Test

① Finding Slope: $m = \frac{y_2 - y_1}{x_2 - x_1}$ or $m = \frac{\text{rise}}{\text{run}}$

② Parallel: (Same Slope) $\rightarrow m = \frac{1}{2}$ $m \parallel = \frac{1}{2}$

Perpendicular: (Opposite Reciprocals) $\rightarrow m = \frac{1}{2}$ $m \perp = -\frac{2}{1}$

③ Finding k

④ $y = \underline{m}x + \underline{b}$ m = Slope b = y-intercept

⑤ Graphing: ① Plot the y-intercept (b)
② Use your slope ($m = \frac{\text{rise}}{\text{run}}$) to plot other points
③ Join the points with a straight line.

⑥ Word Problems:

b = base rate, flat rate, fixed fee etc.

m = per hour, per km, per photo etc

$y = mx + b$

Review Slope

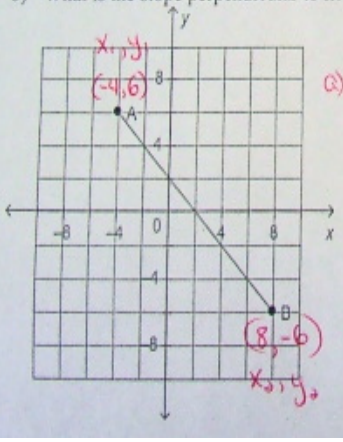
1. Write an equation (**slope intercept form**) for the graph of a linear function that has slope 8 and and a y-intercept of 7.

$y = 8x + 7$

2. Write the equation(**slope intercept form**) of a line with a y-intercept of -4 and a slope of 4/3.

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

3. a) Determine the slope of this line segment.
   b) What is the slope perpendicular to it?



x_1, y_1 $(-4, 6)$

x_2, y_2 $(8, -6)$

a) $m = \frac{-6-6}{8-(-4)} = \frac{-12}{12} = -1$

b) perpendicular slope $= \frac{1}{1} = 1$

x_1, y_1 x_2, y_2

4. Determine the slope of the line that passes through (–11, –8) and (6, 16).

$m = \frac{16-(-8)}{6-(-11)} = \frac{24}{17}$

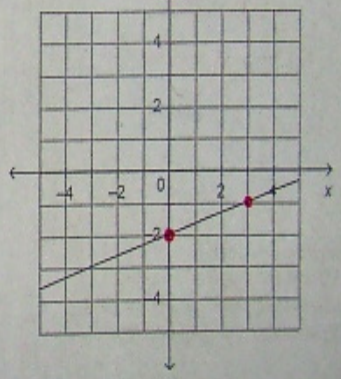
5. The slopes of two lines are $\frac{6}{11}$ and $\frac{6}{11}$. Are the two lines parallel, perpendicular, or neither?

