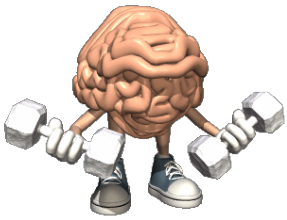
Warm Up



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

x_1 y_1 x_2 y_2

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

watch sign

Remember

$$= \frac{(-20)-(-18)}{(8)-(14)}$$

$$\frac{-20+18}{8-14} = \frac{-2}{-6} = \frac{1}{3}$$

Reduce

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

→ when given 2 points you can find slope

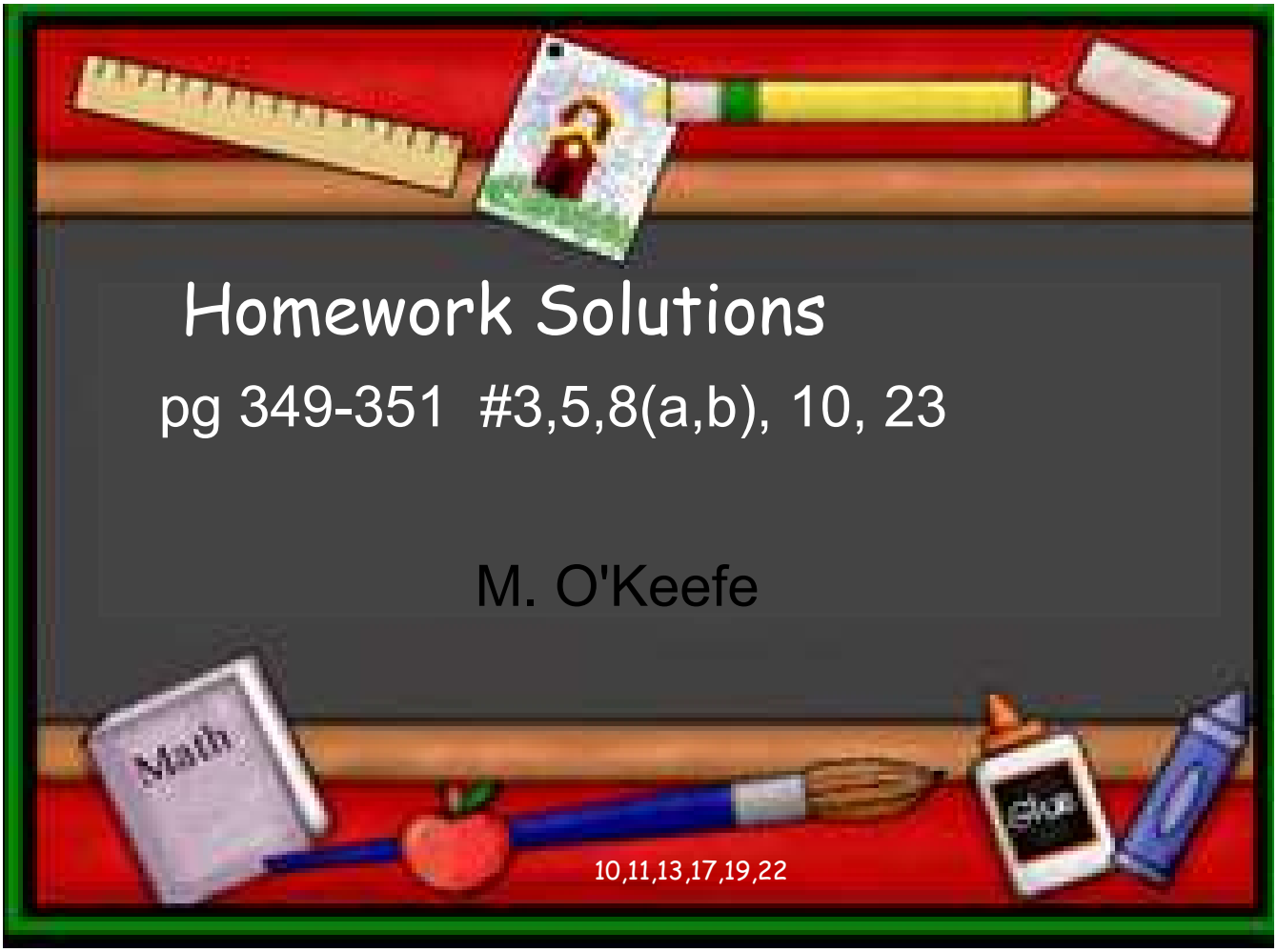
$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$\frac{(6)-(3)}{(-12)-(6)} = \frac{3}{-17}$$

$m = -\frac{3}{17}$

$m_\perp = \frac{17}{3}$ ✓

Perpendicular Slopes have opposite reciprocals for slopes


Homework Solutions
pg 349-351 #3,5,8(a,b), 10, 23
M. O'Keefe
Math
10,11,13,17,19,22

Quiz OUTLINE

Quiz Wednesday (Similar to all warm ups) :

Must Know

Slope of Horizontal is zero

Vertical lines have slope undefind,

Perpendicular Slopes have opposite reciprocals → flip, change overall sign fraction

Parallel lines have equal slopes

Know which number represents the y-intercept and slope in and equation given in the form y=mx+b

Calculate slope when given two points, $m = \frac{y_2 - y_1}{x_2 - x_1}$

Given a slope know the slope of a line that is perpendicular or parallel to it.

