Name _____ Date _____

Constructing Linear, Quadratic, and Exponential Models of Data - Step-by-Step Lesson

Look at this table and write a linear ($y = mx + b$), quadratic ($y = ax^2$), or exponential ($y = a(b)^x$) function that models the data.

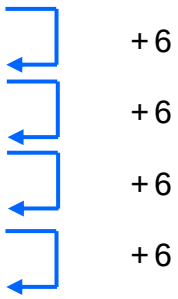
x	y
0	6
1	12
2	18
3	24
4	30

Explanation:

The pattern of the y-values lets us know if the function is linear, quadratic, or exponential. Since the x-values are consecutive and straight forward, it makes it much easier. This allows us to compare each y value directly.

Find the first differences in the table.

x	y
0	6
1	12
2	18
3	24
4	30



+6

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If the first difference between successive y-values is equal, this will be a linear function.

If the second differences between the successive y-values are equal, the function is quadratic.

You can test for exponential functions by finding the ratios between successive y-values. If the ratios are equal, it is exponential.

Since the differences are all equal, the function is linear($y = mx + b$).

$(y = mx + b)$

The slope is “m”.

The starting point is “b”.

Now, plug in one of the points from the table and solve.

$y = 6(0) + 6$

$y = 6$

Since $y = 6$, the function is $(y = 6(x) + 6)$