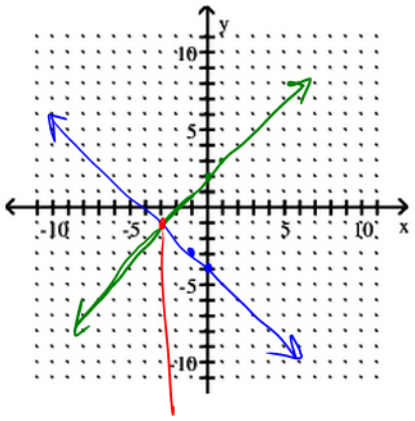
4) $x + y = -4$
$x - y = -2$



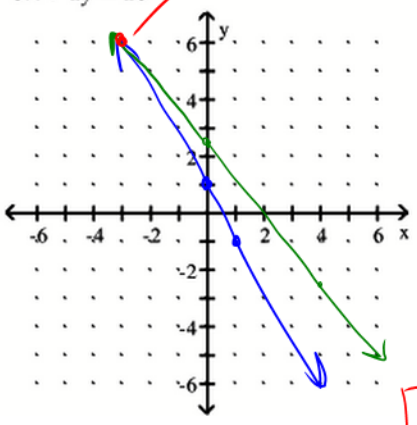
$(-3,-1)$

$x + y = -4$
$y = -x - 4$
$m = \frac{-1}{1}$, y-int: $(0,-4)$

$x - y = -2$
$-y = -x - 2$
$y = x + 2$
$m = \frac{1}{1}$, y-int: $(0,2)$

$\{(-3,-1)\}$, consistent system

5) $2x + y = 1$
$5x + 4y = 10$



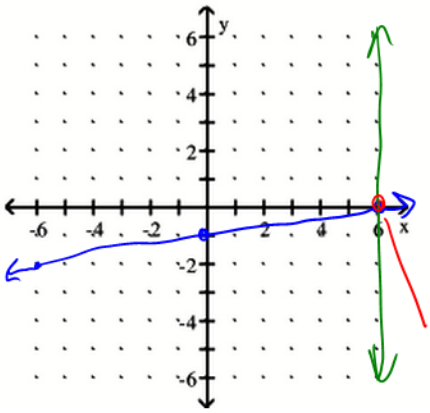
$(-3,6)$

$2x + y = 1$
$y = -2x + 1$
$m = \frac{-2}{+1}$, y-int: $(0,1)$

$5x + 4y = 10$
$4y = -5x + 10$
$y = \frac{-5}{4}x + \frac{10}{4}$
$y = \frac{-5}{4}x + \frac{5}{2}$
$m = \frac{-5}{+4}$, y-int: $(0,5/2)$

$\{(-3,6)\}$, consistent system

6) $\frac{1}{6}x - y = 1$
$x = 6$



$(6,0)$

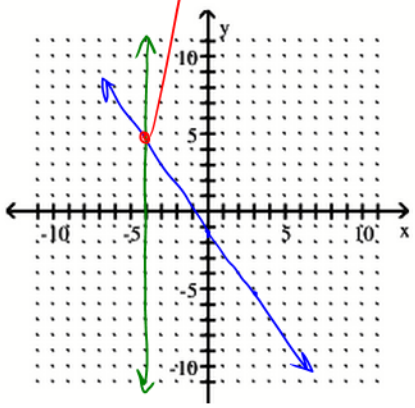
$\frac{1}{6}x - y = 1$
$-y = -\frac{1}{6}x + 1$
$y = \frac{1}{6}x - 1$
$m = \frac{+1}{+6}$, y-int: $(0,-1)$

$x = 6$

$\{(6,0)\}$, consistent system

7) $x + \frac{3}{4}y = -1$

$x = -4$



(-4, 5)

$x + \frac{3}{4}y = -1$

$\frac{4}{3} \cdot \frac{3}{4}y = (-x - 1)\left(\frac{4}{3}\right)$

$y = -\frac{4}{3}x - \frac{4}{3}$

$m = \frac{-4}{+3}$, y-int: $(0, -4/3)$

$x = -4$

$\{(-4, 5)\}$, consistent system

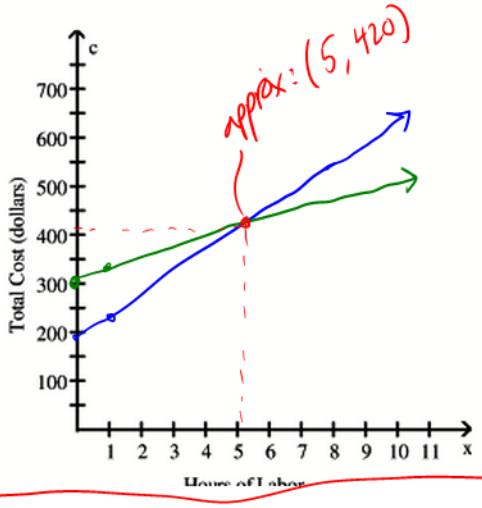
14) Sybil is having her yard landscaped. She obtained an estimate from two landscaping companies. Company A gave an estimate of $240 for materials and equipment rental plus $45 per hour for labor. Company B gave an estimate of $300 for materials and equipment rental plus $35 per hour for labor. We can represent this situation with the system of linear equations

$c = 240 + 45x$ Company A

$c = 300 + 35x$ Company B

where c is the total cost and x is the number of hours of labor.