Know that intercepts are points on a line so it can be used to find slope.

Given a word problem, write the equation in the form y = mx+b

3. The slopes of lines are given below. For each line, what is the slope of a parallel line? parallel

a) $\frac{4}{5}$ $m_{//} = \frac{4}{5}$

b) $-\frac{4}{3}$ $m_{//} = \frac{-4}{3}$

c) 3 $m_{//} = 3$

d) 0 $m_{//} = 0$

6.2 Slopes of Parallel and Perpendicular Lines

5. The slopes of two lines are given. Are the two lines parallel, perpendicular, or neither?

a) $4, 4$

same
parallel

b) $\frac{1}{6}, 6$

Reciprocals
but
not
opposite
so neither

parallel

perpendicular

c) $\frac{7}{8}, -\frac{7}{8}$

opposite in sign
but not reciprocals
neither

opp recip

d) $\frac{1}{10}, -10$

Perpendicular

6.2 Slopes of Parallel and Perpendicular Lines

8 a) i) A (x_1, y_1) $(-5, -2)$ B (x_2, y_2) $(1, 5)$

C $(-1, -4)$ D $(4, 1)$

$$m_{AB} = \frac{y_2 - y_1}{x_2 - x_1}$$

$$= \frac{5 - -2}{1 - -5}$$

$$= \frac{5+2}{1+5}$$

$$= \frac{7}{6}$$

$$=$$

neither

$$m_{CD} = \frac{y_2 - y_1}{x_2 - x_1}$$

$$= \frac{1 - -4}{4 - -1}$$

$$= \frac{1++4}{4++1}$$

$$= \frac{5}{5}$$

$$= +1$$

8b) $E(\overset{x_1}{-3}, \overset{y_1}{4})$ $F(\overset{x_2}{3}, \overset{y_2}{2})$

$G(2,5)$ $H(0,-1)$

$$m_{EF} = \frac{y_2 - y_1}{x_2 - x_1}$$

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

add opp

$$= \frac{2-4}{3+3}$$

$$= \frac{-2}{6}$$

Reduce

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

$$m_{GH} = \frac{y_2 - y_1}{x_2 - x_1}$$

$$= \frac{-1-5}{0-2}$$

$$= \frac{-6}{-2}$$

$$= +3$$

opposite reciprocals so perpendicular

$EF \perp GH$

10. How are the lines in each pair related? Justify your answer.

a) DE has an x-intercept of 4 and a y-intercept of -6.
FG has an x-intercept of -6 and a y-intercept of 4.

b) HJ has an x-intercept of -2 and a y-intercept of 3.
KM has an x-intercept of -9 and a y-intercept of 6.

a) x-intr (4,0)
y-int (0,-6)

$m_{AB} = \frac{-6-0}{0-4}$

$= \frac{-6}{-4}$

$= \frac{3}{2}$

F (-6,0) G(0,4)

