

*"Tell the truth - all the time!"*

*Directions: Show all thinking for maximum credit. You may use a calculator on this test.*

# GGG 1 - 3.2 Algebra 8r Practice Test (Mazzeo 2012/13)

## Short Answer

- 1** Tribetts are fuzzy insects that reproduce at the rate of 30% every day. Suppose you begin with 50 tribetts.

- a. Make a table showing the growth in the number of tribetts for the first days, round to the nearest tribett.

day	0	1	2	3	4
<i>tribetts</i>					

- b. Write an equation for the relationship between days  $d$  and numbers of tribetts  $T$ .

- 2** Complete the table to compare these two equations for  $x$  values from 1 to 5.

$$y_1 = 3(2)^x \qquad y_2 = 46(1.2)^x$$

$x$	1	2	3	4	5
$y_1 = 3(2)^x$					
$y_2 = 46(1.2)^x$					

- a. In which equation does the  $y$  value increase at a faster rate? How do you know?

- b. The equation  $y_1 = 3(2)^x$  might represent the growth pattern for a population of mice. Complete the following sentence by circling your choices. Your sentence should describe the pattern in words.

- i. The population started with \_\_\_\_\_ mice.

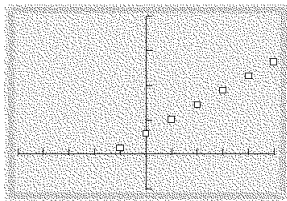
2            3            200            300             $x$

- ii. The population grew at a rate of \_\_\_\_\_ .

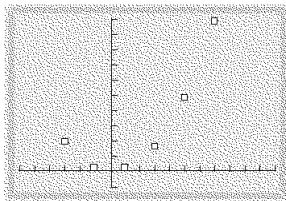
100%    200%    2%            3%             $x\%$

**3** Which of these three graphs looks like a linear model? Explain.

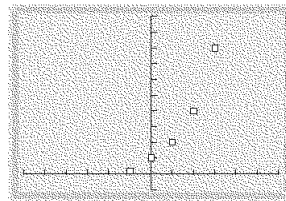
**a.**



**b.**



**c.**



**4** Suppose a single bacterium lands on one of your teeth and starts reproducing by a factor of 3 every hour.

**a.** Is the relationship described linear, exponential, or neither? Write an equation and then explain what the variables and numbers mean in the context of the problem.

**b.** After how many hours will there be at least 1,000,000 bacteria in the new colony?

**Study the pattern in the table. Tell whether the relationship between  $x$  and  $y$  is linear, exponential, or neither, and explain your answer. If the relationship is linear or exponential, write an equation for it.**

**5**

$x$		1	2	3	4	5
$y$		54.4	92.48	157.216	267.2672	454.35424

**6**

$x$		1	2	3	4	5
$y$		9	14.8	20.6	26.4	32.2

**7** Suppose your parents agree to a new plan you suggested for allowance: 1 penny on the first day of the month, then 4 on the second day, 16 on the third day, 64 on the forth day , and so on for the entire month.

a. Is the relationship described linear, exponential, or inverse? Write an equation and then explain what the variables and numbers mean in the context of the problem.

b. How much will you be paid on the 15th day of the month in dollars and cents?

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**8** An killer plant has an unusual growth pattern. On each day, the plant triples its height of the previous day. On the first day of the experiment, the plant grows to triple, or 3 times, its original height. On the second day, the plant grows to 9 times its original height. On the third day, the plant grows to 27 times its original height.

a. How many times its original height does the plant reach on the sixth day? On the  $n$ th day?

b. If the plant is 9841.5 cm tall on the ninth day, how tall was it just before the experiment began?

c. Is the relationship described linear, exponential, or neither? Write an equation and then explain what the variables and numbers mean in the context of the problem.

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- 9** A bathtub is being filled at a rate of 1.5 gallons per minute. The bathtub will hold 30 gallons of water.
- Is the relationship described linear, exponential, or neither? Write an equation and then explain what the variables and numbers mean in the context of the problem.
  - How long will it take to fill the bathtub?

**10** Write  $5 \cdot 5 \cdot 5 \cdot 5 \cdot 5 \cdot 5$  using an exponent.

**11** BONUS:  
Chuck Norris built the \_\_\_\_\_ he was born in.

**12** BONUS:  
Solve the following equation showing transformation lines and labeling properties of equality.

$$-204 - \frac{3}{5}(10w - 25) = 3w + 2(10 - 4w)$$