6. The slopes of two lines are –2 and $\frac{1}{2}$. Are the two lines parallel, perpendicular, or neither?

7. *Slope:* $m = 1/3$

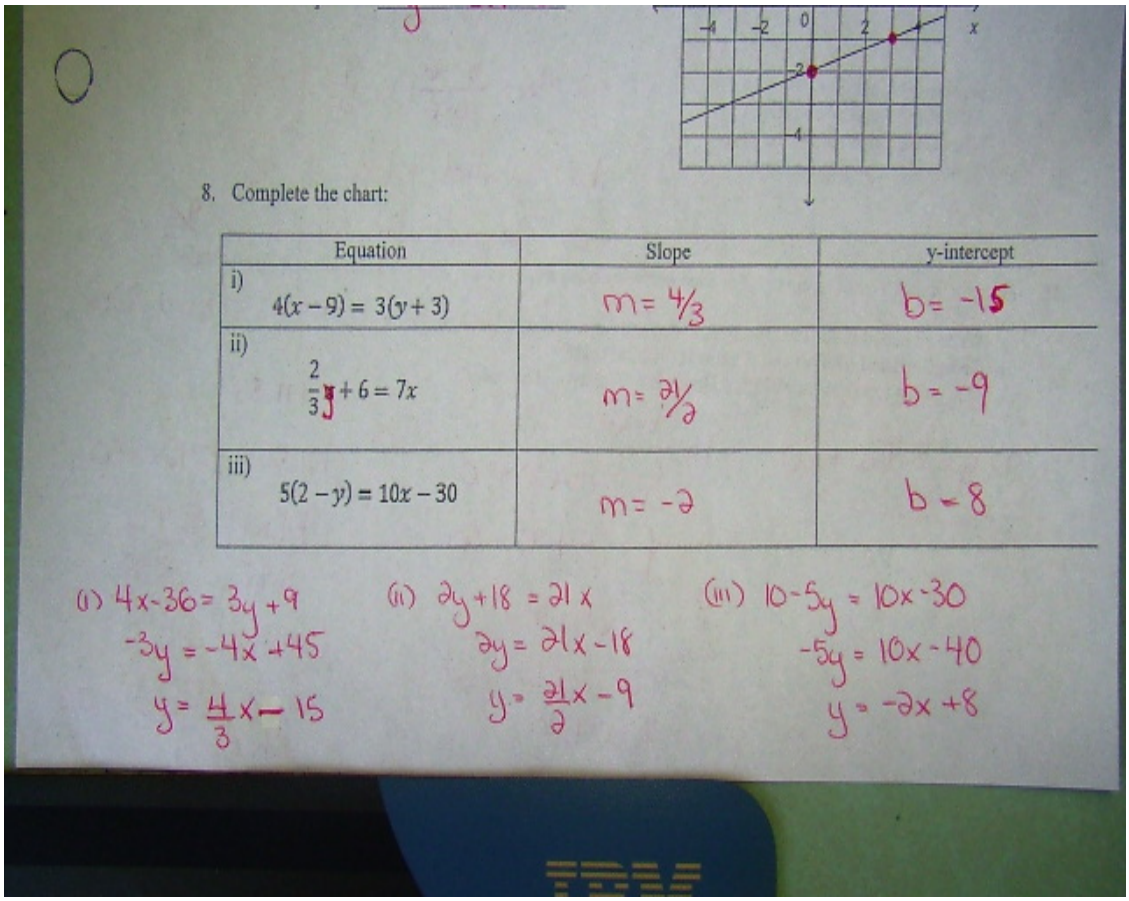
Point: y-intercept $= -2 = b$

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



8. Complete the chart:

Equation	Slope	y-intercept
i) $4(x-9) = 3(y+3)$	$m = 4/3$	$b = -15$
ii) 2		$b = -9$



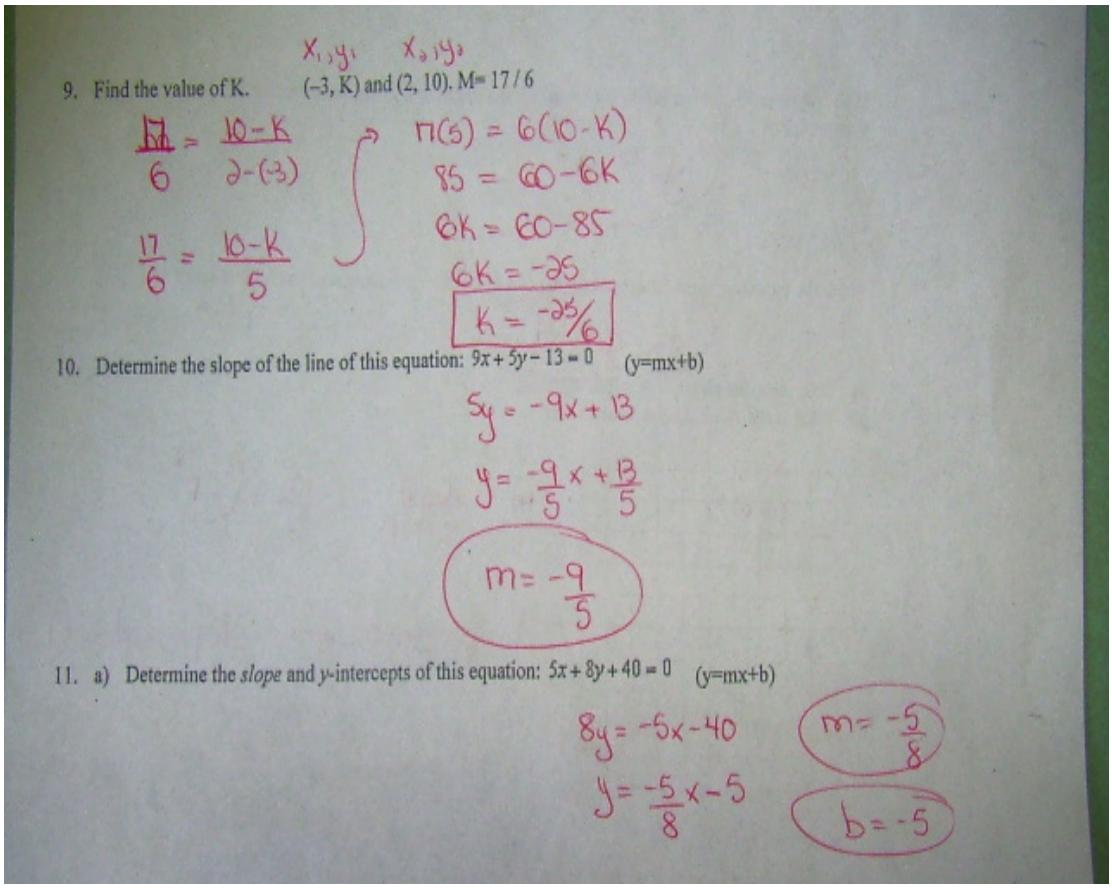
8. Complete the chart:

Equation	Slope	y-intercept
i) $4(x-9)=3(y+3)$	$m=4/3$	$b=-15$
ii) $\frac{2}{3}y+6=7x$	$m=21/2$	$b=-9$
iii) $5(2-y)=10x-30$	$m=-2$	$b=8$

(i) $4x-36=3y+9$
$-3y=-4x+45$
$y=\frac{4}{3}x-15$

(ii) $2y+18=21x$
$2y=21x-18$
$y=\frac{21}{2}x-9$

(iii) $10-5y=10x-30$
$-5y=10x-40$
$y=-2x+8$



x_1, y_1 x_2, y_2

9. Find the value of K. (−3, K) and (2, 10). M= 17 / 6

$\frac{17}{6} = \frac{10-K}{2-(-3)}$

$\frac{17}{6} = \frac{10-K}{5}$

$17(5) = 6(10-K)$

$85 = 60-6K$

$6K = 60-85$

$6K = -25$

$K = -25/6$

10. Determine the slope of the line of this equation: $9x + 5y - 13 = 0$ (y=mx+b)

$5y = -9x + 13$

$y = \frac{-9}{5}x + \frac{13}{5}$

$m = \frac{-9}{5}$

11. a) Determine the *slope* and *y*-intercepts of this equation: $5x + 8y + 40 = 0$ (y=mx+b)

$8y = -5x - 40$

$y = \frac{-5}{8}x - 5$

$m = \frac{-5}{8}$

$b = -5$

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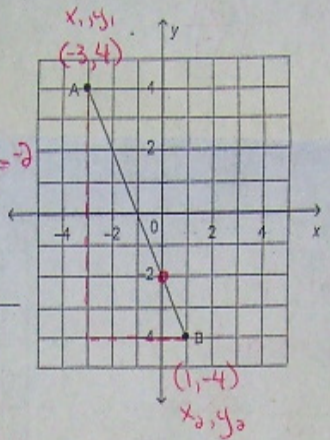

Slope: $m = \frac{rise}{run} = \frac{-8}{4} = -2$

Point: $b = -2$

Equation $y = -2x - 2$

(y=mx+b)

13. A line passes through R(6, 9) and K(–6, 15).
   a) What is the slope of line RK?
   b) What is the slope parallel to RK?
   c) What is slope perpendicular to RK.

a) $m_{RK} = \frac{15-9}{-6-6} = \frac{6}{-12} = -\frac{1}{2}$

b) Parallel slope $= -\frac{1}{2}$

c) Perpendicular slope $= \frac{2}{1}$

16. Francine runs a T-shirt company. For each order she receives, Francine charges a flat fee of $50, plus $8.95 per T-shirt .
   a) Write an equation for the total cost, C dollars, for ordering n T-shirts.
   b) George ordered 62 T-shirts. What was the total cost?
   c) Jake paid a total cost of $971.85. How many T-shirts did he order?

