Name: Key

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5.1-5.4 Think-Link-Sync Review

Directions:

Think: Each "column" of students will receive the same problem. Give a couple of minutes per problem depending on the type of problem.

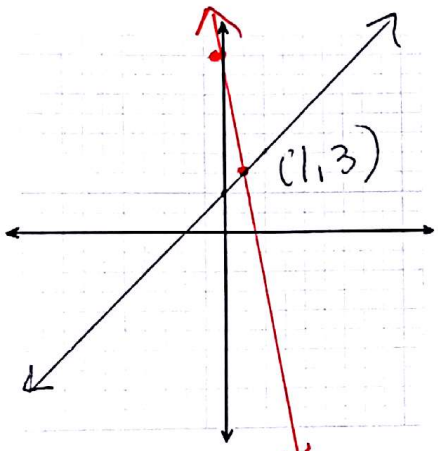
Link: That column will get together and come up with the right answer and fix any errors.

Sync: Each row will then work together (i.e. 6 different problems) and they will explain their problem to the group.

1) I can solve systems of linear equations by graphing: Graph to solve the system of linear equations

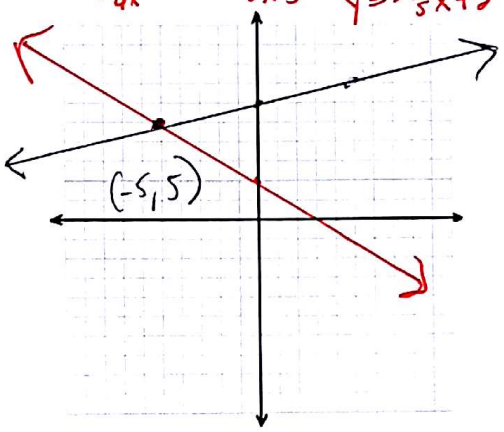
a) $y = x + 2$

• $y = -6x + 9$



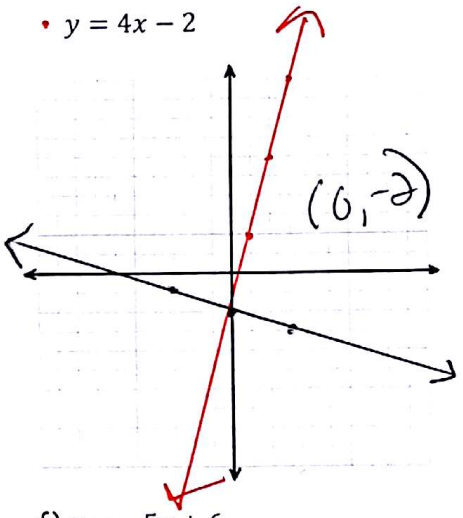
b) $x - 5y = -30$ → $y = \frac{1}{5}x + 6$

$3x + 5y = 10$ → $y = -\frac{3}{5}x + 2$



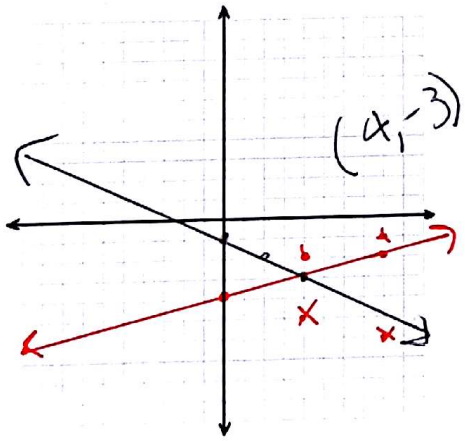
c) $y = -\frac{1}{3}x - 2$

• $y = 4x - 2$



d) $\frac{1}{2}x + y = -1$ → $y = -\frac{1}{2}x - 1$

• $y = \frac{1}{4}x - 4$

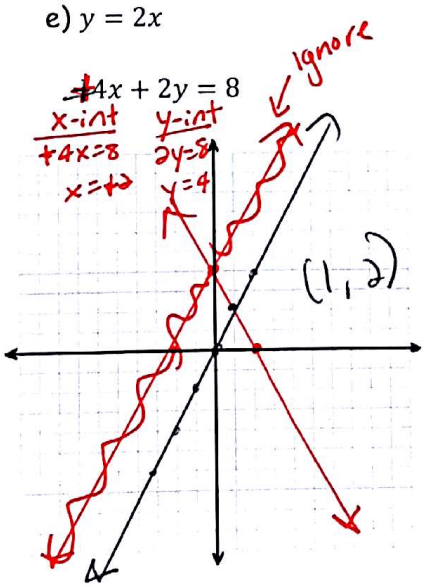


e) $y = 2x$

$4x + 2y = 8$ (ignore)

