + 8.8y = 26 + 6.5y$$

$$- 6.5y \quad - 6.5y$$

$$22 + 2.3y = 26$$

$$- 22 \quad - 22$$

$$\cancel{2.3y} = \frac{4}{\cancel{2.3}}$$

$y = 1.74$  / lb for cashews

28. continued

So, there are about 1.74 lbs of cashews

$$1.74 + 4 = 5.74 \text{ (total pounds)}$$

$$1.74 \div 5.74 = .3031 \times 100 \text{ to make it a percent} = \textcircled{30\%} \textcircled{C}$$

29. My  $f(x) = 10x + 5$

Barbara  $g(x) = 7.5x + 25$

$$\begin{array}{r} 10x + 5 = 7.5x + 25 \\ - 7.5x \quad \quad - 7.5x \\ \hline \end{array}$$

$$\begin{array}{r} 2.5x + 5 = 25 \\ - 5 \quad \quad - 5 \\ \hline \end{array}$$

$$\begin{array}{r} 2.5x = 20 \\ \hline 2.5 \quad \quad 2.5 \\ \hline \end{array}$$

$$\textcircled{x = 8} \textcircled{C}$$