$m = \frac{4-0}{0--6}$

$= \frac{4}{6}$

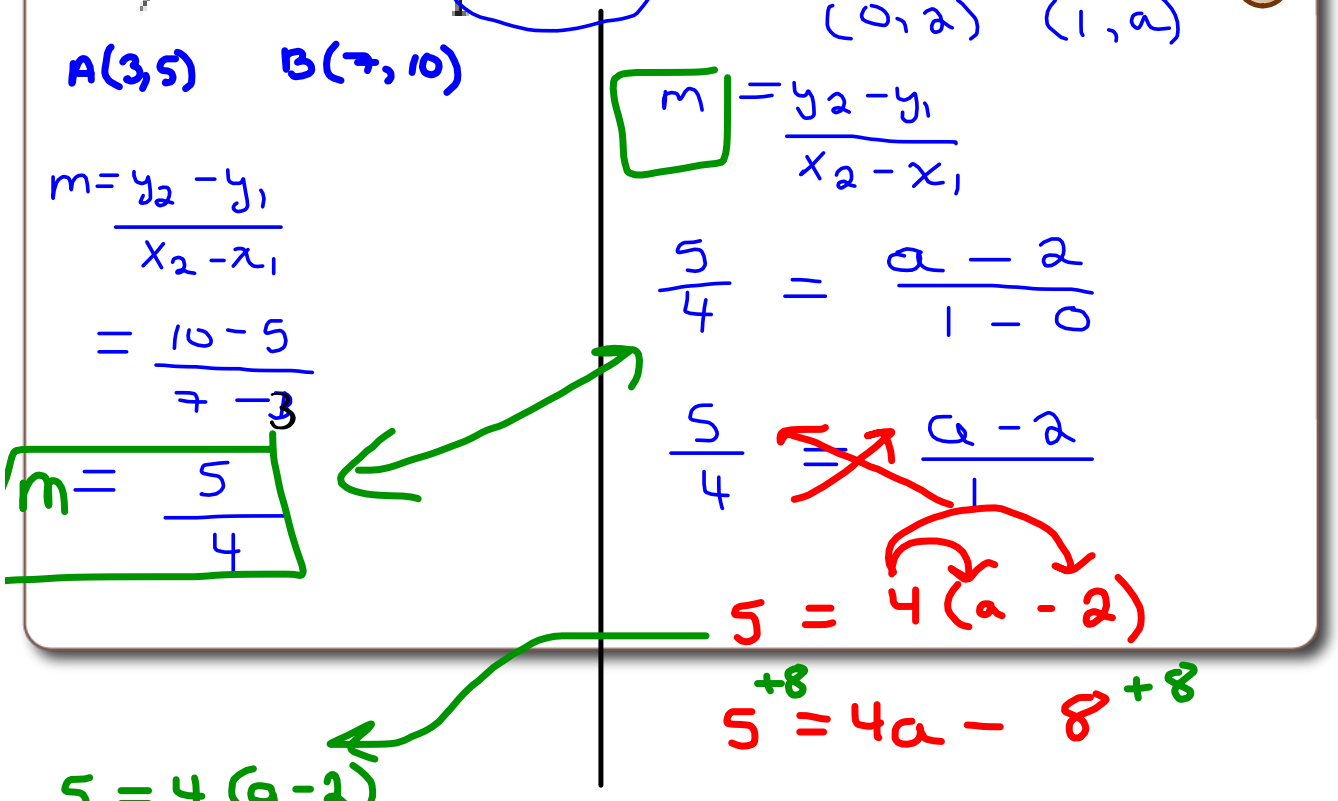
$= \frac{2}{3}$

M. O'Keefe

23. Given A(3, 5), B(7, 10), C(0, 2), and D(1, a), determine the value of a for ~~which~~:

Same slope

a) Line AB is parallel to line CD.



A(3,5) B(7,10)

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

$= \frac{10-5}{7-3}$

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

(0,2) (1,a)

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

$\frac{5}{4} = \frac{a-2}{1-0}$

$\frac{5}{4} = \frac{a-2}{1}$

$5 = 4(a-2)$

$5 = 4a - 8$ (+8 +8)

$13 = 4a$

$a = \frac{13}{4}$

$5 = 4(a-2)$

$\frac{5}{4} = a - 2$

$\frac{5}{4} + 2 = a$

$\frac{5}{4} + \frac{8}{4} = a$

$\frac{13}{4} = a$

$(0,2)$ $(1, \frac{13}{4})$

Slope Intercept Form

$$y = mx + b$$

$y = mx + b$

Slope (m)

y-intercept (b)

also have a point

$(0, y)$

1) Given $y = -\frac{1}{2}x + 5$

$y = mx + b$

x is always 0

What is the slope and the y -intercept? (Write the y-intercept as an ordered pair)

$m = -\frac{1}{2}$ $b = +5$

$(0, 5)$ (x, y)

2) $y = mx + b$

Given $y = 2x - 7$

What is the slope and the y -intercept? (Write the y-intercept as an ordered pair)

$m = 2$ $b = -7$

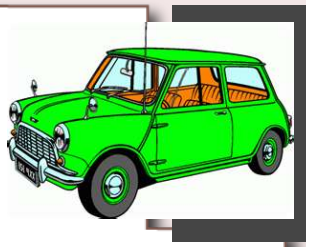
$(0, -7)$

3) Write the equation of a line given m= 2 and a point of the line is (0, -3)

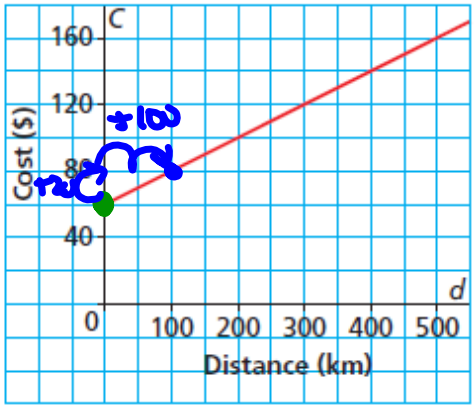
x is zero → y-intercept

$y = mx + b$

$y = 2x - 3$



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.



