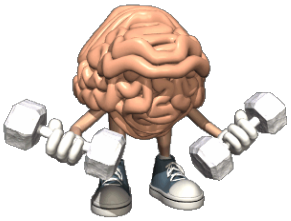
Warm Up



1a)What is the slope of a line that passes through the points(14,-18) and (8, -20) ?

$\frac{y_2 - y_1}{x_2 - x_1}$

$\frac{-20-(-18)}{8-14} = \frac{-2}{-6} = \frac{2}{6} = \frac{2 \div 2}{6 \div 2} = \frac{1}{3}$

x_1, y_1 x_2, y_2

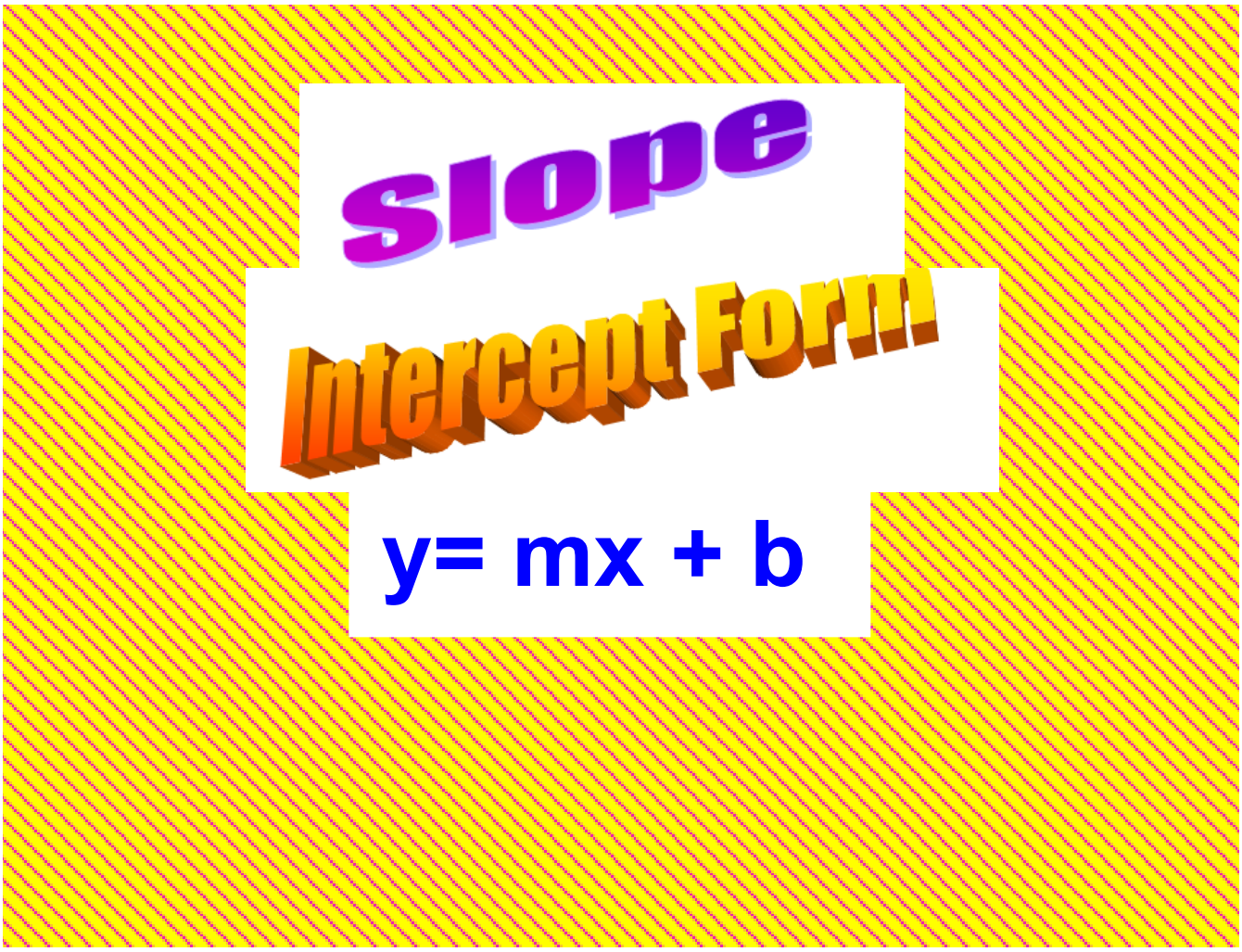
b)What is the slope of a line ~~perpendicular~~ to a line that passes through the points(5,3) and (-12, 6) ?

