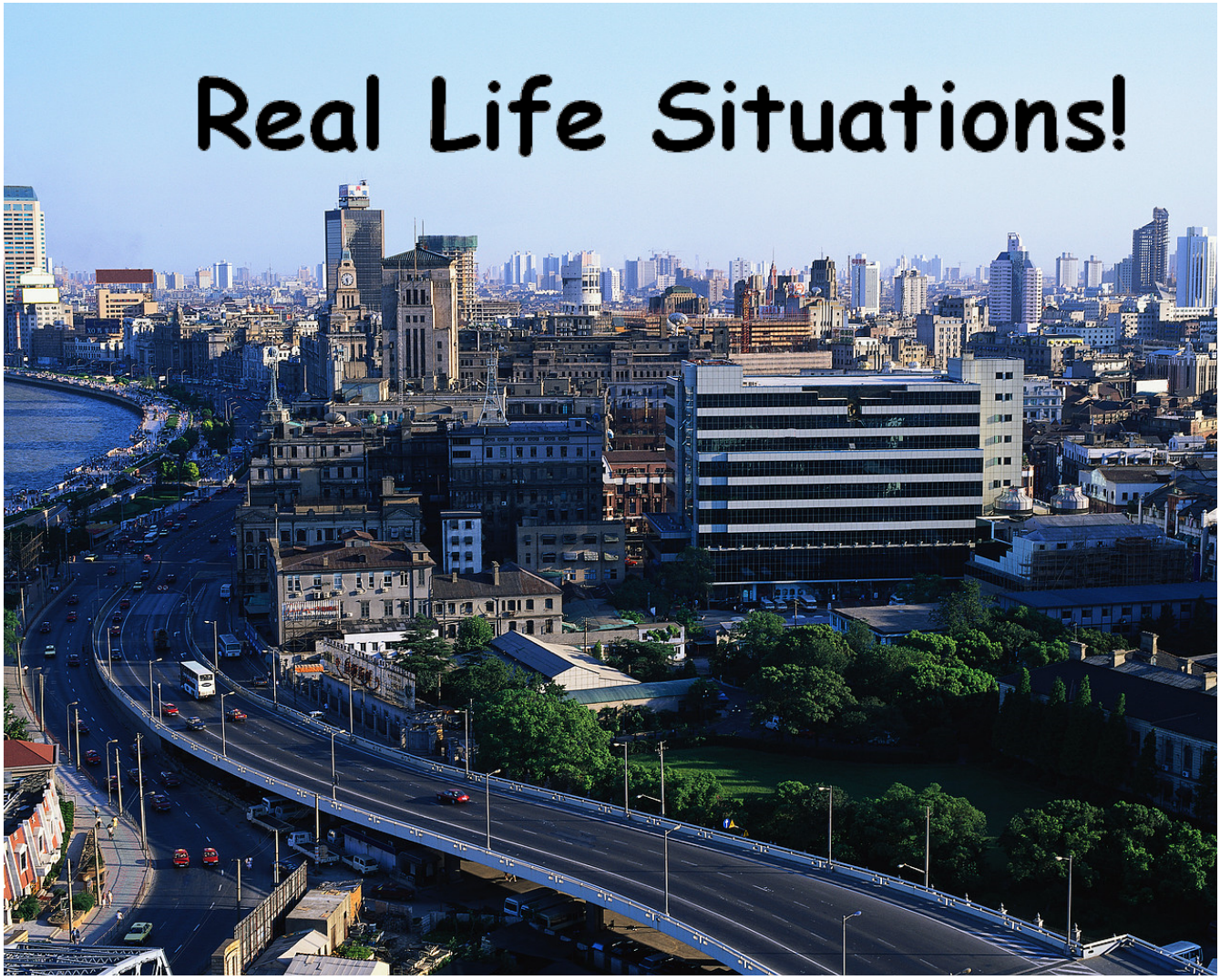

Real Life Situations!

$$y = mx + b$$

Slope (m) = Cost per hour, Cost per Km, Cost per picture, etc.....

y-intercept (b)= Initial cost, base rate, initial fee, flat rate, sitting fee, starting cost etc.....

x = Number of kilometers, Number of hours, Number of pictures, etc....

y = Total Cost $$$$, Total Earned $$$

Laura babysits on the weekend to make extra money. She charges $15 as a flat rate and then $5 every hour.

