

### 12.4.1: The Regression Equation (Exercise)

Use the following information to answer the next five exercises. A random sample of ten professional athletes produced the following data where  $x$  is the number of endorsements the player has and  $y$  is the amount of money made (in millions of dollars).

$x$	$y$	$x$	$y$
0	2	5	12
3	8	4	9
2	7	3	9
1	3	0	3
5	13	4	10

#### ? Exercise 12.4.2

Draw a scatter plot of the data.

#### ? Exercise 12.4.3

Use regression to find the equation for the line of best fit.

**Answer**

$$\hat{y} = 2.23 + 1.99x$$

#### ? Exercise 12.4.4

Draw the line of best fit on the scatter plot.

#### ? Exercise 12.4.5

What is the slope of the line of best fit? What does it represent?

**Answer**

The slope is 1.99 ( $b = 1.99$ ). It means that for every endorsement deal a professional player gets, he gets an average of another \$1.99 million in pay each year.

#### ? Exercise 12.4.6

What is the  $y$ -intercept of the line of best fit? What does it represent?

#### ? Exercise 12.4.7

What does an  $r$  value of zero mean?

**Answer**

It means that there is no correlation between the data sets.

#### ? Exercise 12.4.8

When  $n = 2$  and  $r = 1$ , are the data significant? Explain.

### ? Exercise 12.4.9

When  $n = 100$  and  $r = -0.89$ , is there a significant correlation? Explain.

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