First & Last Name: _____Period:____ID: Version

Directions: Try to be clear and precise with your responses. Support each solution by ***showing all your thinking*** for maximum credit. "Tell the truth all the time."

G.G.G. Investigations 3 - 4 Test Algebra 8r (Mazzeo 2010)

1) Solve the following equation showing transformation lines when needed: (worth 10 points)

$43 - (3h - 40) = 9(6 - 15h)$

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2) In 2010, David deposited $4500 into a retirement fund. A year later, the balance had grown to $5040. David took no money out of the account during the year.

a. Write an exponential equation that could represent this situation.

b. Write a linear equation that could represent this situation,

3)

Diana and Margaux recently discovered that several species of snakes have been declared endangered. When the populations of a particular snake species fall dangerously low, biologists encourage governments to agree to a ban on hunting the species. Suppose that the population was predicted to continue to decline as shown in the table.

Year (y)	**Snakes** (s)
0 (2000)	
1	
2	16810
3	13784
4	11303
5	9268
6	7600

a. Tell whether the relationship between the variables in this table is linear, inverse, exponential growth, or exponential decay, and explain how you know.

b. Write an equation for the relationship and explain what the variables and numbers represent in your equation. (worth 10 points)

c. Tell what the point $(4, 11303)$ represents in the context of the given problem. Be as specific as you can.

4) Mrs Kelleher collects all kinds of spiders! Her parents have given her the barn to house them. The spider population increases by 12% each year.

a. Make a table showing the number of spiders at the end of the first 4 years for a starting population of 16000 spiders.Round to the nearest spider

years	**0**	**1**	**2**	**3**	**4**
spiders					

b. Write an equation for the relationship between years and number of spiders.

c. Explain what information the numbers and variables in your equation represent in the context of this situation.

d. If this pattern continues, then what will the snake population be in 23 years?? Show how you found this.

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Multiple Choice

Identify the choice that best completes the statement or answers the question.

____ 1) Which of the following has a decay rate of $\frac{1}{2}$%?

a. $t = 0.5(1{,}015)^{y}$

b. $t = 1002(0.05)^{t}$

c. $t = 1002(0.995)^{t}$

d. $t = \frac{1}{2}(0.5)^{t}$

e. $t = 1002(1.0005)^{y}$

____ 2) Given the following equations, $y = 2394(1.075)^x$, what is the growth rate?

a. 75%
b. 7.5%
c. 0,075%
d. 1075%
e. 25%

____ 3) Given the following equation, $t = 430,000(0.88)^y$, what is the decay rate?

a. 88%
b. 8.8%
c. 22%
d. 188%
e. 12%

____ 4) What is the growth rate for the equation $A = 90,000(4.22)^w$?

a. 22%
b. 88%
c. 322%
d. 122%
e. 422%

____ 5) Which of the following equations has a growth rate of 300%?

a. $y = 300(125)^x$
b. $y = 300x + 125$
c. $y = 300(3)^x$
d. $y = 125(300)^x$
e. $y = 300(4)^x$

____ 6) Which of the following is growing at the fastest rate?

a. $y = 23(3)^x$
b. $y = 340(1.99)^x$
c. $y = 44000(2.995)^x$
d. growth rate of 250%
e. growth factor of 2.9

____ 7) Which of the following is decaying at the fastest rate?

a. $y = 303(0.99)^x$
b. decay rate of 81%
c. $y = 516(\frac{4}{9})^x$
d. $y = 900(0.23)^x$
e. decay factor of 0.68

____ 8) Which of the following forms best represents an exponential relationships?

a. $y = mx + b$
b. $xy = k$
c. $y = a(b)^x$
d. $y = ax^2 + bx + c$
e. $y = a(x)^2$