$b = 50$ $m = 8.95$

$y = 971.85$

$x = 60$

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c) perpendicular slope = -1/3

16. Francine runs a T-shirt company. For each order she receives, Francine charges a flat fee of $50, plus $8.95 per T-shirt.
   a) Write an equation for the total cost, C dollars, for ordering n T-shirts.
   b) George ordered 62 T-shirts. What was the total cost?
   c) Jake paid a total cost of $971.85. How many T-shirts did he order?

b = 50 m = 8.95

a) $y = 8.95x + 50$

b) $x = 62$

$y = 8.95(62) + 50$

$y = 554.90 + 50$

$y = \$604.90$

It would cost $604.90

c) $y = 971.85$

$971.85 = 8.95x + 50$

$\frac{971.85}{8.95} = \frac{8.95x}{8.95}$

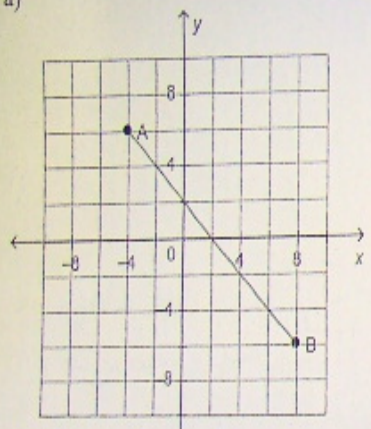
$103 = x$

He ordered 103 shirts.

Slope Review

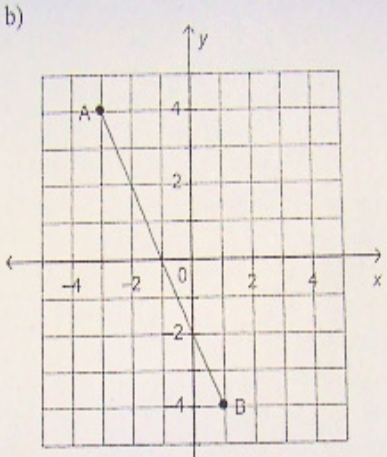
Determine the slope of this line segment.

a)



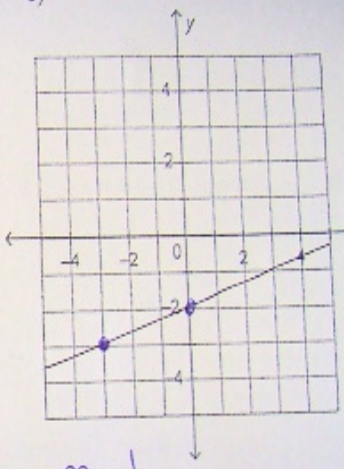
$m_{AB} = \frac{-6}{6} = -1$

b)



$m_{AB} = \frac{-8}{4} = -2$

c)



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

Determine the slope of the line that passes through (9,11) and (15, 27).