x_1, y_1 x_2, y_2

$\frac{y_2 - y_1}{x_2 - x_1}$

$\frac{6-3}{-12-5} = \frac{3}{-17} = \frac{-3}{17}$

$\frac{-3}{17} \parallel \frac{17}{3}$


Slope
Intercept Form
y= mx + b

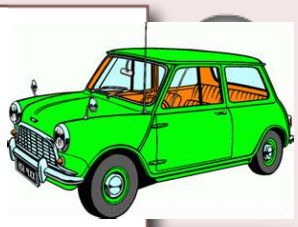
$y = mx + b$

Slope (m)

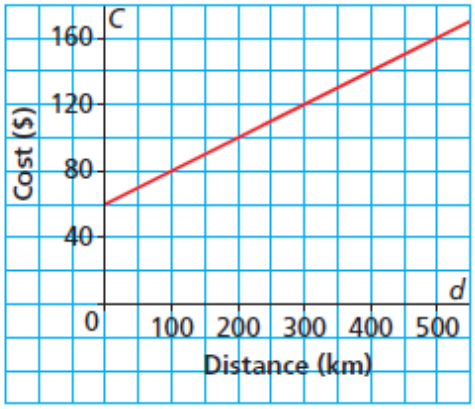
y-intercept (b)

also have a point

In Chapter 5, Lesson 5.6, we described a linear function in different ways. The linear function below represents the cost of a car rental.



Car Rental Costs



An equation of the function is:
$C = 0.20d + 60$

The number 0.20 is ?

The number 60 is ?

6.4 Slope-Intercept Form of the Equation for a Linear Function

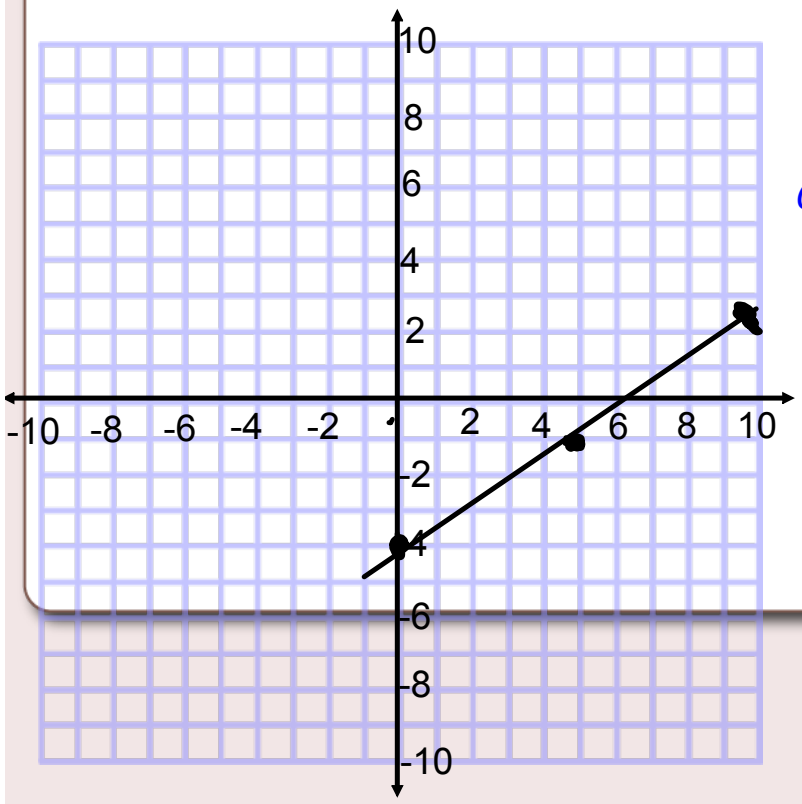
Example 1 Writing an Equation of a Linear Function Given Its Slope and *y*-Intercept

he graph of a linear function has slope $\frac{3}{5}$ and y-intercept -4.

