Linears Unit Review KEY -ALG 2BE

1) $\frac{13-7}{6-4} = \frac{6}{2} = \boxed{3}$

2) $\frac{3--3}{-4-5} = \frac{6}{-9} = \boxed{-\frac{2}{3}}$

3) $\frac{6-3}{12-6} = \frac{3}{6} = \frac{1}{2}$ or 0.5

4) 0

5) undefined

6) 6.49

7) 

8) 

9)

10)

11) - 18) on Graph Paper

19) $y = 6$

20) $x = 2$

21) $y = 5x + 7$

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

23) $x_1 = -4$ $y_1 = 6$ $m = -2$ $\underline{y - 6 = -2(x+4)}$

24) $x = -4$ $y = 6$ $m = -2$

$6 = -2(-4) + b$

$6 = 8 + b$

$-8 \quad -8$

$b = -2$

$\boxed{y = -2x - 2}$

25) $m = \frac{6-9}{4-1} = \frac{-3}{3} = -1$ $x = 1$ $y = 9$ (1, 9)

$9 = -1(1) + b$

$9 = -1 + b$

$+1 \quad +1$

$10 = b$

$\boxed{y = -x + 10}$

26)

x	y
-1	4
0	6
1	8

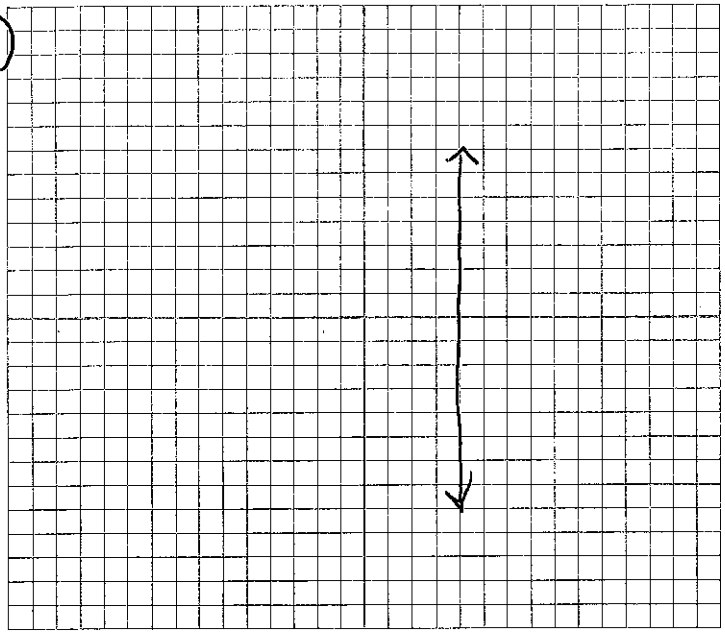
+1 → +2, b

$m = \frac{2}{1} = 2$

$y = 2x + 6$

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

11)



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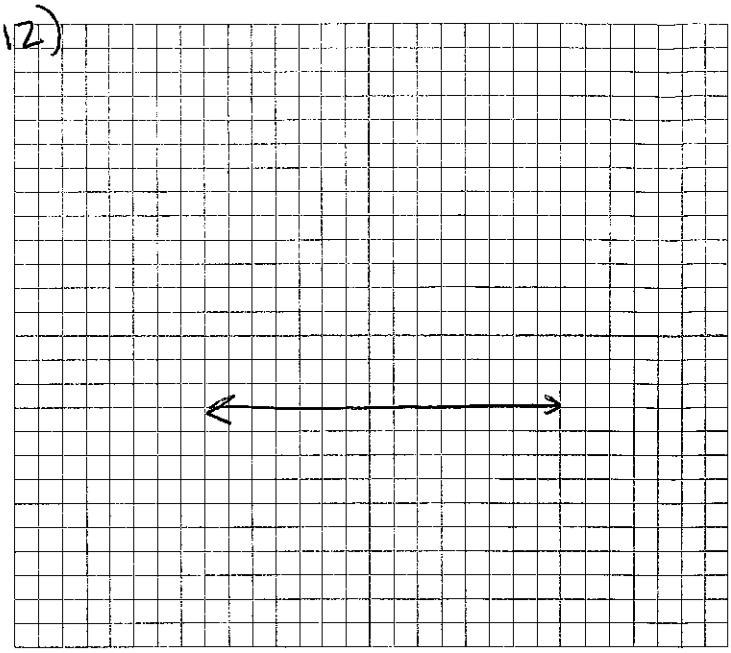