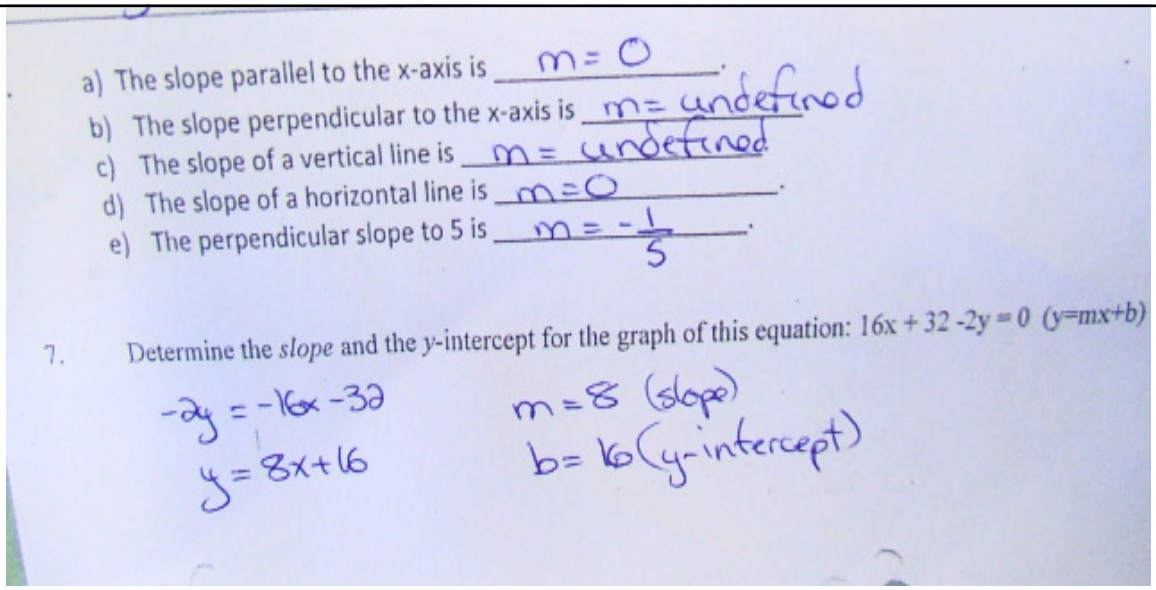
$m = \frac{27-11}{15-9} = \frac{16}{6} = \frac{8}{3}$

The slopes of two lines are $\frac{6}{11}$ and -11/6 . Are the two lines parallel, perpendicular, or neither?

. The slopes of two lines are –2 and -1/2. Are the two lines parallel, perpendicular, or neither?

. Complete the chart:

Equation	Slope	y-intercept
a) $y = 4x - 2$	$m = 4$	$b = -2 \rightarrow (0, -2)$
b) $-y = 5x - 2$ $y = -5x + 2$	$m = -5$	$b = 2 \rightarrow (0, 2)$
c) $2y - 3 = 8x - 5$ $2y = 8x - 2$ $y = 4x - 1$	$m = 4$	$b = -1 \rightarrow (0, -1)$
d) $3(y + 1) = 2x + 9$ $y + 1 = \frac{2}{3}x + 3$ $y = \frac{2}{3}x + 2$	$m = \frac{2}{3}$	$b = 2 \rightarrow (0, 2)$
e) $1/2y + 2 = 2x + 1$ $\frac{1}{2}y = 2x - 1$ $y = 4x - 2$	$m = 4$	$b = -2 \rightarrow (0, -2)$
f) $3x + 5 = 2y - 5$ $3x + 10 = 2y$ $\frac{3}{2}x + 5 = y$	$m = \frac{3}{2}$	$b = 5 \rightarrow (0, 5)$
g) $-5y - 1 = 10x - 20$ $-5y = 10x - 19$ $y = -2x + \frac{19}{5}$	$m = -2$	$b = \frac{19}{5} \rightarrow (0, \frac{19}{5})$



a) The slope parallel to the x-axis is $m = 0$.

b) The slope perpendicular to the x-axis is $m =$ undefined

c) The slope of a vertical line is $m =$ undefined

d) The slope of a horizontal line is $m = 0$.

e) The perpendicular slope to 5 is $m = -\frac{1}{5}$.