/rite an equation for this function.

$y = mx + b$

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



Graph the following

To graph a line you need :

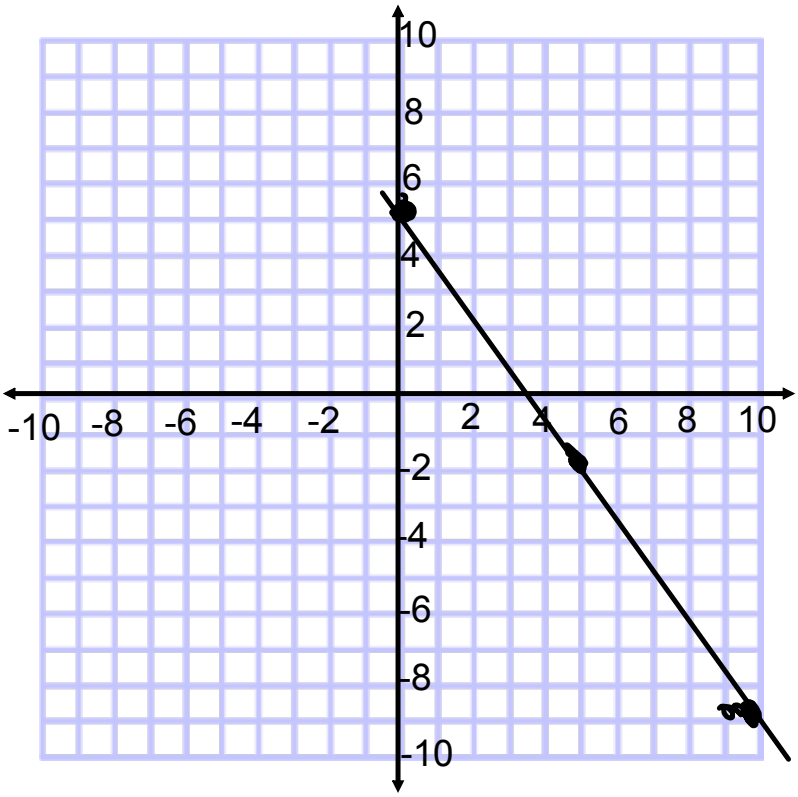
i) One point

(0, -4)

ii) Slope

1. The graph of a linear function has slope $-\frac{7}{3}$ and y-intercept 5.

Write an equation for this function.

