Name:_____ Hour: _____ Date: _____

NOTES: Section 8.6 – Exponential Growth Functions

Goals: #1 - I can graph write and graph exponential growth functions.   

Homework: Section 8.6 Worksheet

Warm Up:

1. Write the number 0.000459 in scientific notation.

2. Write the number 4.33×10^8 in standard notation.

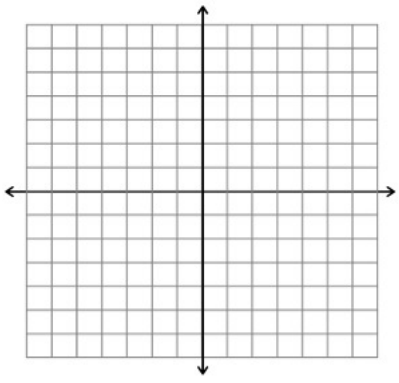
3. Perform the indiciated operation.
   a. $(9 \times 10^{-6})(2 \times 10^{4})$

   b. $\frac{8 \times 10^{-3}}{4 \times 10^{-5}}$

Exploration #1: Work with a partner. Complete the tables and graph the following functions.

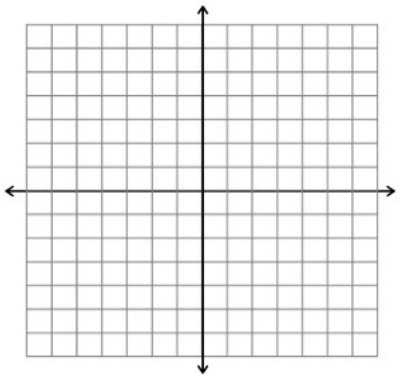
1. $y = 5^x$

x	y



2. $y = 5x$

x	y



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Notes:

One use of _____ is to model _____.

A quantity is growing _____ if it increse by the same _____

in each unit of _____.

_____ can be modeld by the equation:

$$y = C(1 + r)^t$$

Example #1: A newly hatched channel catfish typically weighs about 0.06 gram. During the first six weeks of life, its weight increases by about 10% each day. Write a model for the weight of the catfish during the first six weeks.

a. Using the model, predict the weight of the catfish after 26 days.

Example #2: A TV station's local news program has 50,000 viewers. The managers of the station hope to increase the number of viewers by 2% per month. Write an exponential growth model to represent the number of viewers v in t months.

a. Using the model, predict how many viewers the news program will have in 15 months.

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Notes:

A common real-life example of exponential growth is _____.

The model for _____ is generally written using:

$$A = P(1 + r)^t$$

Example #3: You deposit $500 in an account that pays 8% interest compounded yearly. What will the account balance be after 6 years?

Example #4: A savings certificate of $1000 pays 6.5% interest compounded yearly. What is the balance when the certificate matures in 5 years?

You practice:

1. A rancher begins his herd of Longhorn cattle with 15. The herd grows by about 30% per year. Write a model for the size of his cattle during the first several years.

   a. Using the model, predict how many cattle the rancher will have in 4 years.

2. You deposit $750 in an account that pays 6% interest rate compounded yearly. What is the balance after 10 years?

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Example #5: An initial population of 20 mice triples each year for 5 years.

a. Write an exponential growth model.

b. What is the mice population after 3 years?

c. What is the mice population after 5 years?

d. Graph the exponential growth of the model using a table:

t	y