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

The number 0.20 is ?

$m = \frac{20}{100} = 0.20$

The number 60 is ?

$b = 60$

Slope should be written as a fraction. Looking at the graph what is the rate of change as a fraction? (Reduce fractions)

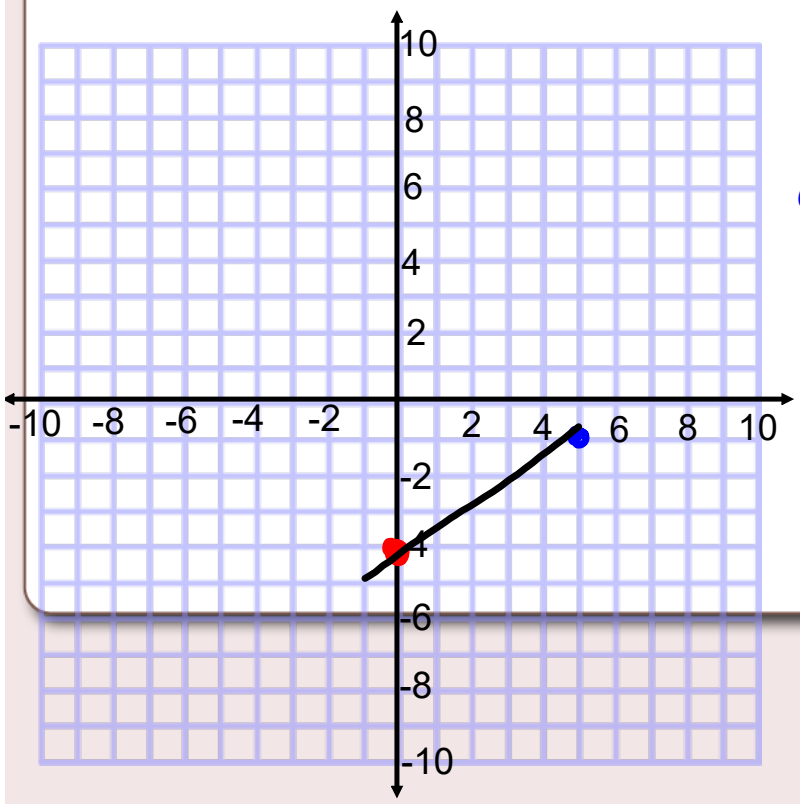
Use this to rewrite the equation of the line.

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

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.



Graph the following

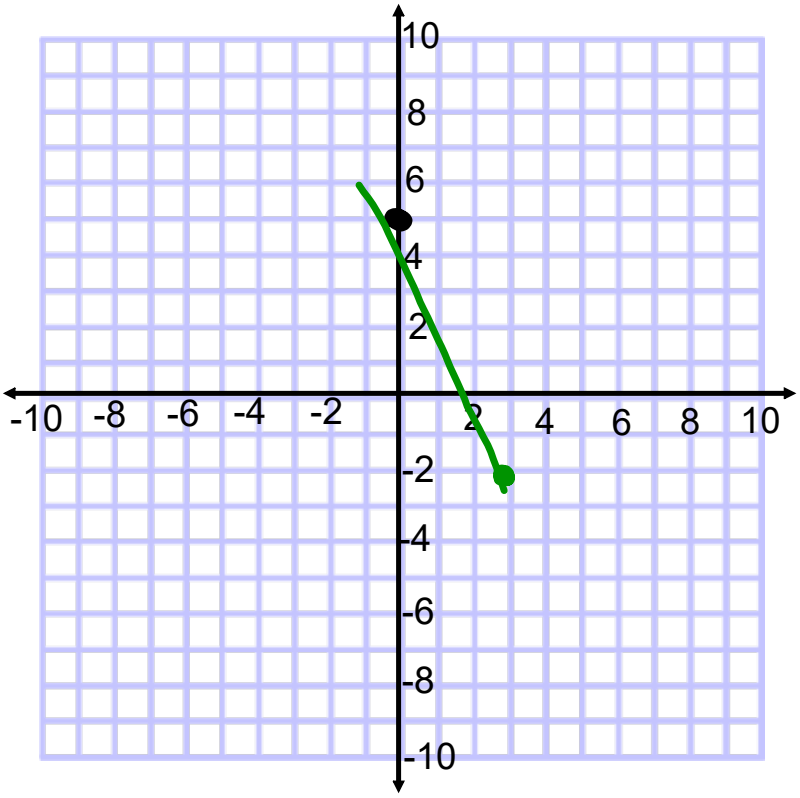
To graph a line you need :