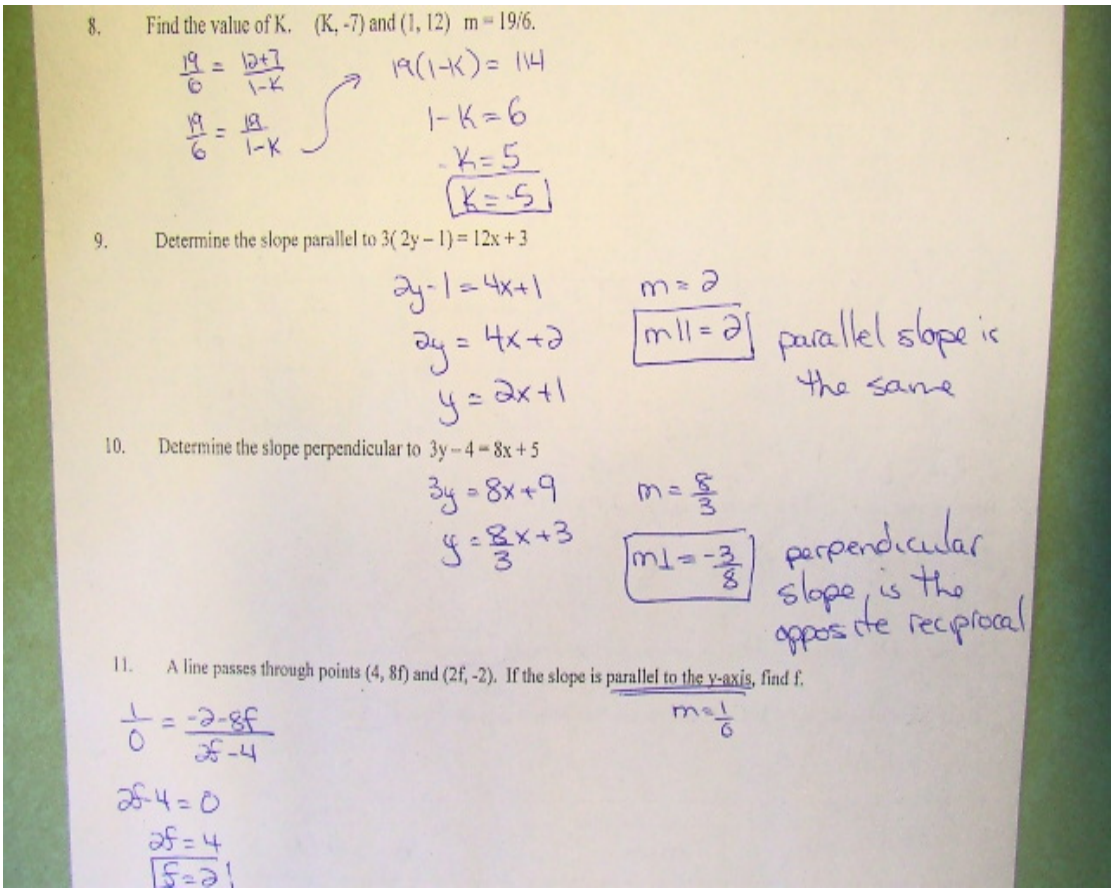
7. Determine the *slope* and the *y*-intercept for the graph of this equation: $16x + 32 - 2y = 0$ $(y=mx+b)$

$-2y = -16x - 32$

$y = 8x + 16$

$m = 8$ (slope)

$b = 16$ (y-intercept)