$m = 5$

$b = 15$

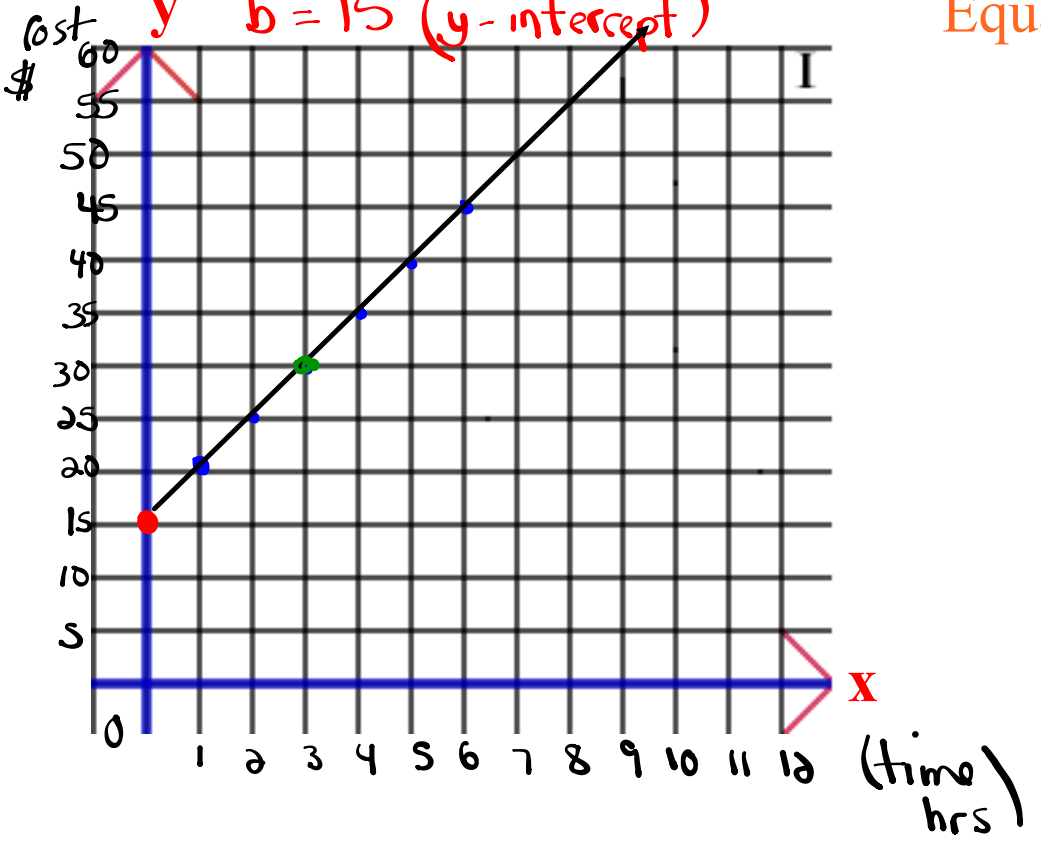
Laura babysists on the weekend to make extra money. She charges $15 as a flat rate and then $5 every hour.

Graph

$m = 5 = \left(\frac{\text{rise}}{\text{run}}\right)$

y $b = 15$ (y - intercept)

Equation



Laura babysits on the weekend to make extra money. She charges $15 as a flat rate and then $5 every hour.

$y = 5x + 15$

b = 15
m = 5
x = # of hours
y = Total Cost $$

1. **How much would it cost to have Laura babysit for 3 hours?**

$y = 5(3) + 15$ $x = 3$

$y = 15 + 15$

$y = \$30$

It would cost $30 to have Laura babysit for 3 hours.