i) One point $b=-4$ $(0,-4)$

ii) Slope

$m=\frac{3}{5}$ $\frac{\text{up } 3}{\text{Rights}}$

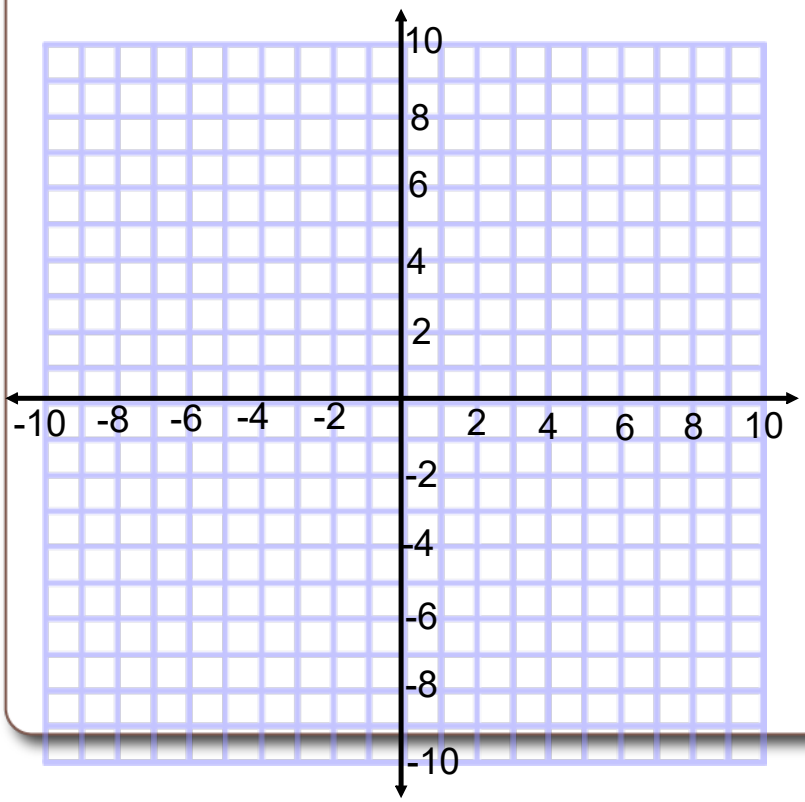
1. The graph of a linear function has slope $-\frac{7}{3}$ and y-intercept 5. Write an equation for this function.



$m = \frac{-7}{3}$ or $\frac{7}{-3}$

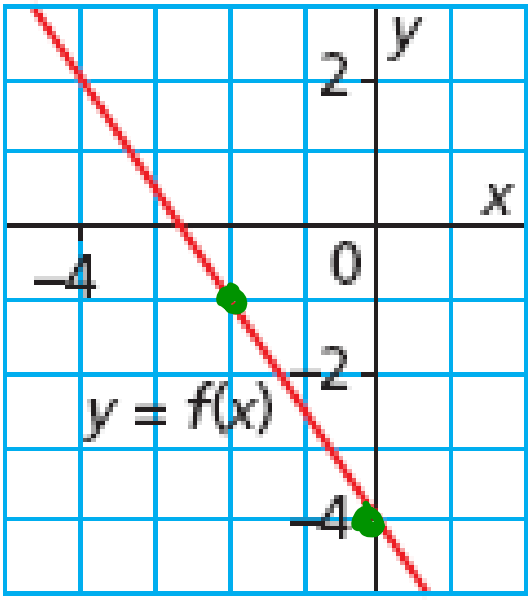
Example 2 Graphing a Linear Function Given Its Equation in Slope-Intercept Form

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



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

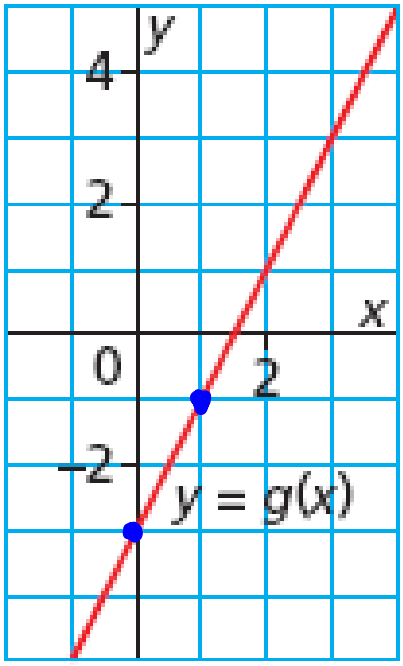
Write an equation to describe this function.
Verify the equation.



