

Test Notes

recursive formula

$$u_0 = \text{starting \#}$$

$$u_n = u_{n-1} \cdot \text{rule}$$

$$n \geq 1$$

exponential equation

$$y = a(b)^x$$

$$a \sim \text{S.N.}$$

$$b \sim \text{rule}$$

ex 3, 6, 12, ...

SN: 3

rule: 2

$$\rightarrow y = 3(2)^x \text{ OR}$$

$$u_0 = 3$$

$$u_n = u_{n-1} \cdot 2$$

$$n \geq 1$$

exponent properties

$$x^n \cdot x^m = x^{n+m}$$

$$(x^n)^p = x^{np}$$

$$x^{-n} = \frac{1}{x^n}$$

$$\frac{x^n}{x^m} = x^{n-m}$$

examples

$$1) (2x^2y)(3x^3y) = 6x^5y^2$$

$$2) (2xy^2)^{-3} = \frac{1}{(2xy^2)^3} = \frac{1}{2^3x^3y^6} = \frac{1}{8x^3y^6}$$

$$3) (2xy^3)^{-2} \cdot (2x^{-1}y^2) = 2^{-2}x^{-4}y^{-6} \cdot 2x^{-1}y^2 \\ = \frac{2y^2}{2^2x^4x^1y^6} = \frac{y^2}{2x^5y^6} = \frac{1}{2x^5y^4}$$

find the constant multiplier given a percent

growth

decay

$$\textcircled{1} \% / 100$$

$$\textcircled{1} \% / 100$$

$$\textcircled{2} \text{ decimal} + 1 = \text{CM}$$

$$\textcircled{2} 1 - \text{decimal} = \text{CM}$$

ex 53% growth

ex 9% decay

$$\textcircled{1} 53/100 = 0.53$$

$$\textcircled{1} 9/100 = 0.09$$

$$\textcircled{2} 1 + 0.53 = \boxed{1.53}$$

$$\textcircled{2} 1 - 0.09 = \boxed{0.91}$$

constant multiplier to rate

- if $CM > 1$ then it's growth, if CM is a decimal it's decay
 - growth: how far is the # above 1? That's the rate.
 - decay: how much do I need to get the CM to 1? That's the rate

ex 1 $y = 200(1.05)^x$
0.05 over 1
so 5% growth

ex 2 $y = 200(0.87)^x$
0.13 to get to 1
so 13% decay.

table to equation

- when $x=0$ y is the SN or a-value
- divide terms to get b * make sure they are only 1 apart in the x -values*

ex

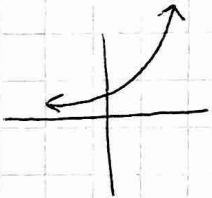
x	y
0	8
1	2
3	1/8

$a = 8$
 $b = \frac{2}{8} = \frac{1}{4}$

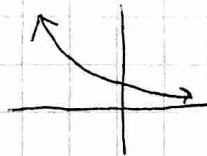
$y = 8\left(\frac{1}{4}\right)^x$

graphs

growth
x increases, y increases



decay
x increases, y decreases



the starting number is where the y-intercept is.

word problems

- ID your a-value (s.n.) : your rate, convert it to a constant multiplier