Interpreting Exponentials

Agenda

Warm-Up

HW Check

Notes p. 119

Kahoot

Activity (extra credit)

HW: Practice (#1-6)

Reminders

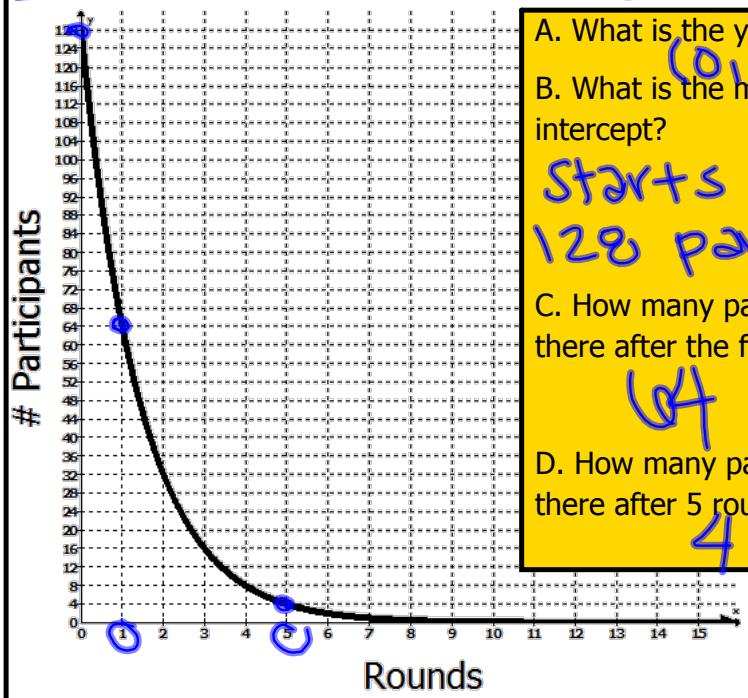
HW 6.1 Due Friday

Test Tuesday

Math Blitz Tues 4/21 OR Thurs 4/23

Warm-Up (Tuesday)

1. Each year the local country club sponsors a tennis tournament. Tournament play starts with 128 participants. During each round, half of the players are eliminated.



A. What is the y-intercept? (0, 128)

B. What is the meaning of the y-intercept? Starts with 128 participants

C. How many participants were there after the first round? 64

D. How many participants were there after 5 rounds? 4

Math Blitz!

You're Invited!

To the April Math Blitz! Please keep this invitation and present it when you attend.

Dear

Based on your scores on the STAAR Simulation, you are required to attend the Algebra I EOC Math Blitz on

Tuesday 4/21 Thursday 4/23

Please meet in C-Hall before 4:30. The session will conclude at 6:30. Snacks will be provided.

Category:

2 3 4 5

If you received a purple invite:

You must attend one of the afterschool sessions next Tuesday or Thursday.

You will go to rooms based on your needs! Please do not lose your invite and present it to the teachers at the blitz.

If you cannot attend: you will receive a Wednesday or Saturday School

Algebra I - Unit 10: Topic 1 – Equations of Exponential Functions

Practice – Equations of Exponential Functions **pp 772-778, 789-795**

Name _____ Date _____ Period _____

Write the function rule for each, then use your calculator to answer the questions.

1.

x	-2	-1	0	1	2
y	5	25	125	625	3125

Function Rule: _____

What is the value of y when x is -3?

What is the value of x when y is 390,625?

2.

x	-3	-2	-1	0	1
y	32	16	8	4	2

Function Rule: _____

What is the value of y when x is 5?

What is the value of x when y is 16,384?

3.

x	-2	-1	0	1	2
y	$\frac{1}{81}$	$\frac{1}{27}$	$\frac{1}{9}$	$\frac{1}{3}$	1

Function Rule: _____

What is the value of y when x is 6?

What is the value of x when y is 6561?

4. Use the data in the table to describe how the ladybug population is changing. Write a function that models the data. Use your function to predict the ladybug population after one year.