2. **How many hours could you have Laura babysit for if you had $45?**

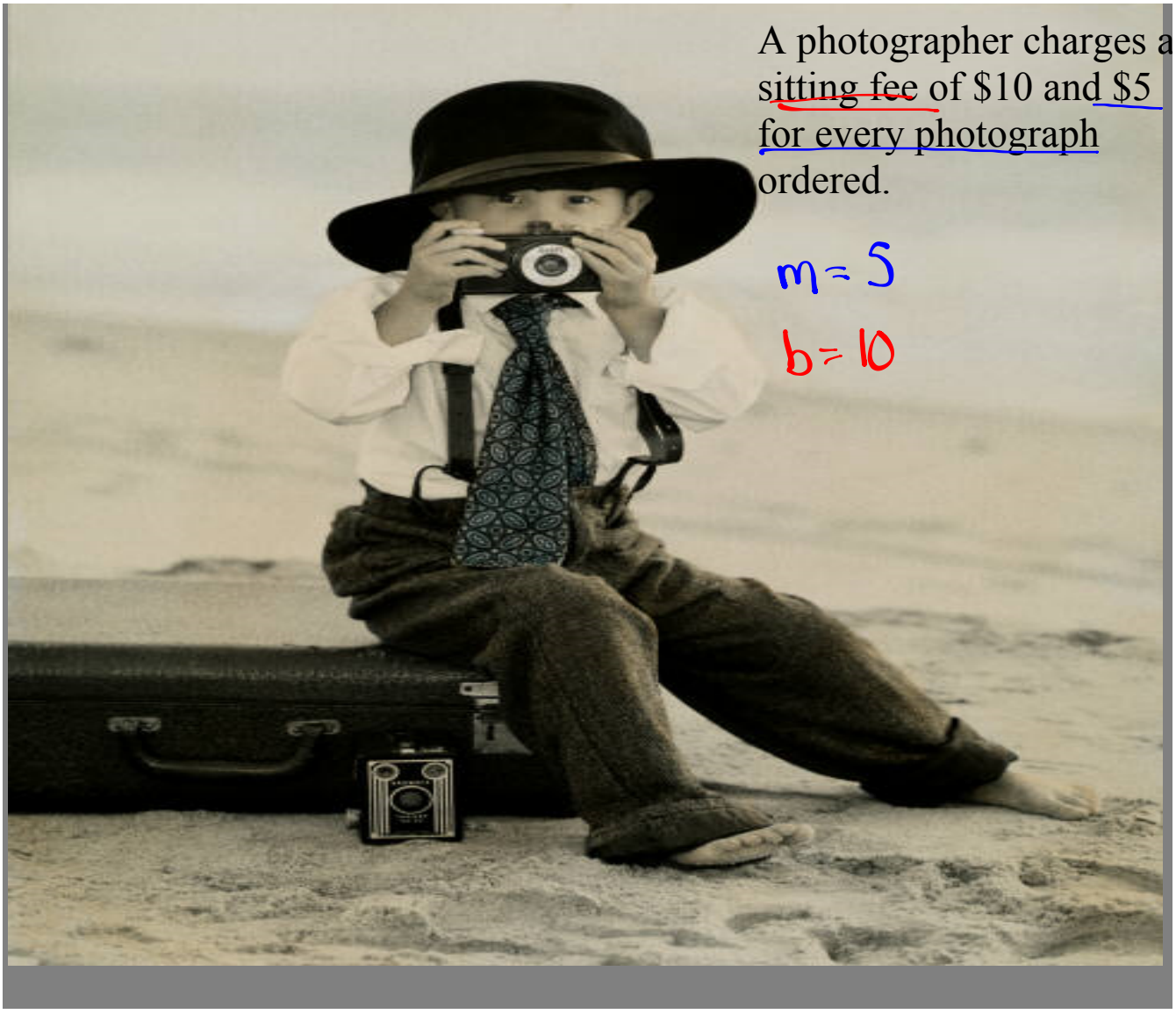
$45 = 5x + 15$ $y = \$45$

$45 - 15 = 5x$

Laura could babysit for 6 hrs.

