LESSON MAKER PRO

Spot the Pattern

Use data to predict and check what does not fit.

HIGH SCHOOL · A1.D.1.2

A1.D.1.2 "Collect data and analyze scatter plots for patterns, linearity, and outliers."

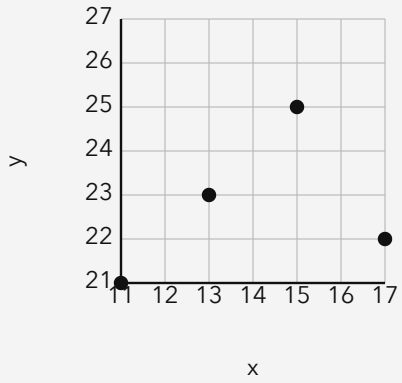
NAME _____ DATE _____

FIND THE TREND

In a linear pattern, y changes by the same amount for each equal change in x. Use points that follow the pattern to predict a value, and set aside any point far from the trend.

WORKED EXAMPLE

Which point is an outlier? Use the pattern to predict y when x = 19.



1. From (11,21) to (13,23), x and y each rise by 2.
2. The pattern is y = x + 10. The point (17,22) does not fit.
3. When x = 19, y = 19 + 10 = 29.

Answer: Outlier: (17,22). Prediction: 29.

PRACTICE 4 problems

1 Data: (0,1), (2,3), (4,5). Predict y when x = 6.

ANSWER _____

2 Data: (0,8), (2,6), (4,4). Predict y when x = 6.

ANSWER _____

3 Data: (0,2), (2,4), (4,6), (6,1). Which point is an outlier?

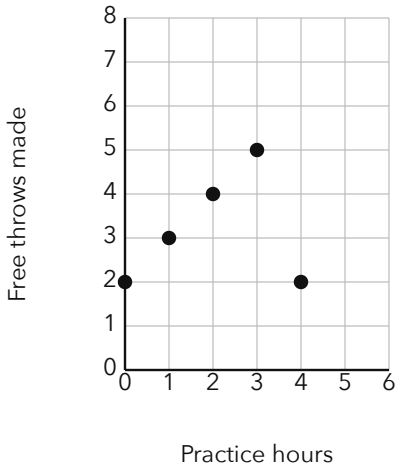
ANSWER _____

4 Data: (0,1), (1,2), (2,5), (3,10). Is the pattern linear? Explain.

ANSWER _____

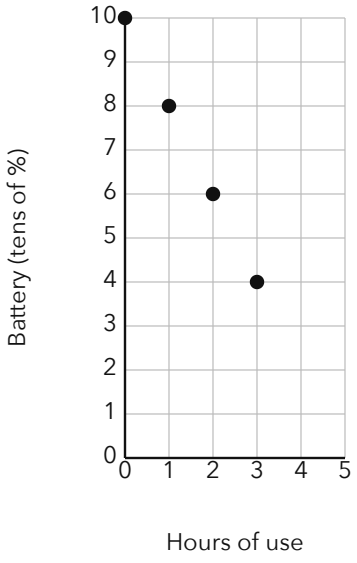
APPLY IT Show your work

1 A student records free throws made out of 10 after different amounts of practice. Which point is an outlier? Predict the number made after 5 hours.



ANSWER _____

2 A student checks a phone's battery level while using it. Predict the battery percentage after 4 hours. Is the trend rising or falling?



ANSWER _____

CHALLENGE One step up

Data: (0,2), (1,4), (2,6), (3,8), (4,1). Ignore the outlier. Predict y at x = 5 and x = 20. Which prediction is less reliable? Explain.

WORK SPACE AND ANSWER

ANSWER KEY

Spot the Pattern

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Data: (0,1), (2,3), (4,5). Predict y when x = 6.	**7**
2	Data: (0,8), (2,6), (4,4). Predict y when x = 6.	**2**
3	Data: (0,2), (2,4), (4,6), (6,1). Which point is an outlier?	**(6,1)**
4	Data: (0,1), (1,2), (2,5), (3,10). Is the pattern linear? Explain.	**No. For each increase of 1 in x, y rises by 1, then 3, then 5.**

PART 2 · APPLY IT

1. **Outlier: (4,2). Prediction: 7 free throws.** The other points follow y = x + 2. At x = 5, y = 7.
2. **20%; falling.** The battery drops by 2 tens of a percent each hour. After 4 hours, it is at 2 tens of a percent, or 20%.

CHALLENGE

At x = 5, y = 12. At x = 20, y = 42. The prediction at x = 20 is less reliable because it is much farther beyond the observed x-values.

Accept any clear explanation that the fourth practice set is not linear because its y-changes are unequal. In the challenge, the outlier is (4,1).