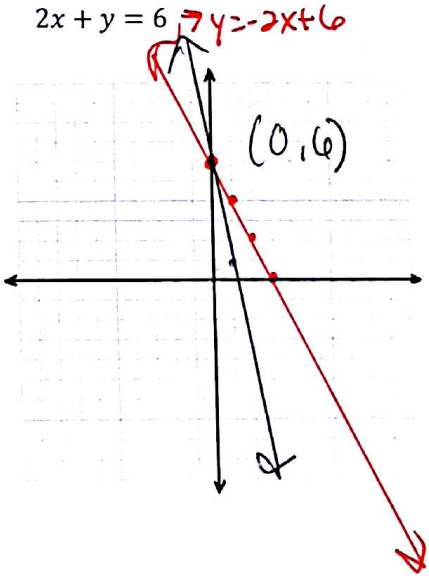
x-int: $4x = 8$, $x = 2$

y-int: $2y = 8$, $y = 4$



f) $y = -5x + 6$

$2x + y = 6$ → $y = -2x + 6$



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2) I can solve systems of linear equations by substitution: Solve the system of linear equations by substitution

a) $y = 5x - 7$

$-3x - 2y = -12$

$-3x-2(5x-7)=-12$

$-3x-10x+14=-12$

$-13x+14=-12$

$-14 \quad -14$

$\frac{-13x}{-13}=\frac{-26}{-13}$

$x=2$

$y=5(2)-7=3$

$(2,3)$

b) $-4x + y = 6 \rightarrow y=4x+6$

$-5x - y = 21$

$-5x-(4x+6)=21$

$-5x-4x-6=21$

$-9x-6=21$

$+6 \quad +6$

$\frac{-9x}{-9}=\frac{27}{-9}$

$x=-3$

$y=4(-3)+6$

$y=-6$

$(-3,-6)$

c) $-7x - 2y = -13$

$x - 2y = 11 \rightarrow x=2y+11$

$-7(2y+11)-2y=-13$

$-14y-77-2y=-13$

$-16y-77=-13$

$+77 \quad +77$

$\frac{-16y}{-16}=\frac{64}{-16}$

$y=-4$

$x=2(-4)+11$

$x=3$

$(3,-4)$

d) $x - 5y = -30 \rightarrow x=5y-30$

$3x + 5y = 10$

$3(5y-30)+5y=10$

$15y-90+5y=10$

$20y-90=10$

$+90 \quad +90$

$\frac{20y}{20}=\frac{100}{20}$

$y=5$

$x=5(5)-30$

$x=-5$

$(-5,5)$

e) $y = -5x + 6$

$2x + y = 6$

$2x+(-5x+6)=6$

$-3x+6=6$

$-6 \quad -6$

$\frac{-3x}{-3}=\frac{0}{-3}$

$x=0$

$y=-5(0)+6$

$y=6$

$(0,6)$

f) $-4x - 2y = 16$

$\frac{4x + 8y = -4}{4}$

$x+2y=-1$

$-2y \quad -2y$

$x=-2y-1$

$-4(-2y-1)-2y=16$

$8y+4-2y=16$

$6y+4=16$

$-4 \quad -4$

$\frac{6y}{6}=\frac{12}{6}$

$y=2$

$x=-2(2)-1=-5$

$(-5,2)$

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3) I can solve systems of linear equations by elimination: Solve the system of linear equations by elimination