$\frac{30}{5} = \frac{5x}{5}$

6 hrs = x

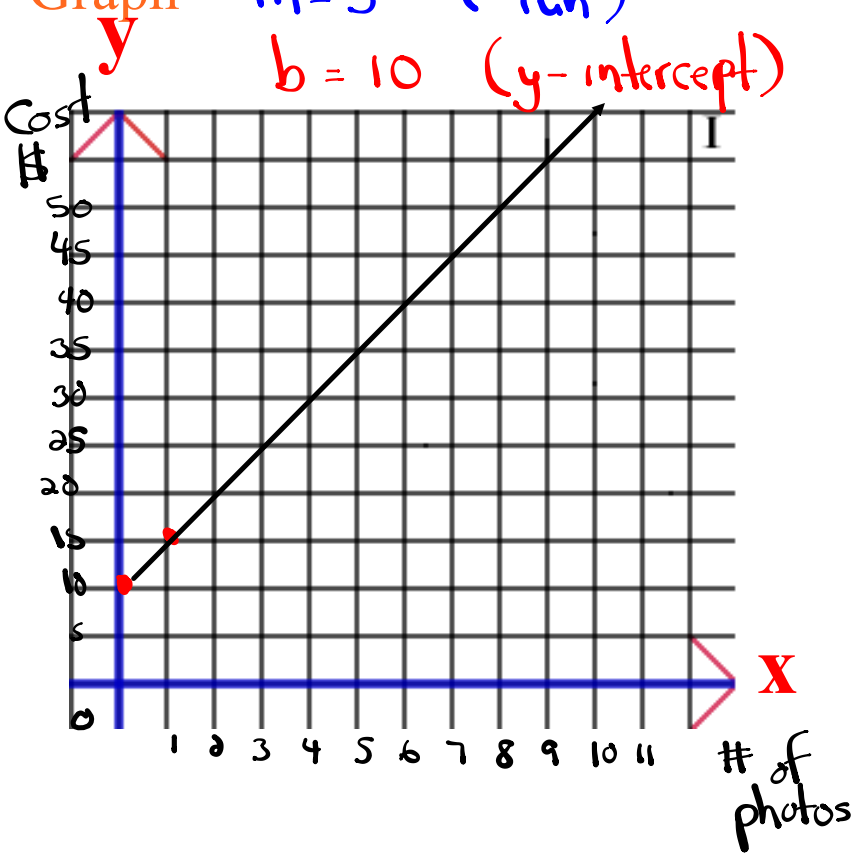

A photographer charges a sitting fee of $10 and $5 for every photograph ordered.
m = 5
b = 10

A photographer charges a sitting fee of $10 and $5 for every photograph ordered.

Graph

$m = 5$ $\left(\frac{\text{rise}}{\text{run}}\right)$

$b = 10$ (y- intercept)



Equation

A photographer charges a sitting fee of $10 and $5 for every photograph ordered.

$y = 5x + 10$

1. How many photographs could you get for $35?

$35 = 5x + 10$

$35 - 10 = 5x$

$\frac{25}{5} = \frac{5x}{5}$

$5 = x$

$y = \$35$

you can get 5 photos for $35

2. How much would it cost for 8 photographs?

$y = 5(8) + 10$

$y = 40 + 10$

$y = \$50$

$x = 8$

It would cost $50 for 8 photos.

Homework

a) How much will Alicia make if she plays 41 songs. $(x=41)$

15. $m=11$ $b=60$

$y=mx+b$

$y=11x+60$

$y=11(41)+60$

$y=451+60$

$y=\$511$

---

c) How many announcements will Amber put on for $\$250$? $(y=250)$

20. $m=20$ $b=30$

$y=mx+b$

$y=20x+30$

$250=20x+30$

$250-30=20x$

$\frac{220}{20}=\frac{20x}{20}$

$\boxed{11=x}$

She could do 11 announcements for $\$250$.

A taxi driver charges a flat fee of $25 and then $1 for every km travele

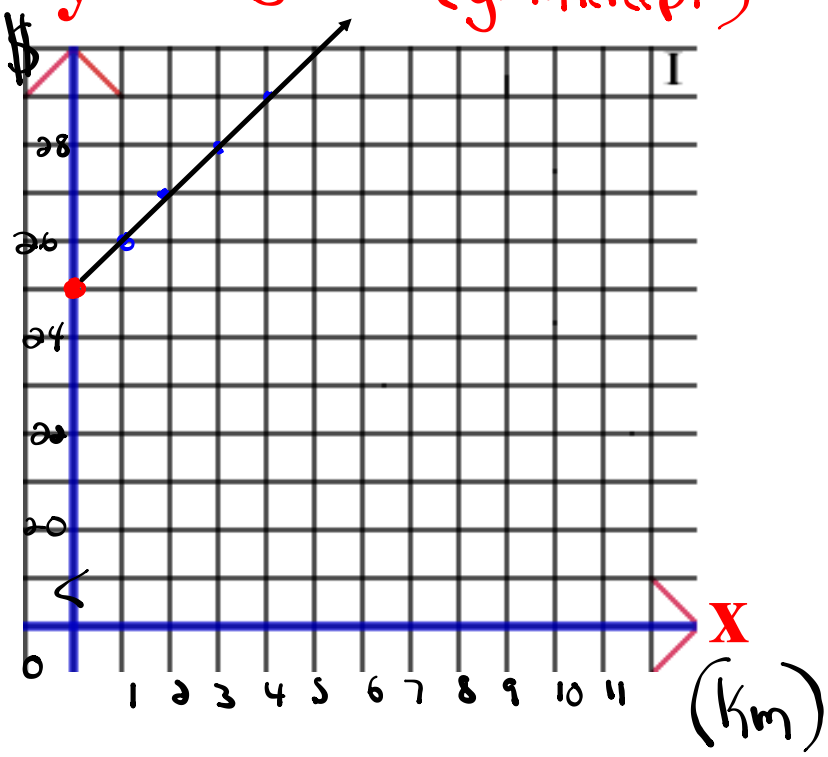
A taxi driver charges a flat fee of $25 and then $1 for every km traveled.