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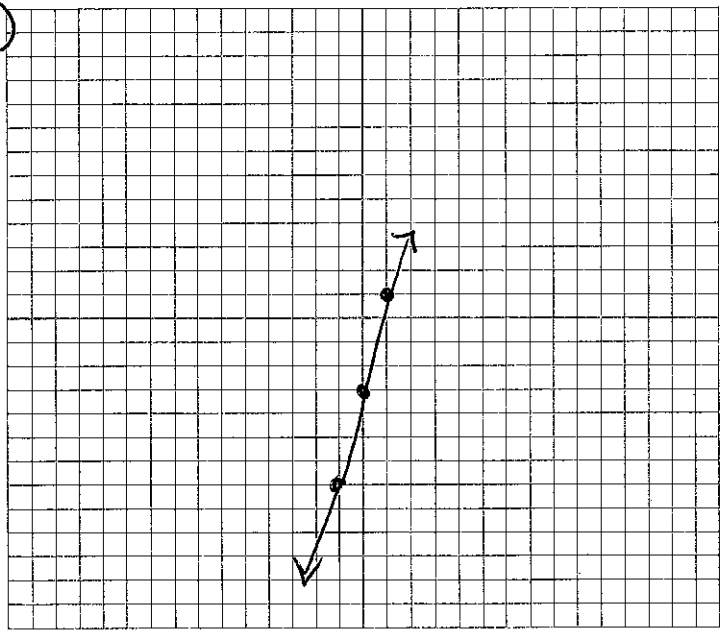

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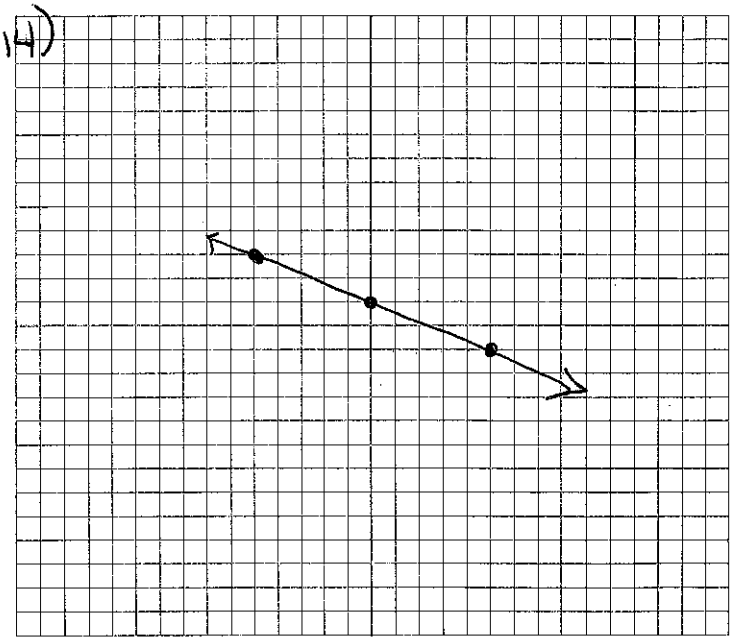

