

Fitting Lines to Data and Making Predictions

Grade 8 math · Test · Standards: 8.SP.A.2, 8.SP.A.3

Name: _____ Date: _____ Class: _____

This test covers lines of best fit, linear models, and predictions. It has 8 questions worth 20 points and should take about 45 minutes. Interpret slope and intercept using the units of each problem, and show every substitution.

Standards: 8.SP.A.2, 8.SP.A.3 · **Level:** Grade 8

Time: 45 minutes · 8 questions · Total: 20 points · Calculator: as allowed by your teacher

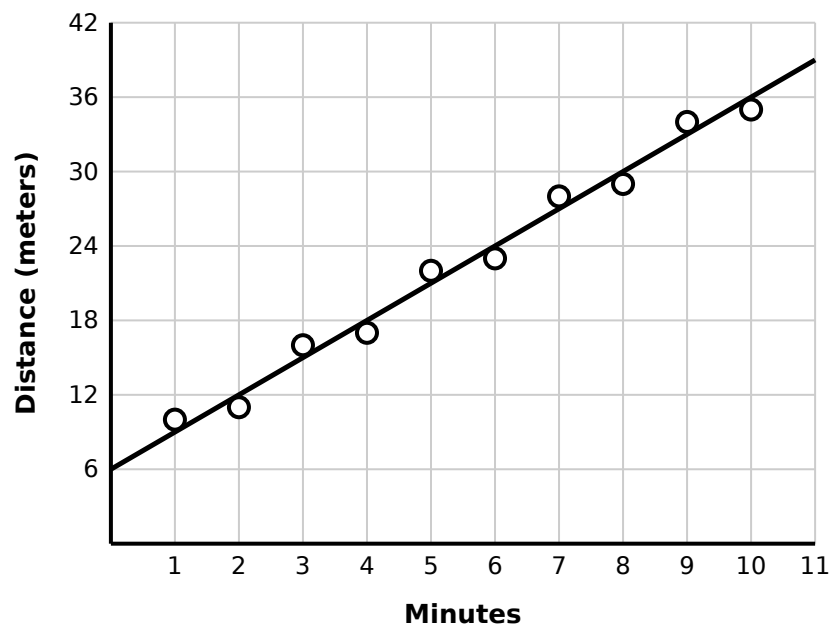
Question 1 Use a model (2 points)

A model is $y = 6x + 14$.

- Find y when $x = 9$. (1 point)
- Find x when $y = 104$. (1 point)

Question 2 Read a trend line (3 points)

A drone's distance from its pilot is graphed with a trend line.



A drone's distance from the pilot over time.

- Find the slope and the y-intercept of the line. (1 point)
- Write the equation of the line. (1 point)
- Use it to predict the distance at 14 minutes. (1 point)

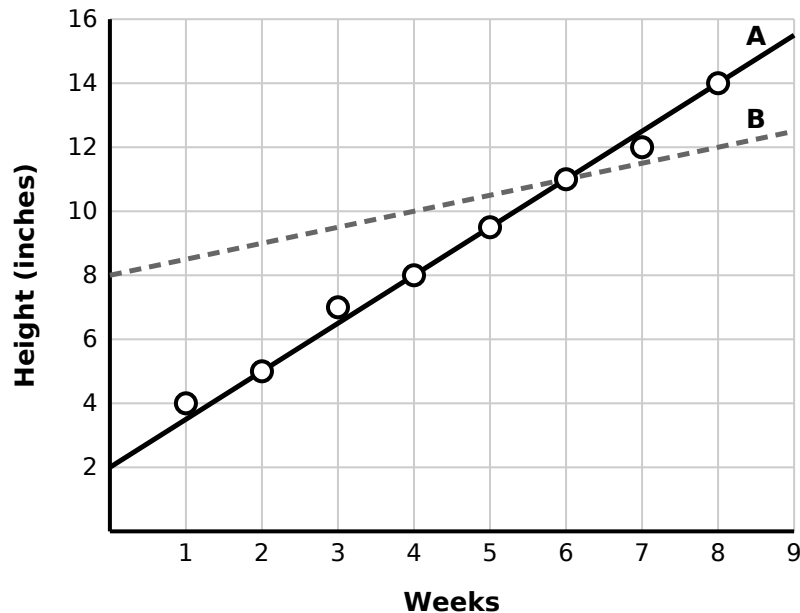
Question 3 Meaning in context (3 points)

The water in a tank is modeled by $y = -2.5x + 90$, where x is minutes and y is gallons.

- Interpret the slope. (1 point)
- Interpret the y -intercept. (1 point)
- When is the tank empty? (1 point)

Question 4 Choose the better line (3 points)

Two lines are drawn on the scatter plot.



Line A (solid) and line B (dashed).

- Which line fits the data better? (1 point)
- Give two reasons. (2 points)

Question 5 Equation from two points (3 points)

A trend line passes through (2, 19) and (8, 43).

- Find the slope. (1 point)
- Write the equation of the line. (1 point)
- Predict y when $x = 12$. (1 point)

Question 6 Trusting a prediction (2 points)

A line fits a baby's length from birth to 12 months. A student uses it to predict the length at 10 years and gets 140 inches. Explain what is wrong.

Question 7 Bracelet sales (2 points)

A fundraiser models its total bracelets sold as $y = 1.5x + 8$, where x is the number of days.

- a. Interpret the slope. (1 point)
- b. Predict the total after 20 days. (1 point)

Question 8 Candle burning (2 points)

A candle's height is modeled by $y = -0.75x + 18$, where x is hours and y is inches. When is the candle 6 inches tall?