

## 10.E: The Regression Equation (Optional 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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