$b = -4$

$m = \frac{\text{rise}}{\text{run}} = \frac{+3}{-2} = -\frac{3}{2}$

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

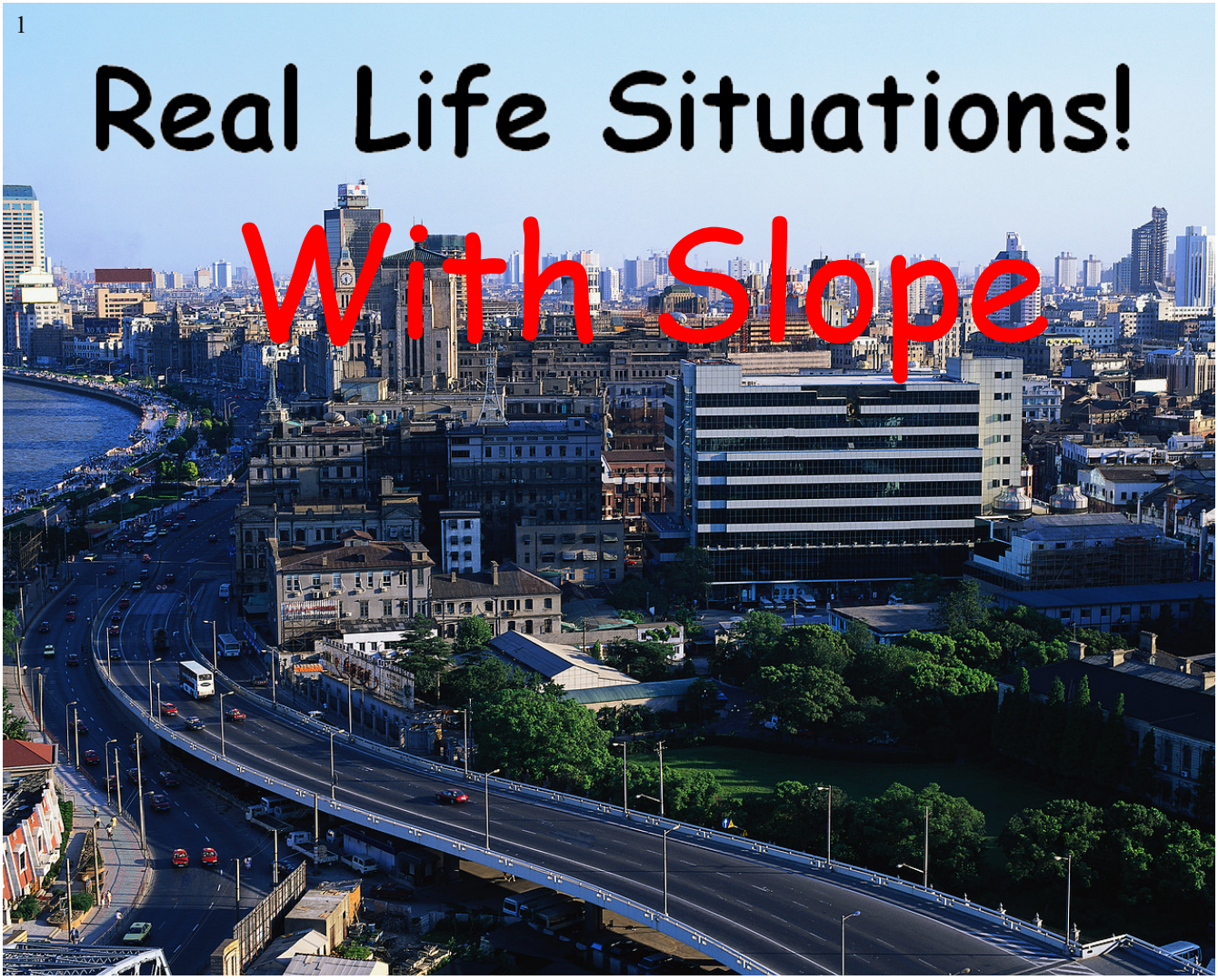


$b = -3$

$m = \frac{\text{rise}}{\text{run}} = \frac{+2}{+1} = 2$

1

Real Life Situations!

