

# Algebra 1B Live Lesson

U2L6 – Exponential Functions  
(Chapter 7-6 in textbook)



# Agenda



1. Review selected problems and topics from U2L6 (Chapter 7-6 in textbook).

2. Use the 2-column note system to take better notes in math class. Bring your math notebook and pen or pencil to each math LiveLesson class.

# 2-Column Notes Template



1. Announcements/To Do's
2. School-Wide Learner Outcomes
3. LL Objectives
4. Vocabulary words
5. Problems
6. Summary (End of class)

1. Write down important details.
2. What are you going to work on this week?
3. Write down the main idea of the lesson.
4. Definitions (fill in as we go)
5. Steps to solving problems
6. 1 or 2 sentences about the LL class.

# Reminders and To – Do's



## Information

1. Complete 1 math lesson per day.
2. Check your WebMail every day
3. Be prepared to spend 4 - 6 hours per day on schoolwork.
4. Remind your Learning Coach to take daily attendance

## What to do

1. Go to your Planner in Connexus to find the math lesson for the day
2. Go to Connexus to find WebMail
3. Complete lessons for the day from your Planner. Do not get behind on lessons.
4. Have your Learning Coach log into Connexus daily.

# Reminders and To – Do's



## Information

5. Go to the Message Board first for information about our math class.

6. Contact Mr. Elizondo for math questions.

Remember: You need at least 2 phone calls with Mr. Elizondo per semester.

## What to do

5. Link to Message Board:

6. Call (559) 549 - 3244 and leave a voicemail if call is not answered.

Make an appointment at:  
<https://elizondo.youcanbook.me>

Send a WebMail

## U2L6 – California Common Core State Standards

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- HSF-LE.A.1: Distinguish between situations that can be modeled with linear functions and with exponential functions
- HSF-LE.A.2: Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table).
- HSF-LE.A.3: Observe using graphs and tables that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or (more generally) as a polynomial function.

# U2L6 - Objectives



- Evaluate and graph exponential functions

# U2L6 - Vocabulary



- Exponential function



# U2L6 – Introduction



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Some functions model an initial amount that is repeatedly multiplied by the same positive number.

# U2L6 – Introduction



For example, let's say we have \$8. Every day, your parents decide to triple the amount of money that you have.

Days	Amount	Exponential form
0	8	$8 \cdot 3^0$
1	$8 \cdot 3$	$8 \cdot 3^1$
2	$8 \cdot 3 \cdot 3$	$8 \cdot 3^2$
3	$8 \cdot 3 \cdot 3 \cdot 3$	$8 \cdot 3^3$
4	$8 \cdot 3 \cdot 3 \cdot 3 \cdot 3$	$8 \cdot 3^4$
x	$8 \cdot 3 \cdot 3 \cdot 3 \dots \cdot 3$	$8 \cdot 3^x$



x times

# U2L6 – Exponential Function



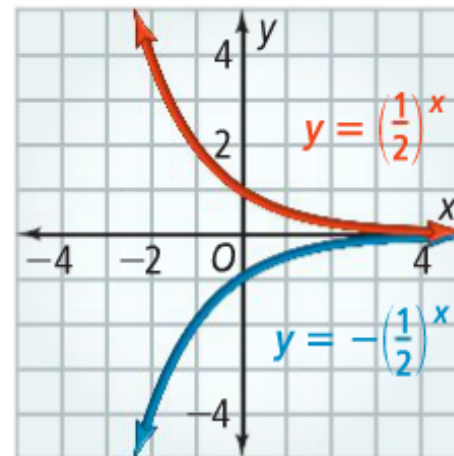
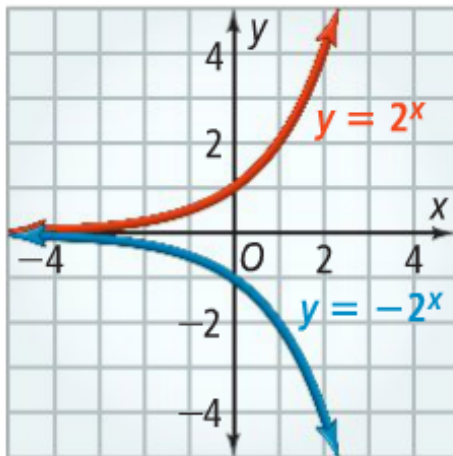
take note

## Key Concept Exponential Function

### Definition

An **exponential function** is a function of the form  $y = a \cdot b^x$ , where  $a \neq 0$ ,  $b > 0$ ,  $b \neq 1$ , and  $x$  is a real number.

