LESSON MAKER PRO

Trend Line Launch

Use linear trends to make sensible predictions.

GRADE 8 · TEKS 8.5.D

8.5.D "use a trend line that approximates the linear relationship between bivariate sets of data to make predictions;"

NAME _____ DATE _____

PREDICT WITH A TREND LINE

A trend line shows the overall pattern in paired data. To make a prediction from an equation, substitute the known x-value and solve for y. A prediction from a trend line is usually an estimate, so label it as about or approximately.

WORKED EXAMPLE

A trend line is y = 9x + 13. Predict y when x = 4.

1. Substitute 4 for x: y = 9(4) + 13.
2. Multiply: y = 36 + 13.
3. Add: y = 49.

Answer: About 49

PRACTICE 6 problems

1 A trend line is y = 3x + 2. Predict y when x = 6.

ANSWER _____

2 A trend line is y = 18 - 2x. Predict y when x = 8.

ANSWER _____

3 A trend line passes through (0, 10) and (3, 16). Predict y when x = 6.

ANSWER _____

4 A trend line is y = 1/2x + 11. Predict y when x = 12.

ANSWER _____

5 A trend line passes through (2, 5) and (8, 23). Predict y when x = 7.

ANSWER _____

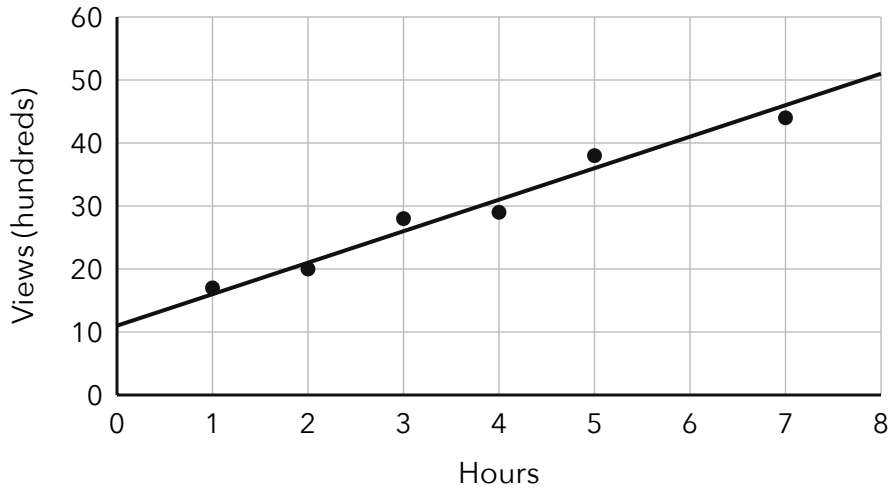
6 A trend line is y = 3x + 1. Predict y when x = 8.

ANSWER _____

APPLY IT Show your work

1 A student records quiz scores after practice sessions. The trend line y = 7x + 18 models the score, y, after x practice sessions. Predict the score after 6 sessions.

2 These simulated data show time x (hours) and views y (hundreds). The drawn trend line approximates the data. Read its prediction at x=6, then check using y=5x+11. Predict at x=12 and explain which prediction is less reliable.



CHALLENGE One step up

A trend line is y = 3x + 7. It was made from data with x-values from 1 to 8. What does the trend line predict when x = 20? Is this prediction likely to be reliable? Explain.

ANSWER KEY

Trend Line Launch

GRADE 8 · TEKS 8.5.D

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	A trend line is y = 3x + 2. Predict y when x = 6.	**About 20**
2	A trend line is y = 18 - 2x. Predict y when x = 8.	**About 2**
3	A trend line passes through (0, 10) and (3, 16). Predict y when x = 6.	**About 22**
4	A trend line is y = 1/2x + 11. Predict y when x = 12.	**About 17**
5	A trend line passes through (2, 5) and (8, 23). Predict y when x = 7.	**About 20**
6	A trend line is y = 3x + 1. Predict y when x = 8.	**About 25**

PART 2 · APPLY IT

1. **About 60 points** Substitute 6 for x in y = 7x + 18. The predicted score is 60 points.
2. **At 6 h, about 41 hundreds = 4,100 views. At 12 h, about 71 hundreds = 7,100 views. The 12-hour prediction is less reliable because it extrapolates beyond the observed 1–7 hours.** The fitted line has y=5x+11; individual observations need not lie on it. Neither prediction is guaranteed.

CHALLENGE

About 67. It may not be reliable because 20 is outside the data range from 1 to 8, so this is an extrapolation.

Accept answers labeled about or approximately when a trend line is used. For the challenge, accept explanations that identify the input as outside the data range and therefore less reliable.