

Homework Answers:

Statistics Chapter 8: Linear vs. Exponential Patterns – KEY

- Tell whether each equation below is a linear or exponential function. Be prepared to describe how you know.

a) $y = 2 + 5x$ linear	b) $y = 3$ Linear (constant)	c) $y = \frac{3}{5}x - 3$ linear	d) $y = 11.2 \cdot 1.08^x$ exponential
e) $y = 2(5)^x$ exponential	f) $y = 625 - 3x$ linear	g) $y = 625\left(\frac{3}{5}\right)^x$ exponential	h) $y = 11.2 - 1.08x$ linear
- Choose equations from question 1 that meet the descriptions below then describe the pattern of change in the response variable (y) each time x increases by 1.

Description	Equation	Each time x increases by 1, y ...
a) Increasing linear	$y = 2 + 5x$	increases by 5
	$y = \frac{3}{5}x - 3$	increases by $\frac{3}{5}$
b) Increasing exponential	$y = 11.2 \cdot 1.08^x$	is multiplied by 1.08
	$y = 2(5)^x$	is multiplied by 5
c) Decreasing linear	$y = 625 - 3x$	decreases by 3
	$y = 11.2 - 1.08x$	decreases by 1.08
d) Decreasing exponential	$y = 625\left(\frac{3}{5}\right)^x$	is multiplied by $\frac{3}{5}$

- Use your descriptions to sketch graphs of the four equations chosen in question 2. Be sure to clearly mark the y -axes in consistent intervals.

Graphs will vary depending on student choices.

- Write equations to describe...

a) y starting at 82 and multiplied by a factor of 3 each time x increases by 1. $y = 82(3)^x$

b) y starting at 82 and decreasing by 3 each time x increases by 1. $y = 82 - 3x$

~~c) the number of parents who know that the game is rescheduled. The coach calls 3 parents then each parent calls 5 parents each hour. Parents = 2 + 5(hours)~~

d) the water remaining in a 50 gallon aquarium that starts full but has a leak losing 1% of its volume each hour. $Gallons = 50(0.99)^{hours}$



$$100 - 1 = 99\% \\ .99$$

1. Partner/Open-Notes Quiz

2. Homework:

Pg. 211-213 #1, 2, 5, 6, 8, 12,
13, ~~16, 18~~ 24