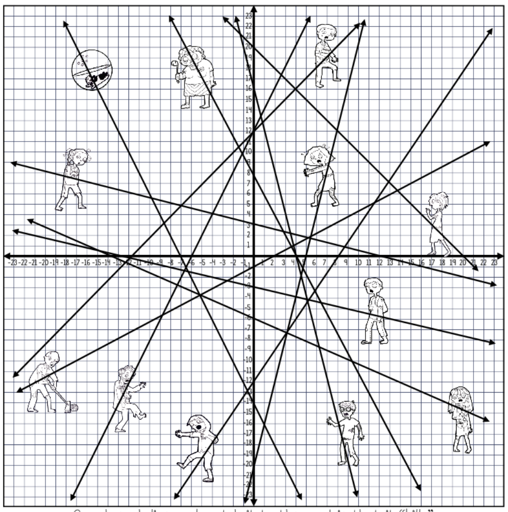
Answer Key



Graph each line and match it to the zombie that it "kills".
To kill a zombie the line must run through any part of its body.
Each line should only kill one zombie. If you kill more than one you were not precise enough.

$x-y=-12$	$2x+y=-14$	$4x+y=16$	$x+4y=12$
$3x+13y=-39$	$2x+y=8$	$2x-y=-12$	$4x-y=20$
$x-2y=2$	$3x+7y=-42$	$x+y=20$	$3x-2y=24$

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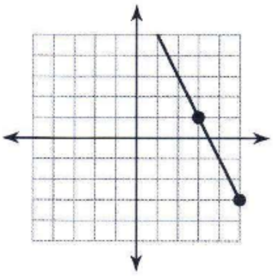
Name________________________________

Slope-intercept Form Worksheet

Date________________ Period____

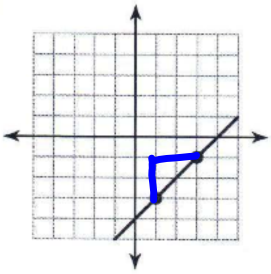
Find the slope of each line. $\frac{\Delta y}{\Delta x}$

1)



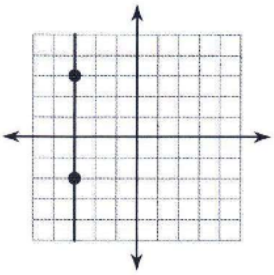
$\frac{-4}{2} = -2$

2)



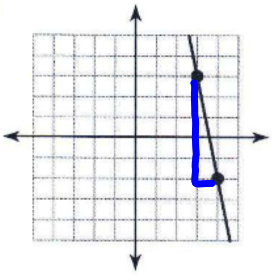
$\frac{+2}{2} = 1$

3)



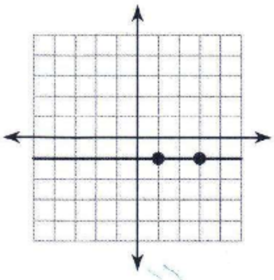
$\frac{5}{0} =$ undef.

4)



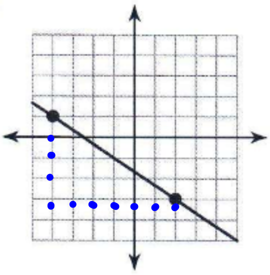
$\frac{-5}{1} = -5$

5)



$\frac{0}{2} = 0$

6)



$\frac{-4}{6} = \frac{-2}{3}$

Find the slope of the line through each pair of points.

7) (−14, −20), (−5, 9)

$\frac{\Delta y}{\Delta x} = \frac{y_2 - y_1}{x_2 - x_1}$

$\frac{\Delta y}{\Delta x} = \frac{9-(-20)}{-5-(-14)} = \frac{29}{9}$

8) (−1, 1), (5, −6)

$\frac{\Delta y}{\Delta x} = \frac{-6-1}{5-(-1)} = \frac{-7}{6}$

9) (15, 9), (−14, −9)

$\frac{-9-9}{-14-15} = \frac{-18}{-29} = \frac{18}{29}$

10) (2, −12), (18, 15)

$\frac{15-(-12)}{18-2} = \frac{27}{16}$

use Stats Version : $y = b + mx$

Write the slope-intercept form of the equation of each line given the slope and y-intercept.

11) Slope $= -1$, y-intercept $= 2$ (m, b)

$y = 2 - x$

12) Slope $= \frac{3}{2}$, y-intercept $= 3$

$y = 3 + \frac{3}{2}x$

13) Slope $= 3$, y-intercept $= -2$

$y = -2 + 3x$

14) Slope $= \frac{3}{4}$, y-intercept $= 1$

$y = 1 + \frac{3}{4}x$

15) Slope $= \frac{1}{2}$, y-intercept $= 1$

$y = 1 + \frac{1}{2}x$

16) Slope $= -\frac{2}{5}$, y-intercept $= 0$

$y = -2/5\,x$

17) Slope $= 7$, y-intercept $= 2$

$y = 2 + 7x$

18) Slope $= \frac{4}{3}$, y-intercept $= -4$

$y = -4 + 4/3\,x$

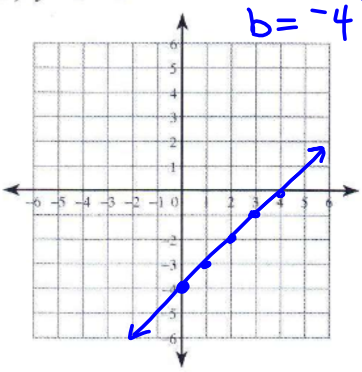
Sketch the graph of each line.

