

Grade 8 - Using Linear Models to Predict - Test Answer Key

Common Core 8.SP.A.3 · maths-pdf.fr/en/

Use this answer key to score the linear models for data test out of 20 points. Each solution shows the full work and a scoring guide, so partial credit can be given fairly when a student shows correct steps but makes an arithmetic slip.

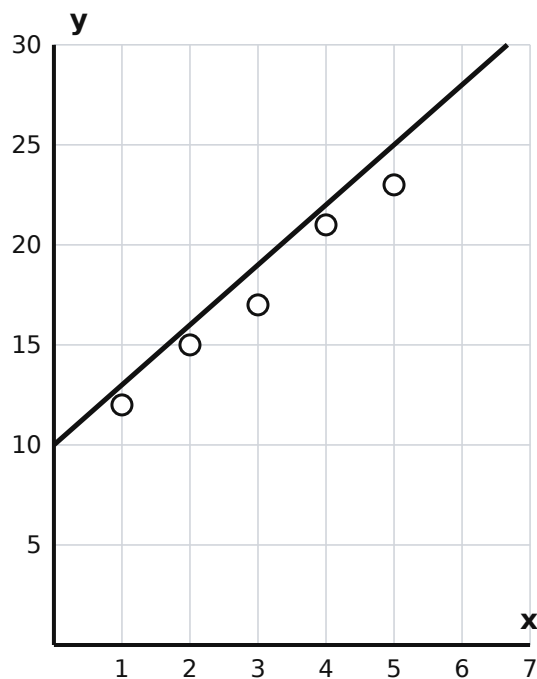
Grade 8 · Common Core State Standards: **8.SP.A.3**

Question 1 - Interpret [3 pts]

Slope: \$7 per hour. Intercept: a \$5 fee. $y = 7 \cdot 4 + 5 = 33$.

Scoring: 1 point for each interpretation. 1 point for \$33.

Question 2 - Equation from a graph [3 pts]



Line $y = 3x + 10$.

$$m = \frac{25-10}{5} = 3, b = 10.$$

$$y = 3x + 10$$

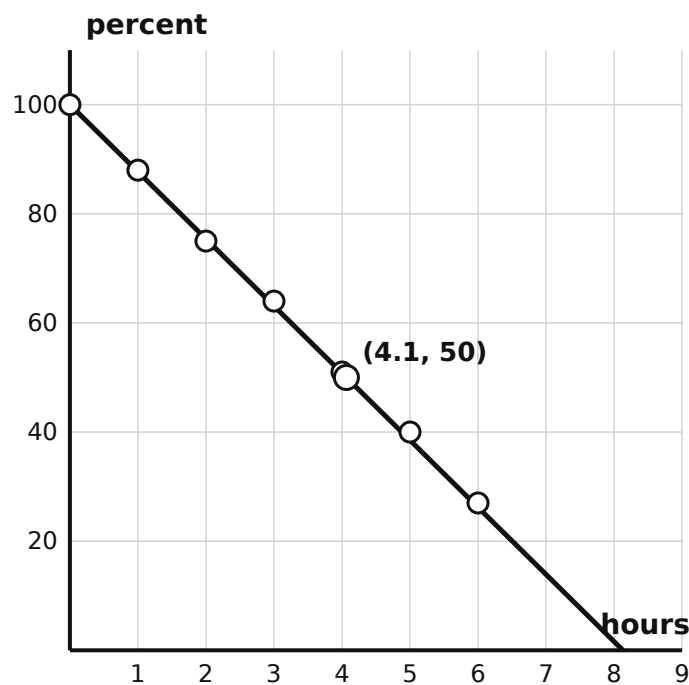
Scoring: 1 point for the slope, 1 point for the intercept, 1 point for the equation.

Question 3 - Predict [2 pts]

$3 \cdot 8 + 10 = 34$. It is extrapolation, since 8 is outside the data.

Scoring: 1 point for 34. 1 point for extrapolation.

Question 4 - Find x [3 pts]



The line reaches 50 at about 4.1 hours.

$$50 = -12.3x + 100, \text{ so } x = \frac{50}{12.3} \approx 4.1.$$

Scoring: 1 point for the equation, 1 point for solving, 1 point for 4.1 hours.

Question 5 - Two points [3 pts]

$$m = \frac{23-11}{5-2} = 4. \quad 11 = 4 \cdot 2 + b, \text{ so } b = 3. \quad y = 4x + 3.$$

$$8 \text{ hours: } 4 \cdot 8 + 3 = 35.$$

Scoring: 1 point for the slope, 1 point for the equation, 1 point for \$35.

Question 6 - Meaning [2 pts]

$0 = -2.5x + 10$, so $x = 4$. After 4 hours the hiker is back at camp.

Scoring: 1 point for 4. 1 point for the meaning.

Question 7 - Reasonable? [2 pts]

The model may only fit trees in a smaller range, and extrapolating beyond the data can give unrealistic results.

Scoring: 1 point for extrapolation. 1 point for a clear explanation.

Question 8 - Compare [2 pts]

$2x + 10 = 3x + 4$, so $x = 6$.

Scoring: 1 point for the equation. 1 point for $x = 6$.

Total**20 points**