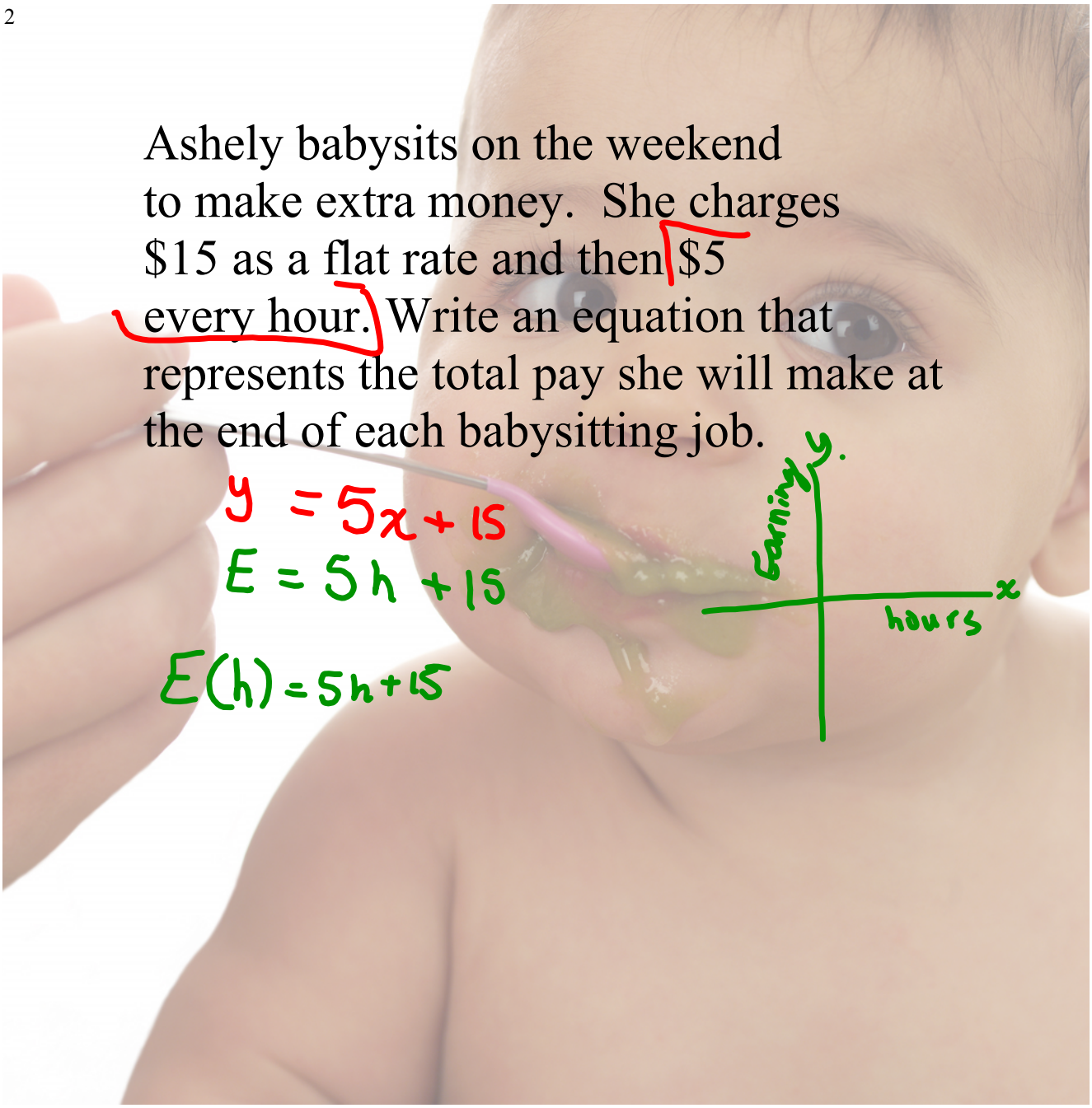


Key words

For each
For every
Per
/

} goes with Variable "x"

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.

$y = 5x + 15$

$E = 5h + 15$

$E(h) = 5h + 15$

3

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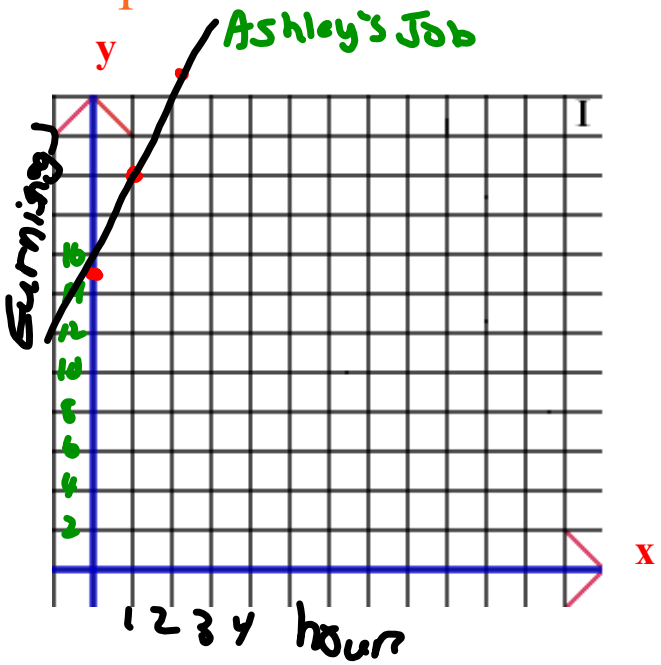
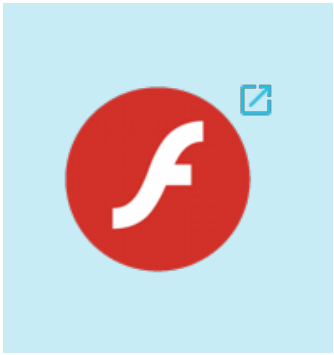
Graph



b = 15
m = 5
x = hours
y = Earnings

Equation



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?