Ladybug Population	
Time (mo)	Ladybugs
0	10
1	30
2	90
3	270

How data is changing: _____

Function rule: $y = 10 \cdot 3^x$

Number of lady bugs after one year: _____

$x = 12$ $y = 10 \cdot 3^{12}$

5. Which function is an example of exponential decay?

A $y = -5\left(\frac{1}{3}\right)^x$

B $y = 5(3)^x$

C $y = 5\left(\frac{1}{3}\right)^x$

D $y = \left(\frac{1}{2}\right) \cdot 3^x$

6. Which function best models the data {(-4, -2), (-2, -1), (0, 0), (2, 1), (4, 2)}?

A $y = \left(\frac{1}{2}\right)^x$

B $y = \frac{1}{2}x$

C $y = \frac{1}{2}x^2$

D $y = \left(\frac{1}{2}x\right)^2$

Algebra I - Unit 10: Topic 1 – Equations of Exponential Functions

Use the data from each problem below to calculate an equation of best fit, then use the equation to answer the questions.

7. The table shows the number of computers in a school for four years. Write a function to model the data. Use your function to predict how many computers the school will have in 2006 if the pattern continues.

Number of Computers				
Year	'00	'01	'02	'03
Computers	14	28	56	112

Function Rule: _____

Prediction of computers in 2006: _____

8. What type of function does the data {(-6, 17), (-7, 20), (-8, 23), (-9, 26) represent?

9. The chart below shows the ticket sales for movies on a certain screen at one theater over four days.

Day	# Tickets
1	3000
2	2400
3	1920
4	1536

0 3750 ÷ .8, ×.8, ×.8, ×.8

Function rule: $y = 3750 \cdot (0.8)^x$

How many tickets were sold on Day 8? _____

$b = \frac{2nd\ y}{1st\ y} = \frac{2400}{3000}$

10. Use the data in the table to describe how the restaurant's sales are changing. Then write a function that models the data. Use your function to predict the amount of sales after 10 years.

Restaurant				
Year	0	1	2	3
Sales ($)	20,000	19,000	18,050	17,147.50

How data is changing: exponential

Function rule: $y = 20000(.95)^x$

Amount of sales after ten years: _____

$b = \frac{19000}{20000}$

Interpreting Exponentials

Glue on p. 119

1. Jamal's bank account balance over 20 years is shown in the graph below.

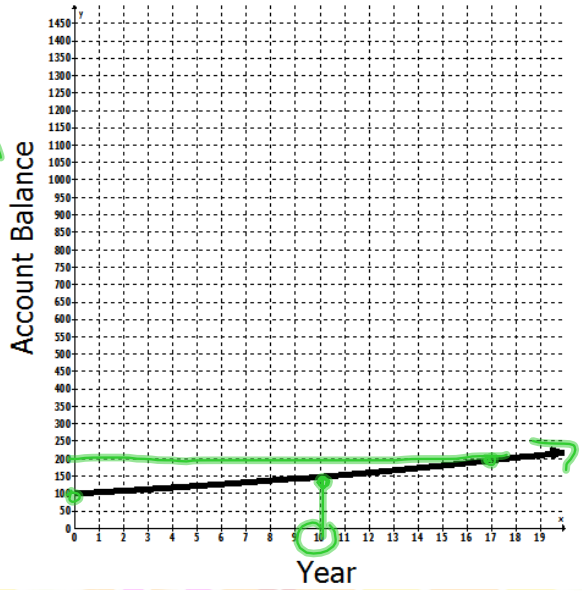
A. What is the *y*-intercept? (0, 100)

