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Line of Best Fit

$$y = 0.55x + 3.2$$
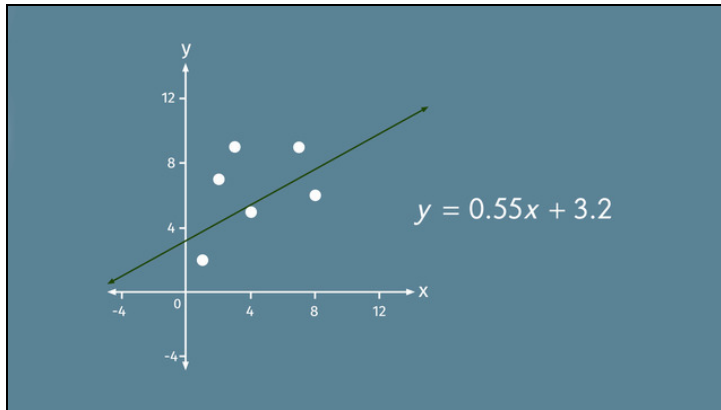
① **Determine the y-value of the given line.**

② Explain what the line of best fit is.

③ Identify how to tell which line fits better when two lines are given.

④ Decide which line fits the best when the following residuals are given.

⑤ Calculate the sum of squares of the following line.

⑥ Decide which line fits better to the given three points.

⊕ with many hints, answer keys, and solution approaches for all tasks

⚠ The complete package, **including all tasks, hints, solutions, and solution approaches**, is available to all subscribers of sofatutor.com

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Determine the y-value of the given line.

Match the ordered pairs with the corresponding y-value of the given line.

$$y = 0.55x + 3.2$$

This is the linear equation that corresponds to the line. We'd like to determine the goodness of fit for this given line to the data set. To do so, one of the steps is to find the y-values of this line for the given x-values of the ordered pairs. Help us by matching the correct pairs.

| | **1** | 4.3 |

$(1, 2)$ **A**

| | **2** | 3.2 |

$(3, 9)$ **B**

| | **3** | 4.75 |

$(2, 7)$ **C**

| | **4** | 7.05 |

$(7, 9)$ **D**

| | **5** | 4.85 |

| | **6** | 3.75 |

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Our hints for the tasks

1 (from 6) Determine the y-value of the given line.

1. Hint

Keep in mind that the first coordinate is the x-coordinate.

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2. Hint

Substitute the corresponding x-coordinate into the linear equation.

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3. Hint

Looking at an example: $(8, 6)$

The corresponding y-value is given as follows:

$y = 0.55(8) + 3.2 = 7.6$.

Solutions and solution approaches for the tasks

1
from 6

Determine the y-value of the given line.

Answer key: A—6 // B—5 // C—1 // D—4

We need the y-values according to each point. So we put the x-coordinate, the first or the left coordinate, in the corresponding linear equation.

- $(1,2) \rightarrow y = 0.55(1) + 3.2 = 3.75$
- $(3,9) \rightarrow y = 0.55(3) + 3.2 = 4.85$
- $(2,7) \rightarrow y = 0.55(2) + 3.2 = 4.3$
- $(7,9) \rightarrow y = 0.55(7) + 3.2 = 7.05$

We will later use these y-values to determine the residuals. To check the goodness of fit of a given line, we have to determine the residuals for each point, square those residuals and finally sum those squares.

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