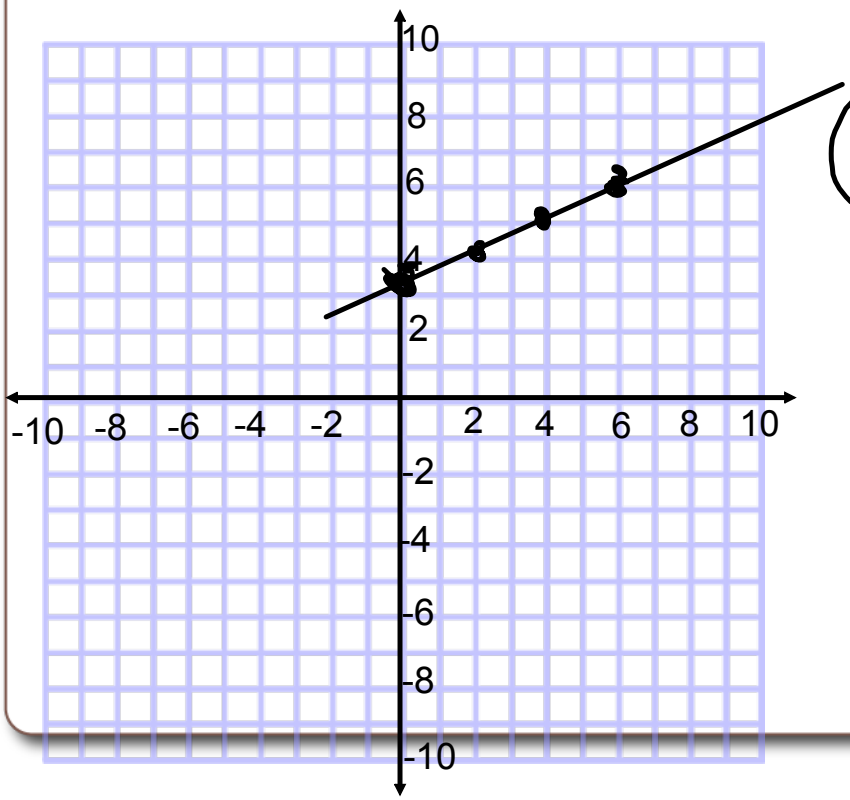


$y = -\frac{7}{3}x + 5$

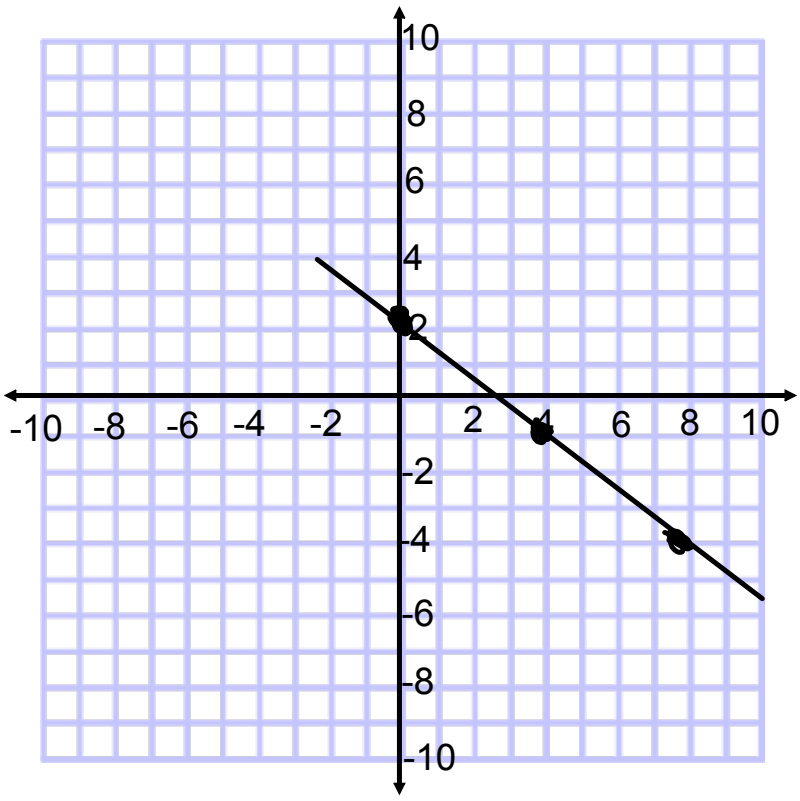
$(0, 5)$

Example 2 Graphing a Linear Function Given Its Equation in Slope-Intercept Form

Graph the linear function with equation: $y = \frac{1}{2}x + 3$



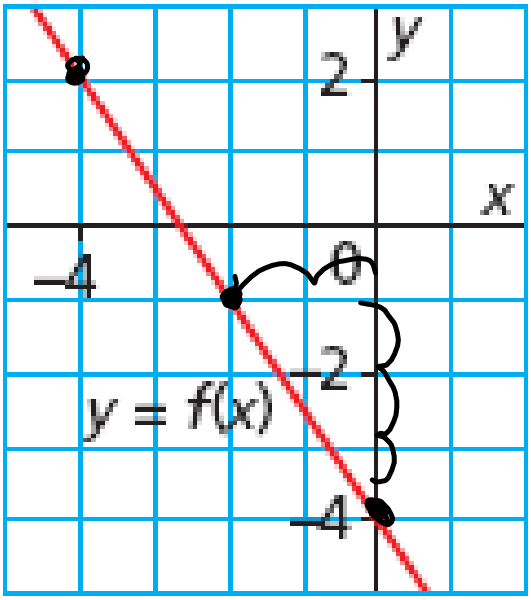
2. Graph the linear function with equation: $y = -\frac{3}{4}x + 2$