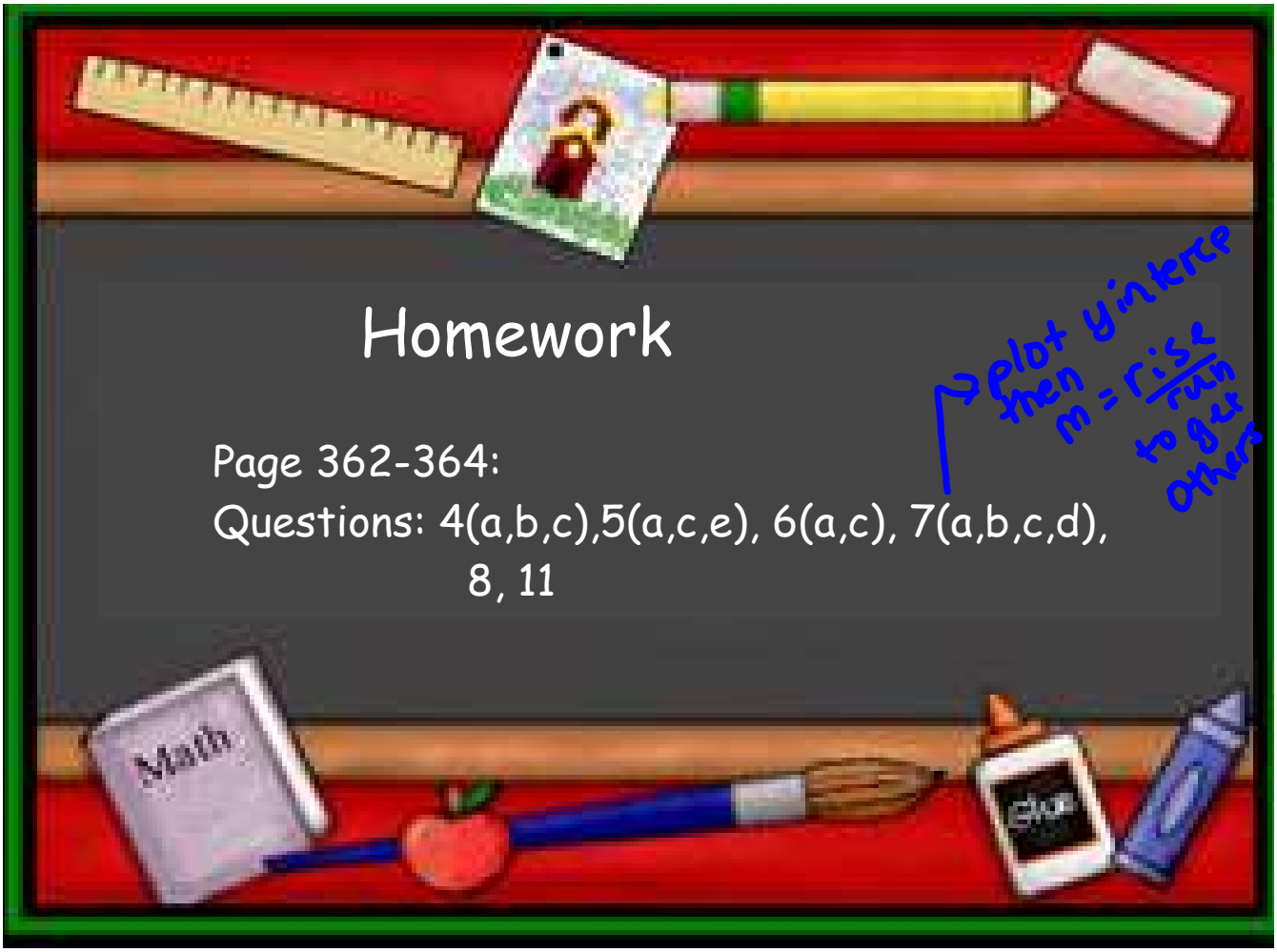
$$y = mx + b$$

Slope (m) = Cost per hour, Cost per Km, Cost per picture, etc..... (key word per for each for every)

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 $$$$, Total Earned $$$


Homework
Page 362-364:
Questions: 4(a,b,c),5(a,c,e), 6(a,c), 7(a,b,c,d),
8, 11
plot y intercept then m = rise/run to get others
Math
Glue

Quiz OUTLINE

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Perpendicular Slopes have opposite reciprocals

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