B. What is the meaning of the *y*-intercept? Account Balance started at $100.

C. About how many years does it take Jamal's balance to double? y=200 ~17 years

D. After 10 years, what is the approximate balance of Jamal's account? $150

E. What is the range of this situation? 100 ≤ y ≤ 400

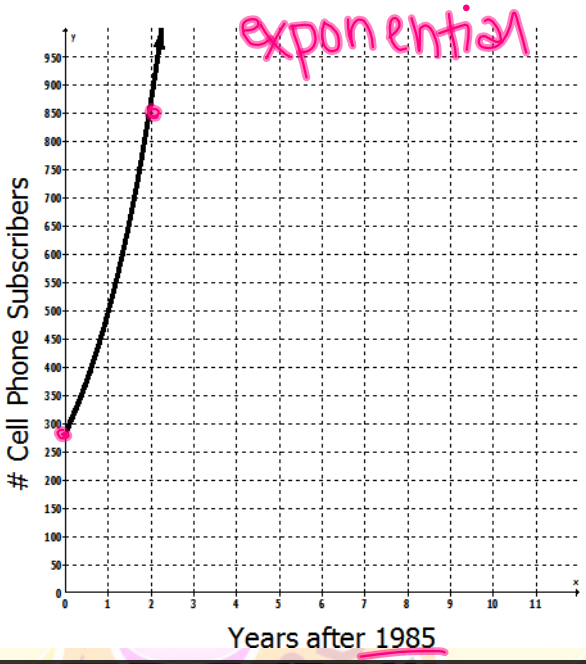


2. In 1985, there were 285 cell phone subscribers in the small town of Centerville. The number of subscribers increased by 75% per year after 1985.

A. What is the meaning of the *y*-intercept? Initially 285 cell phone subscribers in 1985.

B. In 1987, about how many cell phone subscribers were there in Centerville? x=2 ~850

C. What is the range of this situation? 285 ≤ y ≤ 2000



Interpreting Exponentials

KAHOOT!

Reminders:

Your log in name must be identifiable AND school appropriate. If your name does not follow these rules you will not receive bonus points and the game may be shut down for the rest of the class.

Good: MsK & Bob Bad: SexiAngels69

Kahoot is in beta testing & the school wifi can be slow. Please do not become angry if there is a technical issue.

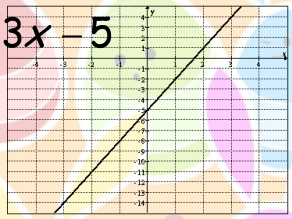
Keep your celebrations to 10 seconds maximum so we can review.

Interpreting Exponentials

In this activity, you will cut out each table, graph, and equation. Match the equation, table, graph, and paste onto chart paper. After pasting identify the domain and range of each graph and then title each graph as linear, quadratic or exponential.

x	-2	-1	0	1	2
y	-11	-8	-5	-2	1

$y = 3x - 5$



Domain: all real numbers
Range: all real numbers

Hint: Match BEFORE you cut out by labeling each as L1, L2, Q1, etc.

You may work with a partner. Your names must be on each of the 3 posters. This is extra credit, do not turn in an ugly or unfinished set of posters.

DUE TUESDAY 4/21

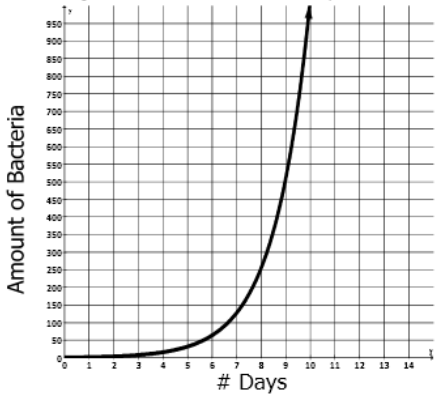
Your HW is the next 2 pages in your packet.

Algebra I - Unit 10: Topic 1 – Interpreting Graphs of Exponential Functions

Practice - Interpreting Graphs of Exponential Functions **pp 772-795**

Name _____ Date _____ Period _____

1. The graph below shows how a certain bacteria can grow at an alarming rate when each bacteria splits into two new cells, thus doubling.