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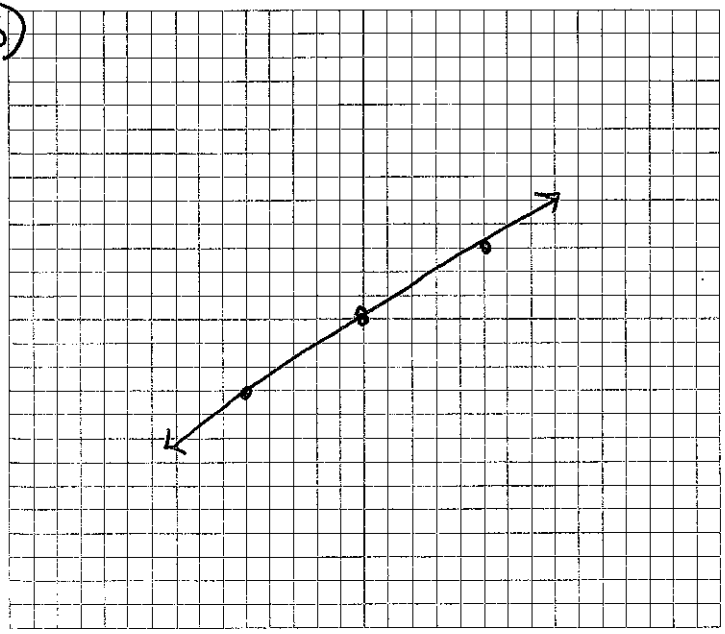
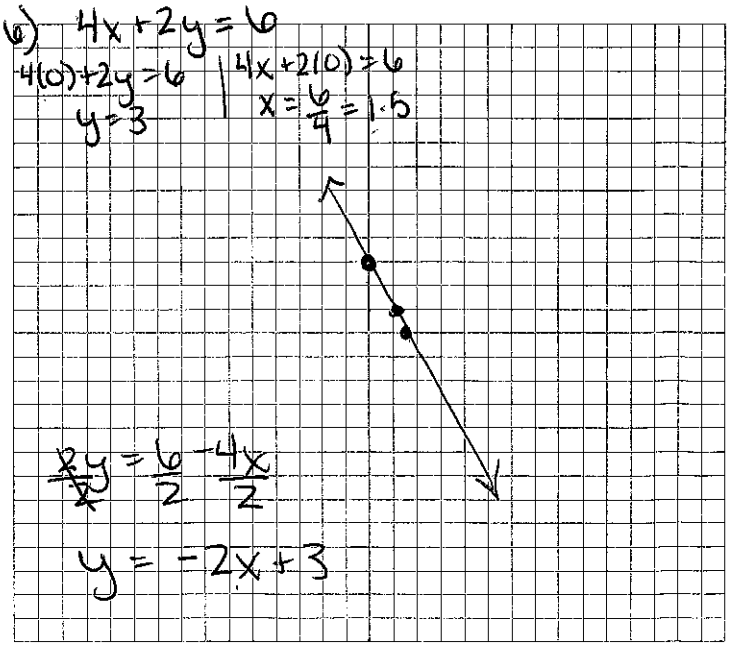