8. Find the value of K. (K, -7) and (1, 12) m = 19/6.

$\frac{19}{6} = \frac{12+7}{1-K}$

$\frac{19}{6} = \frac{19}{1-K}$

$19(1-K) = 114$

$1-K = 6$

$-K = 5$

$\boxed{K = -5}$

9. Determine the slope parallel to $3(2y-1) = 12x+3$

$2y-1 = 4x+1$

$2y = 4x+2$

$y = 2x+1$

$m = 2$

$\boxed{m\parallel = 2}$ parallel slope is the same

10. Determine the slope perpendicular to $3y-4 = 8x+5$

$3y = 8x+9$

$y = \frac{8}{3}x+3$

$m = \frac{8}{3}$

$\boxed{m\perp = -\frac{3}{8}}$ perpendicular slope is the opposite reciprocal

11. A line passes through points (4, 8f) and (2f, -2). If the slope is parallel to the y-axis, find f.

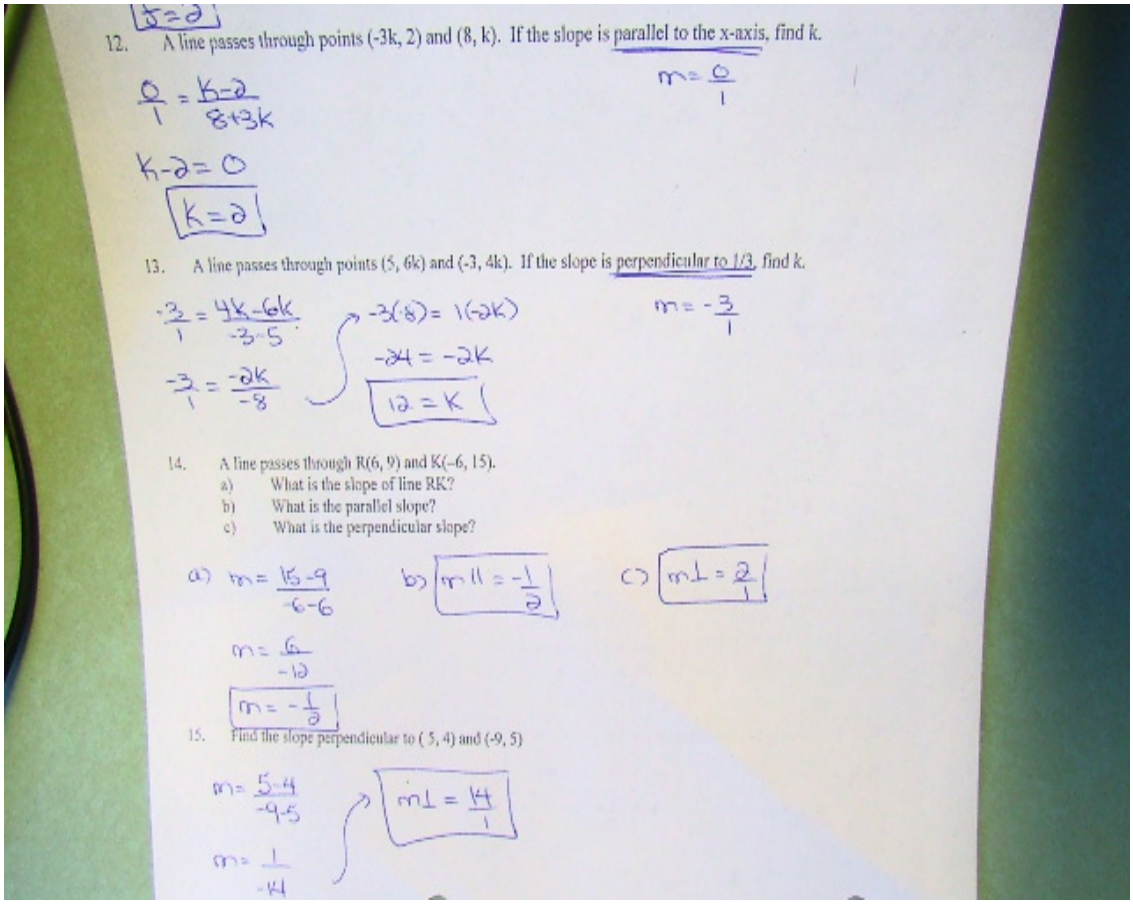
$m = \frac{1}{0}$

$\frac{1}{0} = \frac{-2-8f}{2f-4}$

$2f-4 = 0$

$2f = 4$

$\boxed{f = 2}$



k=2

12. A line passes through points (-3k, 2) and (8, k). If the slope is parallel to the x-axis, find k.

$m = \frac{0}{1}$

$\frac{0}{1} = \frac{k-2}{8+3k}$

$k-2=0$

$k=2$

13. A line passes through points (5, 6k) and (-3, 4k). If the slope is perpendicular to 1/3, find k.

$m = -\frac{3}{1}$

$\frac{-3}{1} = \frac{4k-6k}{-3-5}$

$\frac{-3}{1} = \frac{-2k}{-8}$

$-3(8) = 1(-2k)$

$-24 = -2k$

$12 = k$

14. A line passes through R(6, 9) and K(–6, 15).
a) What is the slope of line RK?
b) What is the parallel slope?
c) What is the perpendicular slope?

a) $m = \frac{15-9}{-6-6}$

$m = \frac{6}{-12}$

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

b) $m\parallel = -\frac{1}{2}$

c) $m\perp = \frac{2}{1}$

15. Find the slope perpendicular to (5, 4) and (-9, 5)

$m = \frac{5-4}{-9-5}$

$m = \frac{1}{-14}$

$m\perp = \frac{14}{1}$