Graph

$m = 1 \left(\frac{\text{rise}}{\text{run}}\right)$

$b = 25$ (y-intercept)

Equation



A taxi driver charges a flat fee of $25 and then $1 for every km traveled.

$y = 1x + 25$

1. How far can you travel for $75? $(y = 75)$

$y = x + 25$

$75 = x + 25$

$75 - 25 = x$

$\boxed{50 = x}$

You can travel 50 km.

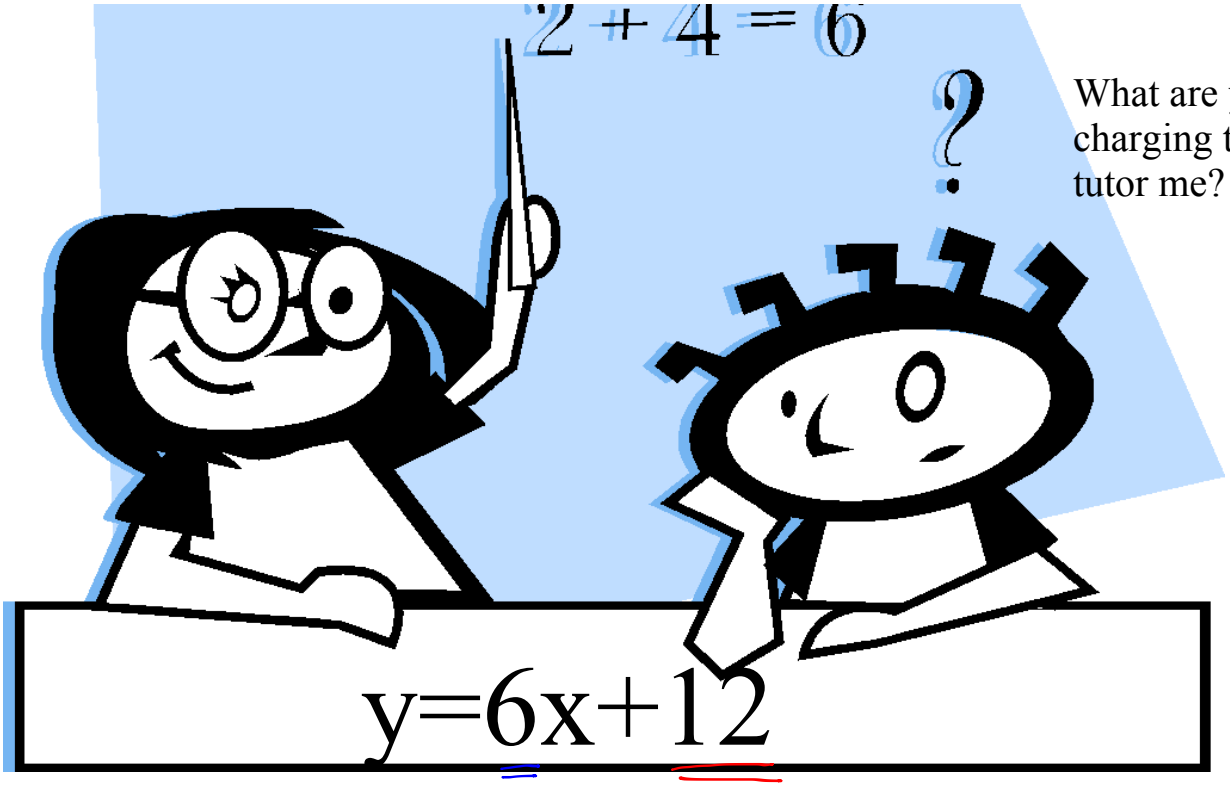
2. How much would it cost to travel 60 km? $(x = 60)$

$y = x + 25$

$y = 60 + 25$

$\boxed{y = \$85}$

It would cost $85.