(0, 2)

Example 3 Writing the Equation of a Linear Function Given Its Graph

Write an equation to describe this function.
Verify the equation.

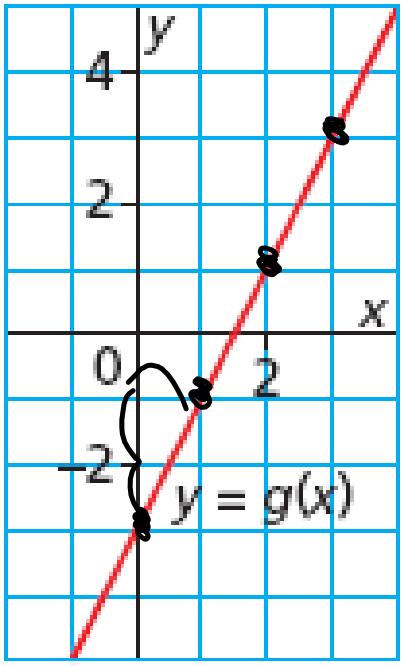


y-int = -4

$\text{Slope} = \frac{-3}{2}$

$y = \frac{-3}{2}x - 4$

3. Write an equation to describe this function. Verify the equation.



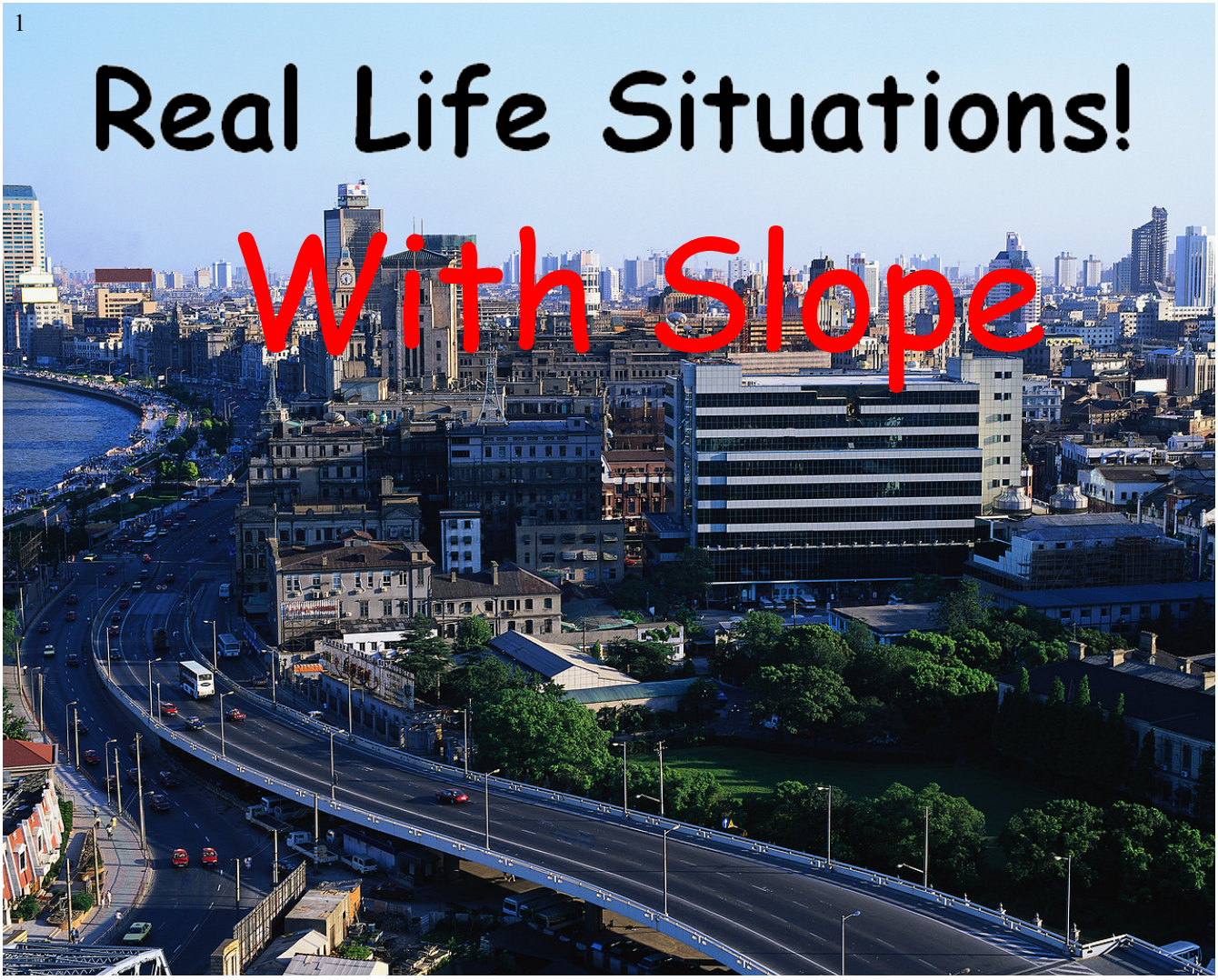
y-int = −3

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

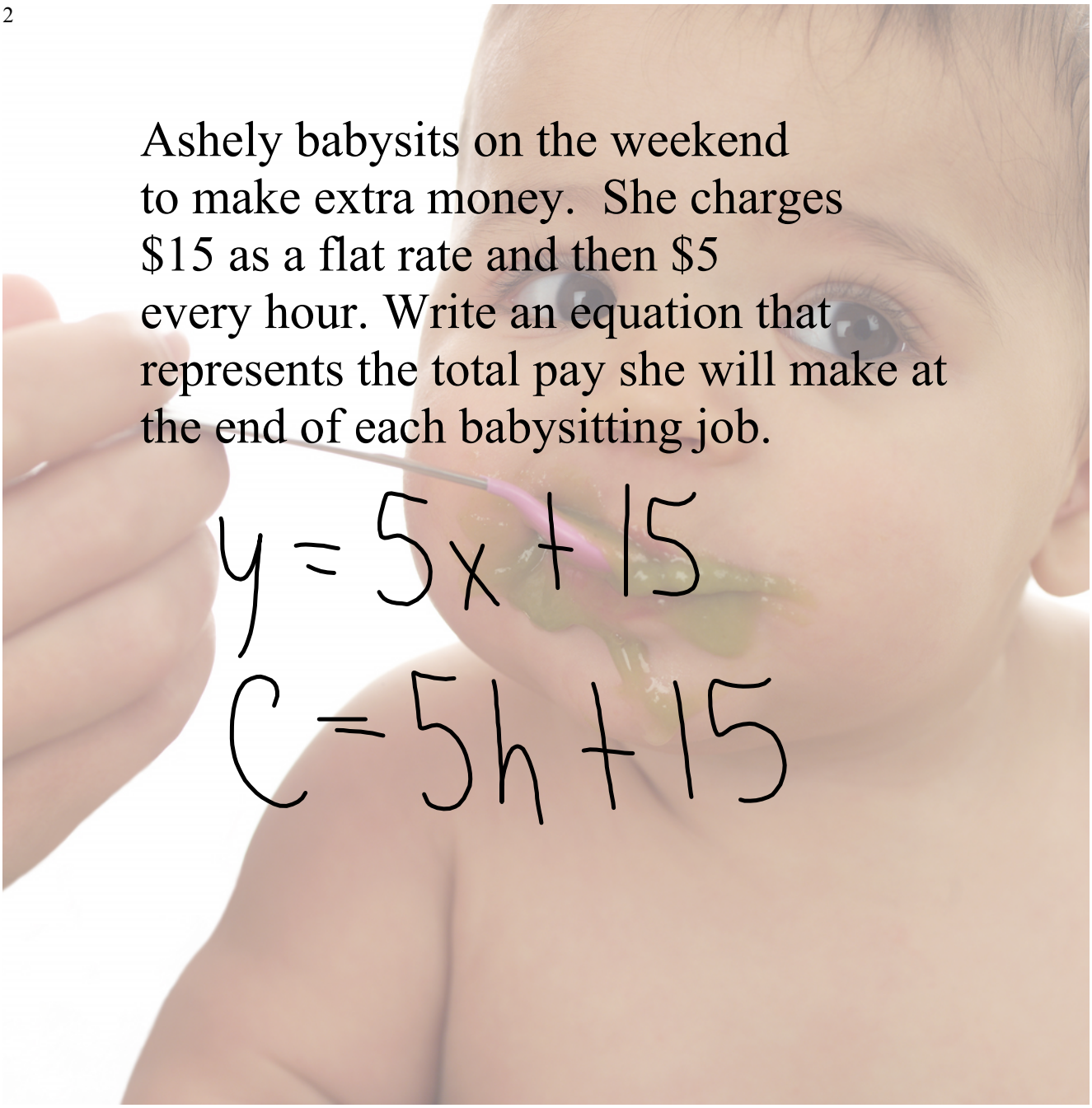
