LESSON MAKER PRO

Model Match

Choose the function that fits the pattern.

HIGH SCHOOL · MA.912.F.1.8

MA.912.F.1.8 "Determine whether a linear, quadratic or exponential function best models a given real-world situation."

NAME _____ DATE _____

SPOT THE PATTERN

A linear function adds or subtracts the same amount each step. A quadratic function has equal second differences, and an exponential function multiplies by the same factor each step.

WORKED EXAMPLE

A table has x-values 3, 4, 5 and y-values 6, 18, 54. Which type of function fits?

1. From x = 3 to x = 4, the y-value is multiplied by 3.
2. From x = 4 to x = 5, the y-value is multiplied by 3.
3. Constant multiplication means the function is exponential.

Answer: Exponential

PRACTICE 5 problems

1 What type of function is y = 8x + 9?

ANSWER _____

2 What type of function is y = x^2 - 11?

ANSWER _____

3 What type of function is y = 7^x?

ANSWER _____

4 A table has x-values 8, 9, 10 and y-values 13, 17, 21. What type of function fits?

ANSWER _____

5 A table has x-values 11, 12, 13 and y-values 16, 32, 64. What type of function fits?

ANSWER _____

APPLY IT Show your work

1 You have $25 saved for a concert and add $7 each week. Which type of function models your savings?

WORK SPACE

ANSWER _____

2 A video has 20 views on day one. Its views double each day. Which type of function models the views?

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

A table has x-values 7, 8, 9, 10 and y-values 14, 23, 34, 47. Which type of function fits? Explain using differences.

_____

_____

ANSWER KEY

Model Match

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PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	What type of function is y = 8x + 9?	**Linear**
2	What type of function is y = x^2 - 11?	**Quadratic**
3	What type of function is y = 7^x?	**Exponential**
4	A table has x-values 8, 9, 10 and y-values 13, 17, 21. What type of function fits?	**Linear**
5	A table has x-values 11, 12, 13 and y-values 16, 32, 64. What type of function fits?	**Exponential**

PART 2 · APPLY IT

1. **Linear** The savings increase by the same amount, $7, each week. A linear model is S(w) = 25 + 7w.
2. **Exponential** The number of views is multiplied by 2 each day. An exponential model is V(d) = 20(2)^(d - 1).

CHALLENGE

Quadratic. The first differences are 9, 11, and 13, so the second differences are 2 and 2.

Accept the function type names or equivalent descriptions such as constant rate of change for linear. For the challenge, students should identify equal second differences.