Write the scenario that would represent the equation.

flat rate = $12 (b)

per hour rate = $6 (m)

Which of the following equations is a reasonable representation of the cost of raking leaves.

$y=50x+5$

$y=5x+20$

Homework

Test on Friday

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

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

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

③ Finding k

④ $y = mx + b$ 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

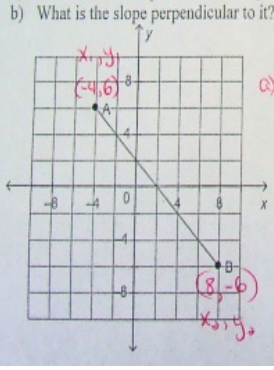
1. Write an equation (**slope intercept form**) for the graph of a linear function that has slope 8 and and a y-intercept of 7.

$y = 8x + 7$

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

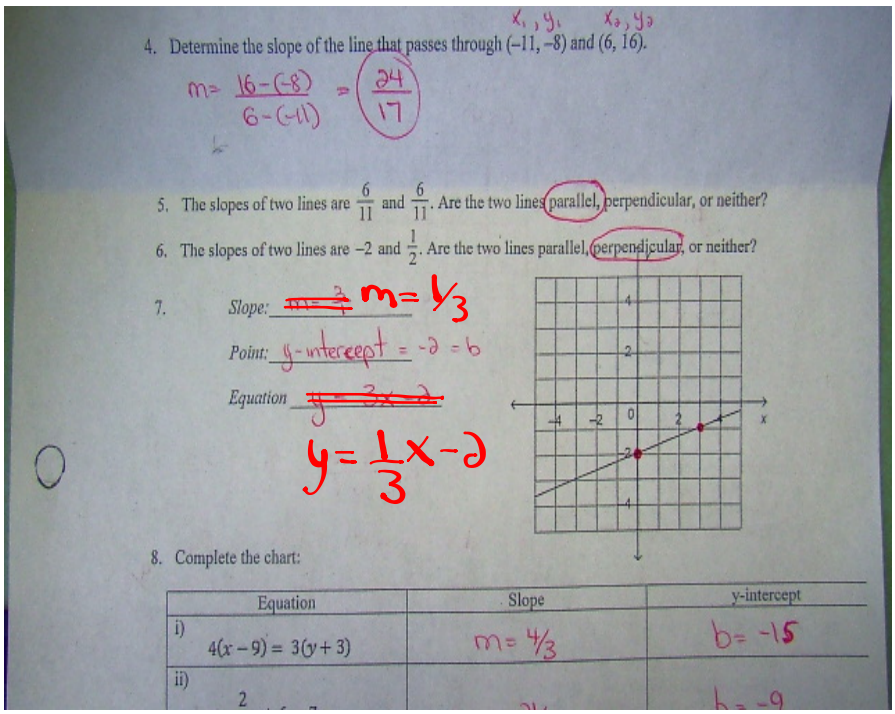
$y = \frac{4}{3}x - 4$

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



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

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