$y = 2x - 3$

1

Real Life Situations!



2



Ashely babysits on the weekend to make extra money. She charges $15 as a flat rate and then $5 every hour. Write an equation that represents the total pay she will make at the end of each babysitting job.

$y = 5x + 15$

$C = 5h + 15$

3

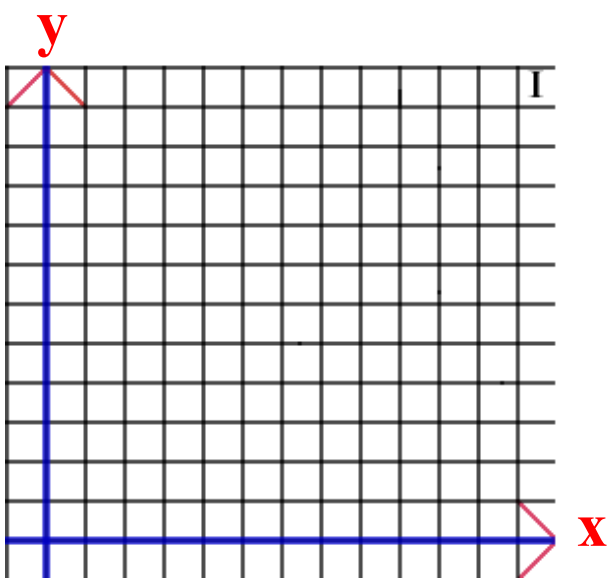
Ashely babysists on the weekend to make extra money. She charges $15 as a flat rate and then $5 every hour.

$y = 5x + 15$

b = 15 flat rate
m = 5 $ per hour
x = # of hours
y = cost

Equation

Graph



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

2. How many hours could you ahve Ashley babysit for if you had $45?

Ashely babysists 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 Ashley babysit for 3 hours?**

$y = 5(3) + 15$ \$30
$y = 30$ 3hours

2. **How many hours could you ahve Ashley babysit for if you had $45?**

$45 = 5x + 15$
$45 - 15 = 5x$
$\frac{30}{5} = \frac{5x}{5}$
$6 = x$
Ashley can work 6 hours for $45