16) $4x+2y=6$

$4(0)+2y=6$ | $4x+2(0)=6$

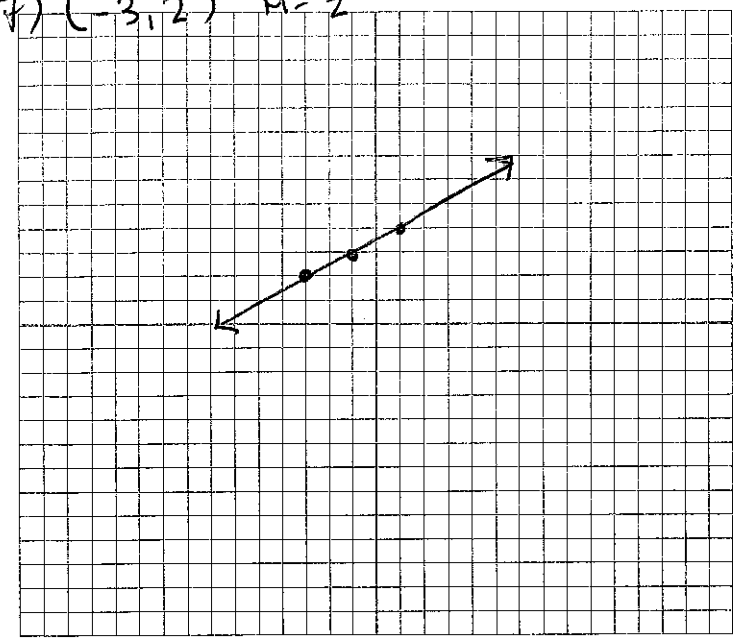
$y=3$ | $x=\frac{6}{4}=1.5$



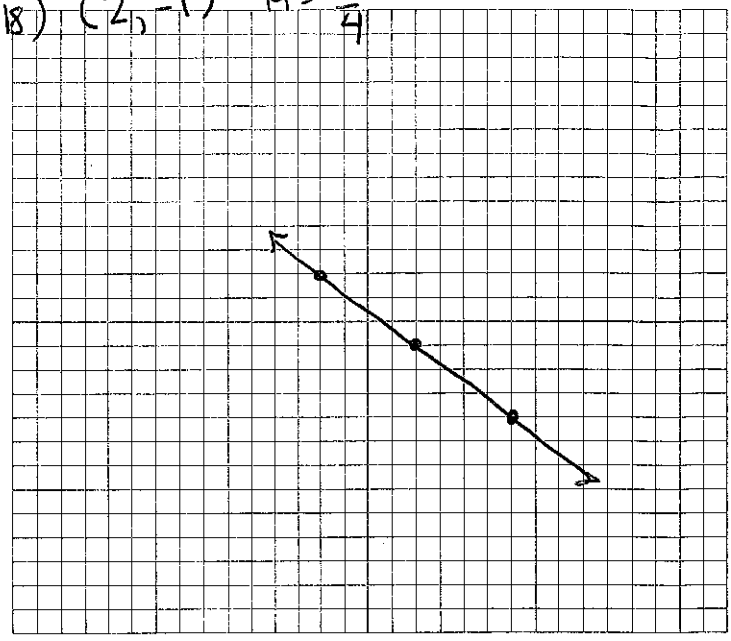
$\frac{2y}{2}=\frac{6}{2}-\frac{4x}{2}$

$y=-2x+3$

17) $(-3, 2)$ $M = \frac{1}{2}$



18) $(2, -1)$ $M = \frac{-3}{4}$



28) A. $M = 3$ - The \$3 per box
B. $b = 100$ - The flat rate/initial fee
C. $y = 3x + 100$
D. $3(25) + 100 = 175$

29) $169 = 11.50x + 8$
$161 = 11.50x$
$x = 14$ shirts

30) A. The number of papers she has to grade that week.
B. She can grade 40 papers per day.

31) $P = 50n - 300$
$400 = 50n - 300$
$700 = 50n$
$n = 14$ games

32) $\frac{1}{3}x = \frac{5}{6}x - 15$
$-\frac{5}{6}x \quad -\frac{5}{6}x$
$-\frac{3}{6}x = -15$ $\quad -2\left(-\frac{1}{2}x\right) = (-15)\,-2$
$x = 30$

33) $\underset{\text{largest}}{a} \quad a+1 \quad \underset{\text{5 times smallest}}{a+2}$
$a + 2 + 5a = -244$
$6a + 2 = -244$
$6a = -246$
$a = -41$
$-41, -40, -39$

34) A. Clean Cycle
(Their machine is originally valued at \$600 and the other company's was worth \$500)

B. Washers Plus $M = -100$
Clean Cycle $M = -60$

Clean cycle washers lose \$60 in value each year while Washers Plus loses \$100 in value each year.