a) $-4x - 2y = 16$
$4x + 8y = -4$

$6y = 12$
$y = 2$

$-4x - 2(2) = 16$
$-4x - 4 = 16$
$+4 \quad +4$
$-4x = 20$
$x = -5$

$(-5, 2)$

b) $-2x - 9y = -25$
$-(-4x - 9y = -23)$

$-2x - 9y = -25$
$4x + 9y = 23$

$2x = -2$
$x = -1$

$-2(-1) - 9y = -25$
$2 - 9y = -25$
$-2 \quad -2$
$-9y = -27$
$y = 3$

$(-1, 3)$

c) $-4(-7x - 8y = 9)$
$7(-4x + 9y = -22)$

$28x + 32y = -36$
$-28x + 63y = -154$

$95y = -190$
$y = -2$

$-7x - 8(-2) = 9$
$-7x + 16 = 9$
$-16 \quad -16$
$-7x = -7$
$x = 1$

$(1, -2)$

d) $x - 5y = -30$
$3x + 5y = 10$

$4x = -20$
$x = -5$

$-5 - 5y = -30$
$+5 \quad +5$
$-5y = -25$
$y = 5$

$(-5, 5)$

e) $8x - 2y = -12$
$-2(-5x - y = 21)$

$8y - 2y = -12$
$10x + 2y = -42$

$18x = -54$
$x = -3$

$8(-3) - 2y = -12$
$-24 - 2y = -12$
$+24 \quad +24$
$-2y = 12$
$y = -6$

$(-3, -6)$

f) $5(3x - 2y = 2)$
$-2(5x - 5y = 10)$

$15x - 10y = 10$
$-10x + 10y = -20$

$5x = -10$
$x = -2$

$3(-2) - 2y = 2$
$-6 - 2y = 2$
$+6 \quad +6$
$-2y = 8$
$y = -4$

$(-2, -4)$

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4) Miscellaneous Learning Targets...

a) I can use systems of linear equations to solve real-life problems: You spend $264 on clothes. Shirts cost $24 and pants cost $32. You buy a total of 9 items. Write a system of linear equations that represents this situation and solve by graphing.

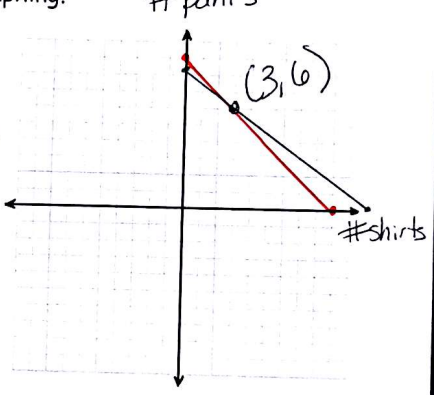
X=# shirts
y = # pants

$x+y=9$
$y=-x+9$

$24x+32y=264$

x-int
$\frac{24x}{24}=\frac{264}{24}$
$x=11$

y-int
$\frac{32y}{32}=\frac{264}{32}$
$y=8.25$



3 shirts & 6 pants

b) I can use systems of linear equations to solve real-life problems: A phone company charges $0.06 per minute for local calls and $0.15 per minute for international calls. When your bill comes, it states that you accumulated 852 minutes with a charge of $69.84. Write and solve a system of linear equations to find the number of local and international minutes used.

x=# local min
y=# int. min

$0.06x+0.15y=69.84$
$0.06x+0.15(-x+852)=69.84$
$0.06-0.15x+127.8=69.84$
$-0.09x+127.8=69.84$
$-0.09x=-57.96$
$x=644$

$x+y=852$
$y=-x+852$
$y=-644+852$
$y=208$

644 local min, 208 international min

c) I can use systems of linear equations to solve real-life problems: Two students are going to the store to buy school supplies for the new school year. One of the students buys 2 packs of pencils and 3 packs of pens for $8.25. Her friend purchases 5 packs of pencils and 2 packs of pens for $11.00. Is there enough information to determine the cost of 1 pack of pencils and 1 pack of pens? If so, find the cost of each.

X=$pencils
Y=$pens

$5(2x+3y=8.25)$
$-2(5x+2y=11)$

$10x+15y=41.25$
$-10x-4y=-22$

$\frac{11y}{11}=\frac{19.25}{11}$
$y=1.75$

$2x+3(1.75)=8.25$
$2x+5.25=8.25$
$-5.25 \quad -5.25$

$\frac{2x}{2}=\frac{3}{2}$
$x=1.5$

pencils are $1.50 & pens are $1.75

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d) I can determine the numbers of solutions of linear systems: Determine whether the systems has one solution, no solutions, or infinitely many solutions.

$-3x + 3y = 4$

$-3(-x + y = 3)$

$-3x + 3y = 4$

$3x - 3y = -9$

$0 = -5$

No Solution

$2(2x + 3y = -6)$

$-4x - 6y = 12$

$4x + 6y = -12$

$-4x - 6y = 12$

$0 = 0$

Infinitely many solutions