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

x_1, y_1 x_2, y_2

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

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:* ~~$m = 3$~~ $m = 1/3$

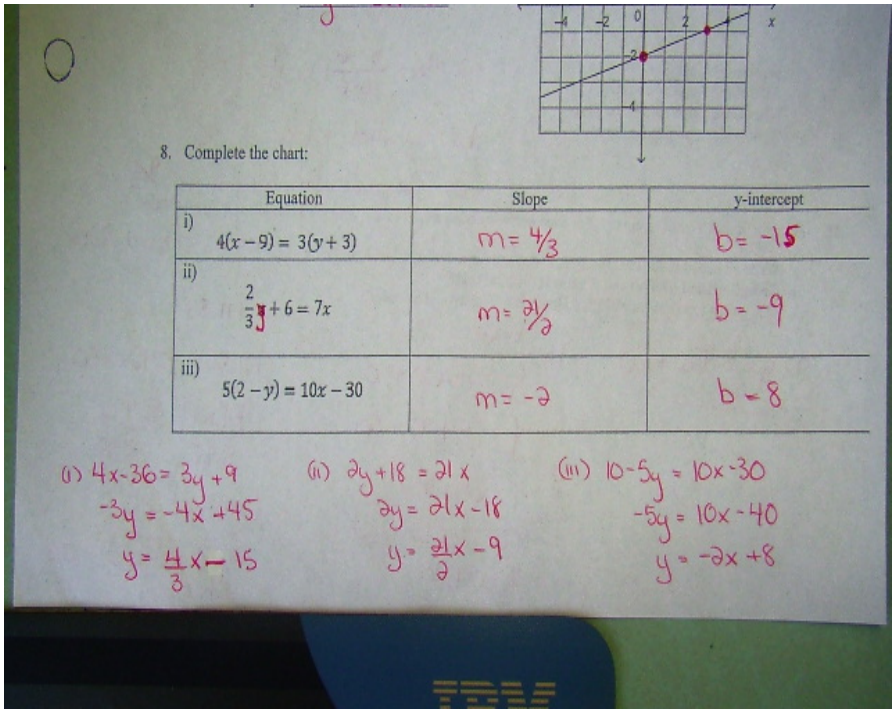
Point: y-intercept $= -2 = b$

Equation ~~$y = 3x - 2$~~

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

8. Complete the chart:

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



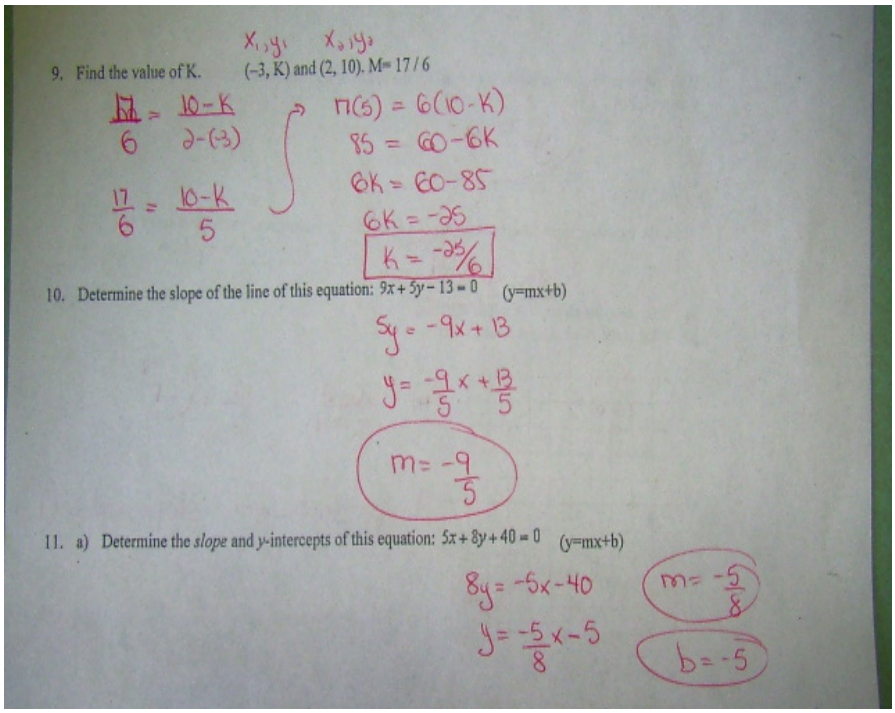
8. Complete the chart:

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

$\frac{17}{6} = \frac{10-K}{2-(-3)}$ → $17(5) = 6(10-K)$

$\frac{17}{6} = \frac{10-K}{5}$ $85 = 60-6K$

$6K = 60-85$

$6K = -25$

$K = -25/6$

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)

$8y = -5x - 40$

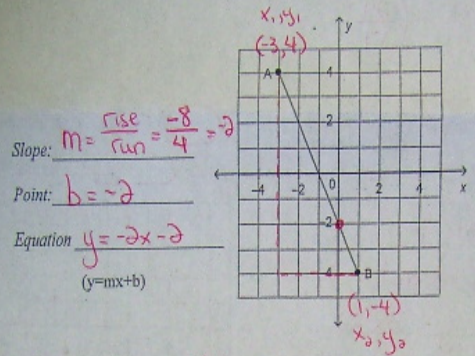
$y = \frac{-5}{8}x - 5$

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

$b = -5$

oblem

12.