Graph the system. What is the x-coordinate of the intersection point of the graphs? Describe what this x-coordinate means in practical terms.



$c = 240 + 45x$

$c = 45x + 240$

$m = \frac{+45}{+1}$, c-int: $(0, 240)$

$c = 300 + 35x$

$c = 35x + 300$

$m = \frac{+35}{+1}$, c-int: $(0, 300)$

C) 5; for 5 hours of labor, both companies charge the same.

18) $x + y = -2$ (A)

$x - y = 12$ (B)

Step 1: Isolate y in eq. A

$x + y = -2$

$y = -x - 2$

Step 2: Sub $y = -x - 2$ into eq. B

$x - y = 12$

$x - (-x - 2) = 12$

$x + x + 2 = 12$

$2x = 10$

$x = 5$

Step 3: Sub. $x = 5$ into eq. A

$x + y = -2$

$5 + y = -2$

$y = -7$

Step 4: Conclusion

$\{(5, -7)\}$, consistent system

19) $y = 4x + 7$ (A)
$y = 7x + 6$ (B)

Step 1: Sub $y = 4x + 7$ into eq. B

$y = 7x + 6$

$4x + 7 = 7x + 6$

$-3x = -1$

$x = \frac{1}{3}$

Step 2: Sub. $x = \frac{1}{3}$ into eq. A

$y = 4x + 7$

$y = 4\left(\frac{1}{3}\right) + 7$

$y = \frac{4}{3} + 7 \cdot \frac{3}{3}$

$y = \frac{4}{3} + \frac{21}{3}$

$y = \frac{25}{3}$

Step 3: Conclusion

$\left\{\left(\frac{1}{3}, \frac{25}{3}\right)\right\}$, consistent system

20) $y = 1.1x - 3.5$ (A)
$y = 0.3x - 2.78$ (B)

Step 1: Sub. $y = 1.1x - 3.5$ into eq. B

$y = 0.3x - 2.78$

$1.1x - 3.5 = 0.3x - 2.78$

$0.8x = 6.28$

$x = 7.6$

Step 2: Sub $x = 7.6$ into eq. A

$y = 1.1x - 3.5$

$y = 1.1(7.6) - 3.5$

$y = 8.36 - 3.5$

$y = 4.86$

Step 3: Conclusion

$\{(7.6, 4.86)\}$, consistent system

23) $x = -y$ (A)
$x + y = 6$ (B)

Step 1: Sub $x = -y$ into eq. B

$x + y = 6$

$-y + y = 6$

$0y = 6$

$0 = 6$

False
↳ contradiction!

Step 2: Conclusion

$\{\}$, inconsistent system

33) $4x - \frac{2}{5}y = -6$ (A)

$4x + \frac{3}{5}y = -1$ (B)

Step 1: $-A+B$, elim. x, Solve for y

$-4x + \frac{2}{5}y = 6$

$4x + \frac{3}{5}y = -1$

$0x + \frac{5}{5}y = 5$

$y = 5$

Step 2: Sub. $y=5$ into eq. A, Solve for x

$4x - \frac{2}{5}y = -6$

$4x - \frac{2}{5}(5) = -6$

$4x - 2 = -6$

$4x = -4$

$x = -1$

Step 3: Conclusion

$\{(-1,5)\}$, consistent system

52) Jimmy is a partner in an Internet-based coffee supplier. The company offers gourmet coffee beans for $11 per pound and regular coffee beans for $4 per pound. Jimmy is creating a medium-price product that will sell for $6 per pound. The first thing to go into the mixing bin was 12 pounds of the gourmet beans. How many pounds of the less expensive regular beans should be added?

Step 1: Analysis

Let x be the # of pounds of regular beans

Let y be the # of pounds of the mixture

Step 2: Translate

$12 + x = y$

$11(12) + 4x = 6y$

53) Jamil always throws loose change into a pencil holder on his desk and takes it out every two weeks. This time it is all nickels and dimes. There are 8 times as many dimes as nickels, and the value of the dimes is $4.50 more than the value of the nickels. How many nickels and dimes does Jamil have?

Step 1: Analysis

Let x be the # of nickels

Let y be the # of dimes

Step 2: Translate

$y = 8x$

$0.10y = 0.05x + 4.50$

Skip 56