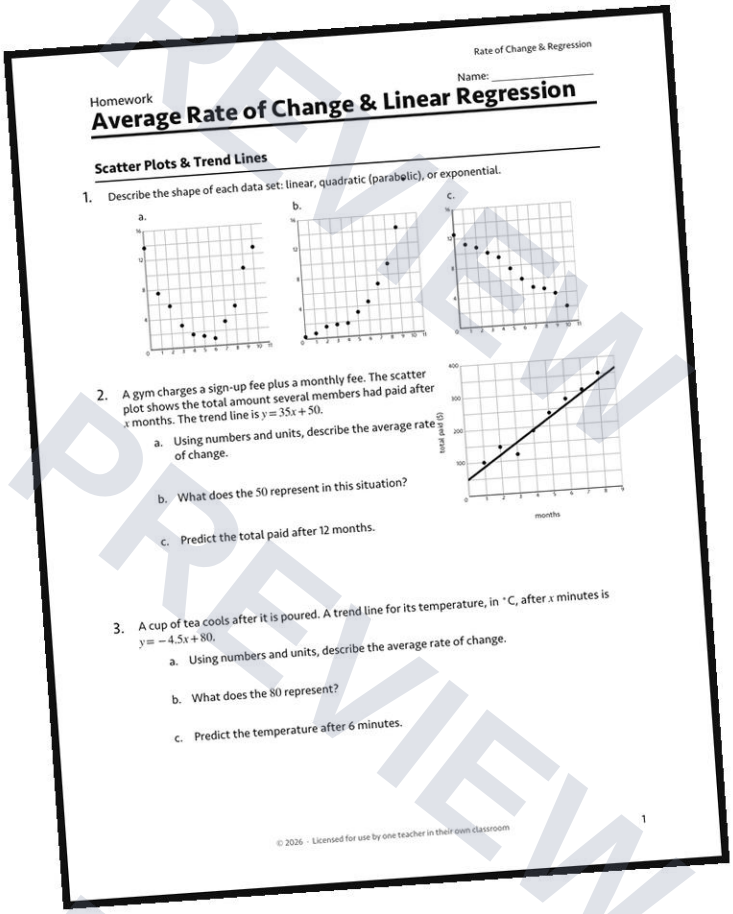
ALGEBRA 2 · PRECALCULUS

Average Rate of Change & Linear Regression

Homework & Practice



Rate of Change & Regression

Name: _____

Homework

Average Rate of Change & Linear Regression

Scatter Plots & Trend Lines

1. Describe the shape of each data set: linear, quadratic (parabolic), or exponential.

a. b. c.

2. A gym charges a sign-up fee plus a monthly fee. The scatter plot shows the total amount several members had paid after x months. The trend line is $y = 35x + 50$.

a. Using numbers and units, describe the average rate of change.

b. What does the 50 represent in this situation?

c. Predict the total paid after 12 months.

3. A cup of tea cools after it is poured. A trend line for its temperature, in °C, after x minutes is $y = -4.5x + 80$.

a. Using numbers and units, describe the average rate of change.

b. What does the 80 represent?

c. Predict the temperature after 6 minutes.

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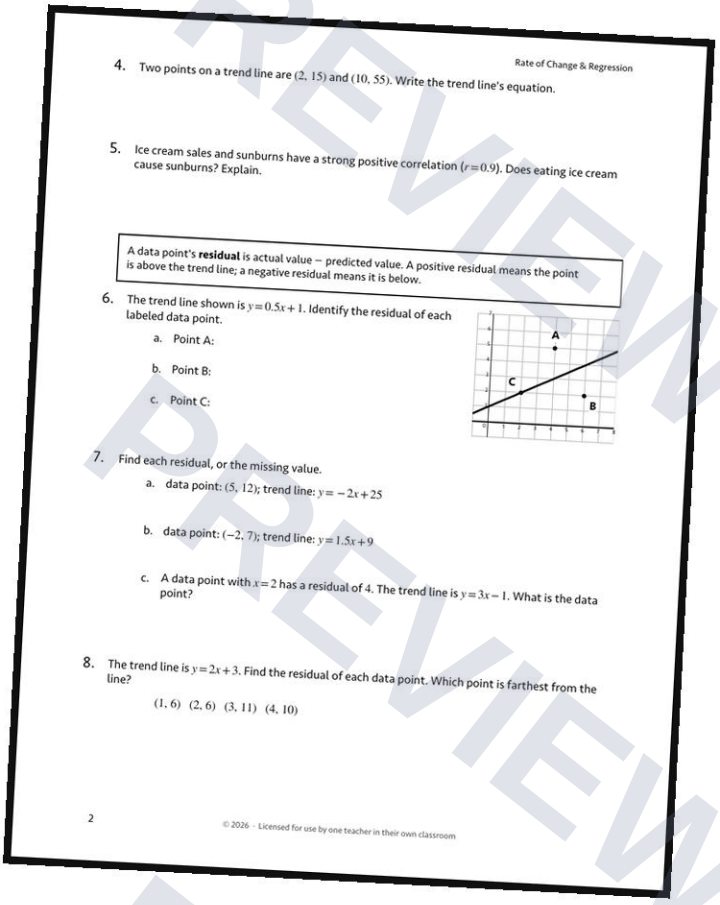

4. Two points on a trend line are (2, 15) and (10, 55). Write the trend line's equation.

5. Ice cream sales and sunburns have a strong positive correlation ($r = 0.9$). Does eating ice cream cause sunburns? Explain.

A data point's **residual** is actual value − predicted value. A positive residual means the point is above the trend line; a negative residual means it is below.

6. The trend line shown is $y = 0.5x + 1$. Identify the residual of each labeled data point.

a. Point A:

b. Point B:

c. Point C:

7. Find each residual, or the missing value.

a. data point: (5, 12); trend line: $y = -2x + 25$

b. data point: (−2, 7); trend line: $y = 1.5x + 9$

c. A data point with $x = 2$ has a residual of 4. The trend line is $y = 3x - 1$. What is the data point?

8. The trend line is $y = 2x + 3$. Find the residual of each data point. Which point is farthest from the line?

(1, 6) (2, 6) (3, 11) (4, 10)

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30 PROBLEMS **ANSWER KEY** **PRINT-READY**

Preview - the full worksheet and its answer key are at primeworksheet.com