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

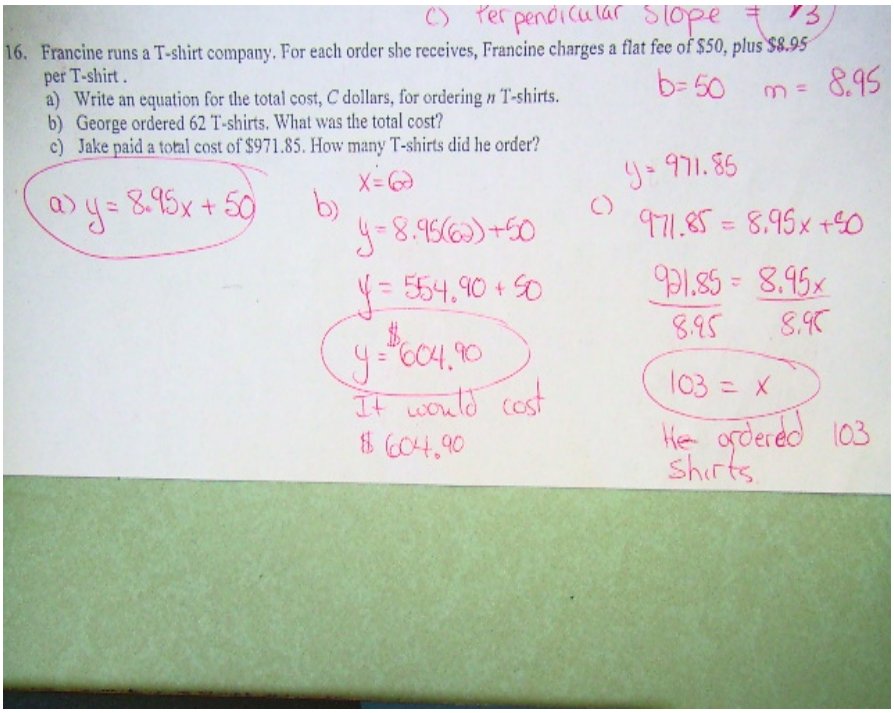
c) Perpendicular slope $= \frac{2}{1}$

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?

$b = 50$ $m = 8.95$

$y = 971.85$

$x = 60$


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.
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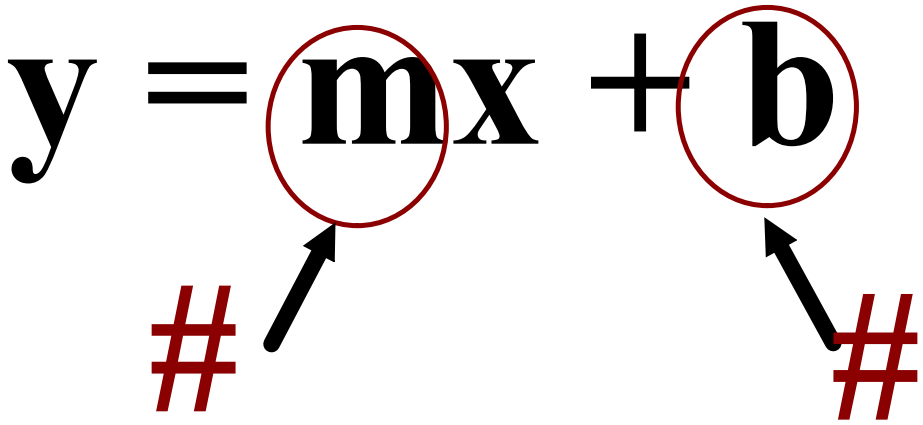
c) Jake paid a total cost of $971.85. How many T-shirts did he order?
b=50 m=8.95
a) y=8.95x+50
b) x=62
y=8.95(62)+50
y=554.90+50
y=$604.90
It would cost $604.90
c) y=971.85
971.85=8.95x+50
971.85/8.95 = 8.95x/8.95
103=x
He ordered 103 shirts.



m = Rate of Change (Slope)

b = initial amount (vertical intercept or y-int.)