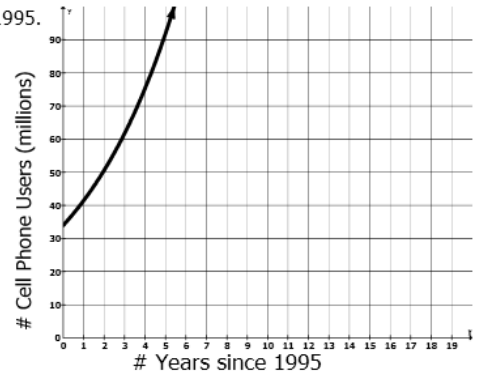


   A. What was the increase between Day 8 and Day 9?

   B. After 7 days, what is the approximate number of bacteria?

   C. After about how many days was there 800 bacteria?

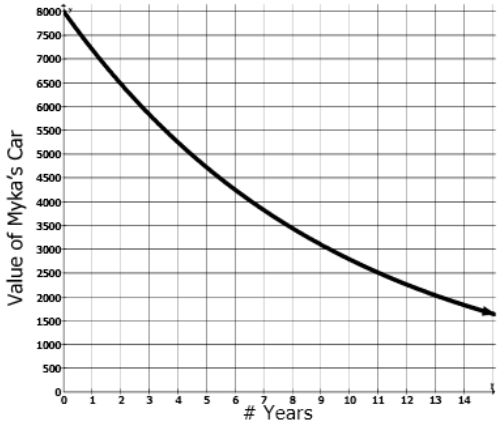
2. Cellular phone usage has grown about 22% each year since 1995.



   A. If the *y*-intercept is 34 (million), what does this mean?

   B. In what year were there approximately 60 million cellular phone users?

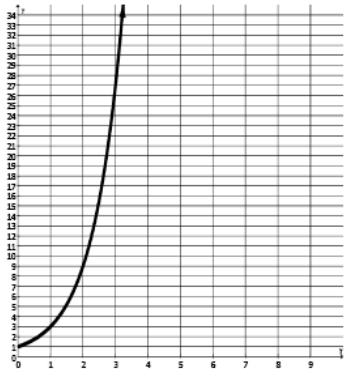
3. The graph below shows the relationship of the value of Myka's car over a period of years. According to the graph, which of the following statements appears to be true?



   A. The value of the car decreased by almost $1000 each year.
   B. The value of the car decreased by $500 each year.
   C. The value of the car decreased more from year 13 to year 15 than in any other year.
   D. The value of the car decreased more from year 0 to year 1 than in any other year.

Algebra I - Unit 10: Topic 1 – Interpreting Graphs of Exponential Functions

4. Which statement best describes the graph shown to the right?



   A. The amount of money in John's savings when he deposits $35 each month.
   B. The amount of money in an account that triples every month.
   C. The amount of money in Kara's checking account when she writes $50 in checks each month.
   D. The amount of money Michael owes on his car as he makes car payments.

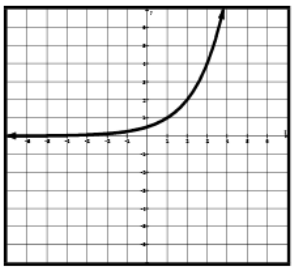
5. Rearrange the functions below into three related groups. Explain why you grouped the functions together. What made each function fit the characteristics of their group?

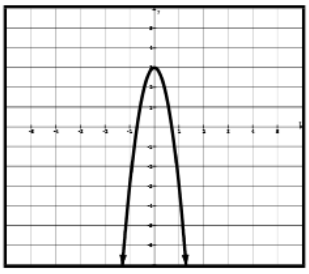
$f(x) = -3^x$ $f(x) = 4$ $f(x) = \left(\frac{1}{2}\right)^x$

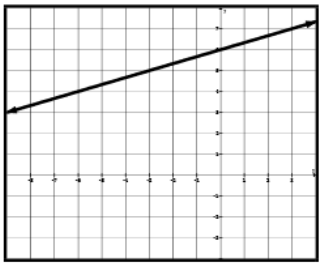
$f(x) = \frac{1}{2}x^2$ $f(x) = 2x^2 + 5$ $f(x) = -3x^2$

$f(x) = 8 - \frac{1}{2}x$ $f(x) = 2^x$ $f(x) = 2x - 5$

6. Identify the following graphs as linear, exponential, or quadratic.







a. _____ b. _____ c. _____

HW Help: Interpreting Exp!

As always: No WORK = No CREDIT!

1. Use the graph to answer the questions!

2. The y-intercept always represent the beginning y-value. So here, the y-intercept means that 34 million people used cell phones in 1995.

3 & 4 Read each answer choice carefully!!

5. Your 3 groups can be "Linear" "Quadratic" and "Exponential". What is special about the variables in each of these groups?

ex. Linear: $2x - 5$ Quadratic: $-3x^2$ Exponential: 2^x

6. Linear = Line; Quadratic = U; Exponential = Curve