$$y = mx + b$$

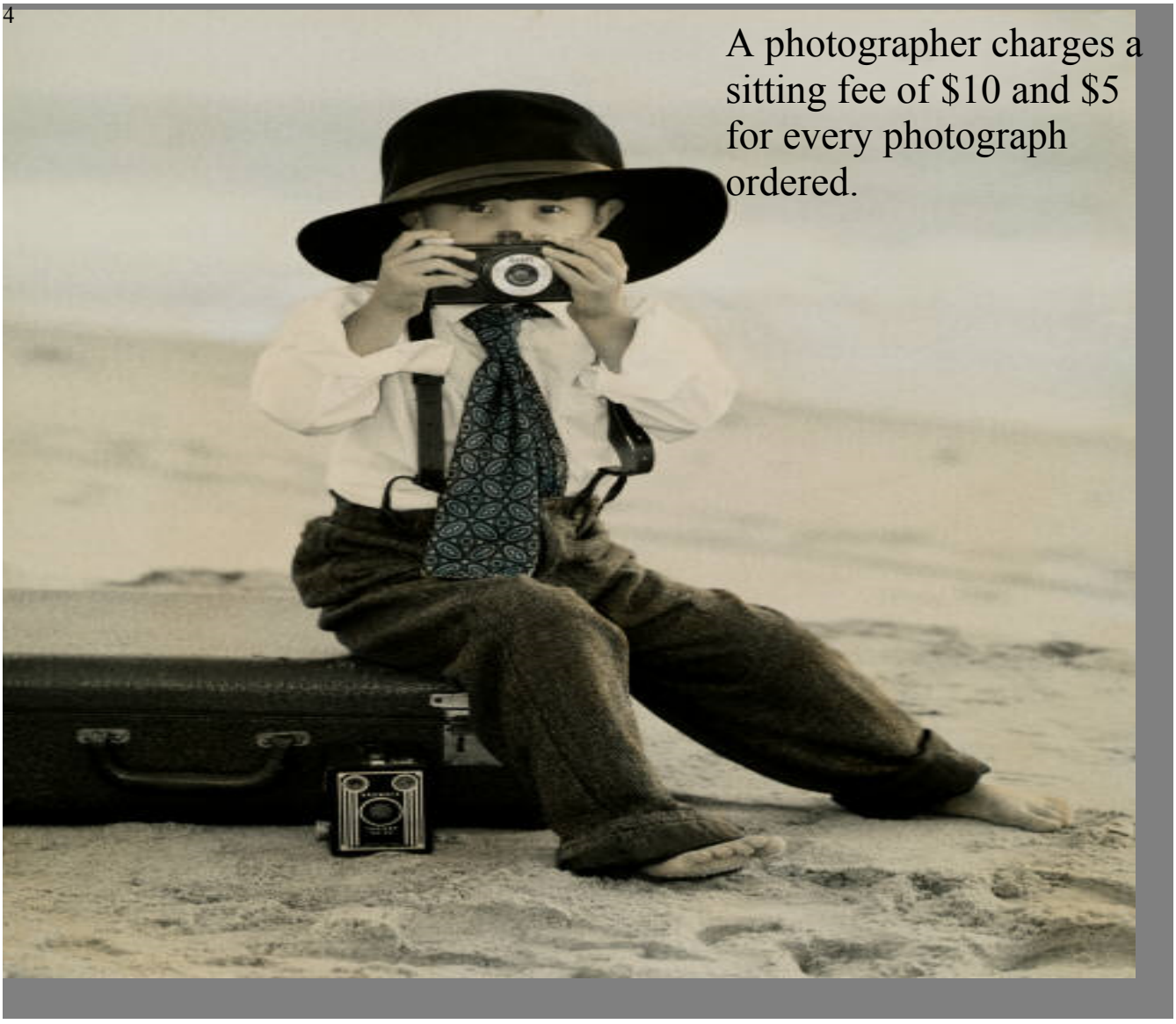
Slope (m) = Cost per hour, Cost per Km, Cost per picture, etc.....

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 $$$$, Total Earned $$$

4


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

5

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

Graph

$y = 5x + 10$

Equation

b = 10 (sitting fee)
m = $5 per photo
x = # of photos
y = Cost

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

$35 = 5x + 10$ $\quad \frac{25}{5} = \frac{5x}{5}$ $\quad x = 5$

2. How much would it cost for 8 photographs?

$y = 5(8) + 10$

$y = 50$