19) $y = x - 4$

$y = mx + b$

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

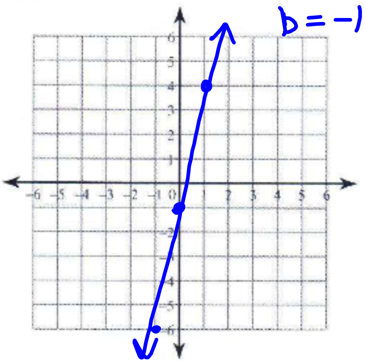
$b = -4$



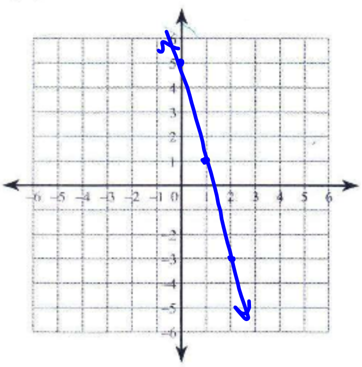
20) $y = 5x - 1$

$m = 5 = \frac{5}{1}$

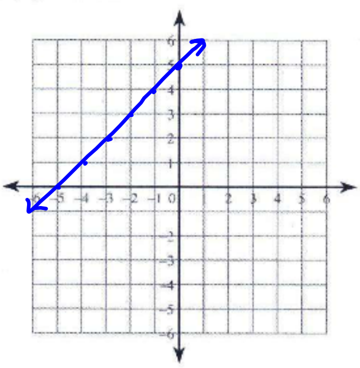
$b = -1$



21) $y = -4x + 5$

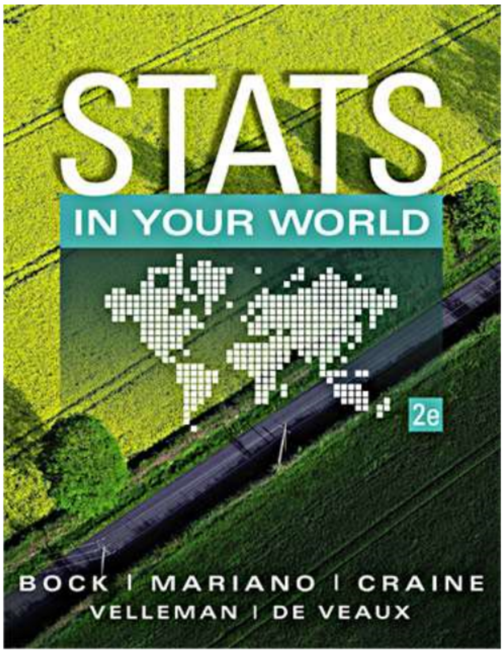


22) $y = x + 5$



Chapter 7

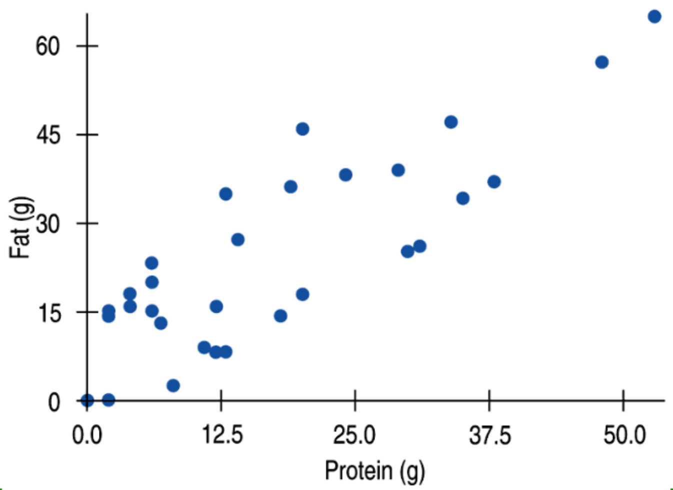
What's My Line?



ALWAYS LEARNING PEARSON Chapter 7, Slide 1

Fat Versus Protein: An Example

- The following is a scatterplot of total *fat* versus *protein* for 30 items on the Burger King menu:



linear
positive
mod. strong

The Linear Model

- The correlation in this example is 0.83. Using that value and the graph, last chapter we said "There is a fairly strong, linear, positive association between protein and fat."

- In this chapter we will say more about the linear relationship between two quantitative variables with a linear model.

Best fit line

 Chapter 7, Slide 3

The Linear Model (cont.)

- The linear model is just an equation of a straight line through the data.
  - The points in the scatterplot don’t all line up, but a straight line can summarize the general pattern with only a couple of parameters.
  - The linear model can help us understand how the values are associated.

The Linear Model

- Remember from Algebra that a straight line can be written as: $y = mx + b$
- In Statistics we use a slightly different notation:

$$\hat{y} = a + bx$$

slope

y-int

- We write $\hat{y}$ to emphasize that the points that satisfy this equation are just our *predicted* values, not the actual data values.
- This model says that our *predictions* from our model follow a straight line.
- If the model is a good one, the data values will scatter closely around it.

 Chapter 7, Slide 5

Remember:

1. The explanatory variable goes on the x-axis.
2. The response variable goes on the y-axis.

* We don't use the terms independent (x) and dependent (y) variables because those terms lead people to think the x-variable *causes* the y, and we know we cannot determine cause and affect just from a linear correlation line.

$$\text{Slope} = \frac{\text{change in y-variable}}{\text{change in x-variable}}$$

From a graph, choose two points and then use the above formula.

Use pts: $(-2, -11)$, $(6, 13)$

$b = m = \frac{\Delta y}{\Delta x} = \frac{13-(-11)}{6-(-2)} = \frac{24}{8} = 3$

$\hat{y} = a + bx$ $\quad x = 6,\ \hat{y} = 13$

$13 = a + 3(6)$

$13 = a + 18$

$-5 = a$

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