Name _____ Period _____ Date _____

Growing, Growing, Growing Inv. 2 – Quiz

Write an equation for the data in each of the tables below.

1.

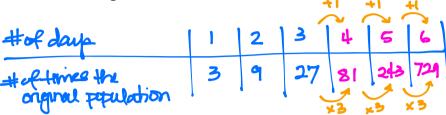| x	0	1	2	3	4	5
y	20	26	33.8	43.94	57.122	74.2586

+1 +1 +1 +1 +1
×1.3 ×1.3 ×1.3 ×1.3 ×1.3

y-int ↗

$$y = 20(1.3)^x$$

2.

x	1	2	3	4	5	6
y	2.3	3.8	5.3	6.8	8.3	9.8

+1 +1 +1 +1 +1
+1.5 +1.5 +1.5 +1.5 +1.5

$\frac{\Delta y}{\Delta x} = \frac{1.5}{1} = 1.5$

$y = 1.5x + b$

$2.3 = 1.5(1) + b$

$2.3 = 1.5 + b$

$-1.5 \quad -1.5$

$0.8 = b$

$$y = 1.5x + 0.8$$

3.

x	0	1	2	3	4	5
y	3	8.1	21.87	59.05	159.43	430.47

+1 +1 +1 +1 +1
×2.7 ×2.7 ×2.7 ×2.7 ×2.7

y-int ↗

$$y = 3(2.7)^x$$

4.

Alg 8 not responsible for this.

0 x	1	3	5	7	9	10
4 y	12	108	972	8748	78732	236196

-1 +2 +2 +2 +2 +1
÷3 ×9 ×9 ×9 ×9 ×3

Growth factor calculated when x increases by 1

$$y = 4(3)^x$$

5. An experimental organism has an unusual growth pattern. On each day, the organism triples its population of the previous day. On the first day of the experiment, the population is 3 times its original population. On the second day, the population is 9 times the original. On the third day, the population has grown to 27 times its original amount.

# of days	1	2	3	4	5	6
# of times the original population	3	9	27	81	243	729

a. How many times its original does the population reach on the sixth day?

729 time the original

b. How many times the original population does the organism reach on the nth day?

$$y = 3^n$$

c. If there are 629,856 organisms on the ninth day, how many organisms were there before the experiment began?

$$\frac{629,856}{3^9} = \frac{a(3)^9}{3^9}$$

$$32 = a$$

There were 32 organisms before the experiment began.

d. What type of relationship does this describe?

Exponential

e. What key word(s) in the original problem identified the type of relationship?

"times"

f. Write an equation relating the variables. DEFINE YOUR VARIABLES!

$$y = 32(3)^x$$

There were 32 organisms
when the experiment
began.

# of days since
the experiment
began

$$y = 32 \,(3)^x$$

# of organisms
'd' days after
the experiment
began

the # of organisms
is multiplied by
3 each day.