### Examples



## U2L6 – Identifying and Exponential Function



Does the table or rule represent an exponential function? Explain.

x	0	1	2	3
y	-1	-3	-9	-27

The difference between each x-value is 1.

x	0	1	2	3
y	-1	-3	-9	-27

+1 +1 +1

×3 ×3 ×3

The ratio between each y-value is 3.

Yes, the table represents an exponential function. There is a constant difference between x-values and a constant ratio between y-values.

## U2L6 – Identifying and Exponential Function

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Does the rule represent an exponential function? Explain.

$$y = 3x^2$$

Remember that exponential functions are in the form

$$y = a \cdot b^x$$

No, the function is not in the form  $y = a \cdot b^x$ . The independent variable  $x$  is not an exponent.

# U2L6 - Evaluating Exponential Functions

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**Population Growth** Suppose 30 flour beetles are left undisturbed in a warehouse bin. The beetle population doubles each week. The function  $f(x) = 30 \cdot 2^x$  gives the population after  $x$  weeks. How many beetles will there be after 56 days?

56 days is equal to 8 weeks. Evaluate the function for  $x = 8$ .

$$\begin{aligned} f(x) &= 30 \cdot 2^x \\ &= 30 \cdot 2^8 \\ &= 30 \cdot 256 \\ &= 7680 \end{aligned}$$

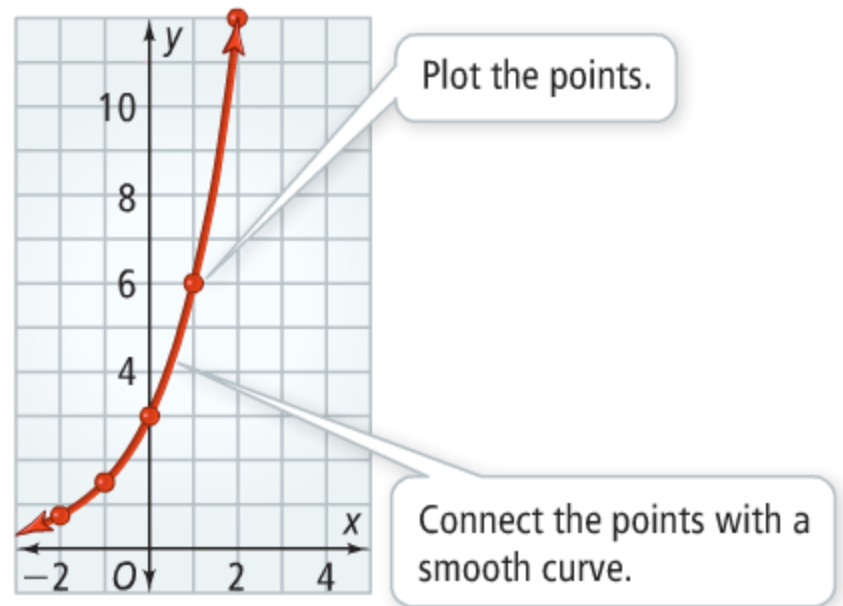
After 56 days, there will be 7680 beetles.

# U2L6 – Graphing and Exponential Function



What is the graph of  $y = 3 \cdot 2^x$ ?

$x$	$y = 3 \cdot 2^x$	$(x, y)$
-2	$3 \cdot 2^{-2} = \frac{3}{2^2} = \frac{3}{4}$	$(-2, \frac{3}{4})$
-1	$3 \cdot 2^{-1} = \frac{3}{2^1} = 1\frac{1}{2}$	$(-1, 1\frac{1}{2})$
0	$3 \cdot 2^0 = 3 \cdot 1 = 3$	$(0, 3)$
1	$3 \cdot 2^1 = 3 \cdot 2 = 6$	$(1, 6)$
2	$3 \cdot 2^2 = 3 \cdot 4 = 12$	$(2, 12)$



# Questions?

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- Check the Message Board first
- Send a WebMail
- You can also make an appointment at <https://elizondo.youcanbook.me>
- You can also call me at (559) 549-3244. If I'm not available to answer your call, please leave a voicemail with your full name and phone number.