35) // Parallel = same slopes
⊥ Perpendicular = slopes are opposite reciprocals

36) ⊥ to $y = -\frac{1}{3}x + 4$ means slope $= m = 3$

A. $y - y_1 = m(x - x_1)$ $\boxed{y - 5 = 3(x+2)}$

B. $y - 5 = 3x + 6$
$+5 \quad +5$
$\boxed{y = 3x + 11}$

C. $y = 3x - 11$
$-3x \quad -3x$
$-1(-3x + y = -11)$
$\boxed{3x - y = 11}$

I multiply by -1 because A must be > 0

37) $3x + 5y = 7$
$-3x \quad -3x$

$\frac{5y}{5} = \frac{-3x}{5} + \frac{7}{5}$

$y = -\frac{3}{5}x + \frac{7}{5}$

$m = -\frac{3}{5}$ to be //

(0, 6)
||
b

$\boxed{y = -\frac{3}{5}x + 6}$

38) $x = -1$ 

39) // to $y =$ is $y =$ $(\overset{x}{6}, \overset{y}{3})$

$\boxed{y = 3}$

40) $1.2 + 0.35x = 2.8 + 0.15x$
$-0.15x \quad -0.15x$

$1.2 + 0.2x = 2.8$
$-1.2 \quad -1.2$

$\frac{0.2x}{0.2} = \frac{1.6}{0.2}$

$x = 8$ weeks

$P = 1.2 + 0.35(8)$

$= \$4$

41) a = # adult tickets s = # student tickets

$$a + s = 450$$
$$8a + 4s = 2{,}200$$

$$\begin{bmatrix} 1 & 1 & 450 \\ 8 & 4 & 2200 \end{bmatrix} \sim \begin{bmatrix} 1 & 0 & 100 \\ 0 & 1 & 350 \end{bmatrix}$$

100 adult + 350 student tickets sold

42) $3x - 4y = -19$
$2(x + 2y = 17)$

Elimination ⇒

$3x - 4y = -19$
$2x + 4y = 34$
$5x = 15$
$x = 3$

$3(3) - 4y = -19$
$9 - 4y = -19$
$-4y = -28$
$y = 7$

OR

Matrix

$$\begin{bmatrix} 3 & -4 & -19 \\ 1 & 2 & 17 \end{bmatrix} \sim \begin{bmatrix} 1 & 0 & 3 \\ 0 & 1 & 7 \end{bmatrix}$$

$x = 3$
$y = 7$

So $2x + y = 2(3) + 7 = 6 + 7 = 13$

43) $c + r + d = 200$
$1.50c + 5.75r + 2.60d = 589.50$ ⇒

$$\begin{bmatrix} 1 & 1 & 1 & 200 \\ 1.5 & 5.75 & 2.6 & 589.50 \\ 0 & 1 & -1 & -20 \end{bmatrix}$$

rearrange to put in Matrix ⇒

$r = d - 20$
$-d \quad -d$
$r - d = -20$

c r d = #

$$\begin{bmatrix} 1 & 0 & 0 & 80 \\ 0 & 1 & 0 & 50 \\ 0 & 0 & 1 & 70 \end{bmatrix}$$

⇒ 80 carnations
⇒ 50 roses
⇒ 70 daisies

44) $h_1 = 4h_2 - 20$

$$\frac{4h_2 - 20}{h_1} + \frac{h_2}{h_2} = 380 \text{ ft}$$

$5h_2 - 20 = 380$
$+20 \quad +20$

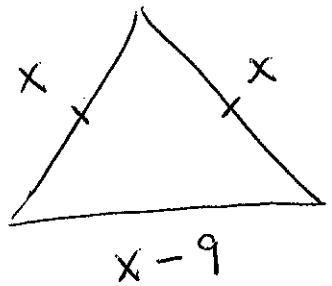
$\frac{5h_2}{5} = \frac{400}{5}$

hose 2 = 80 ft

⇒ $h_1 = 380 \text{ ft} - 80 \text{ ft}$
$= 300 \text{ ft}$

hose 1 = 300 ft

45)



$x + x + x - 9 = 63$

$3x - 9 = 63$

$3x = 72$

$x = 24$

shortest side $= x - 9$

$= 24 - 9$

$= 15$ feet