

# Algebra 1B Live Lesson

## U2L8 – Exponents and Exponential Functions Unit Review



# Agenda



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1. Review selected problems and topics from Unit 2 in preparation for the upcoming Unit 2 Test.

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 your own questions.
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

# U2L7 - Review Problems



5. Suppose your friend's parents invested \$20,000 in an account paying 5% interest compounded annually? What will be the balance be after 10 years ?

Compound interest formula:  $A = P \left( 1 + \frac{r}{n} \right)^{nt}$

A: the balance

P: the principal (initial amount)

r: annual interest rate (decimal)

n: # of times compounded per year

t: time in years

## From the problem

$P = \$20,000$

$r = 0.05$  (5% as decimal)

$n = 1$  (1 time per year)

$t = 10$  years

$$A = 20000 \left( 1 + \frac{0.05}{1} \right)^{1(10)}$$

$$A = 20000 (1.62889463)$$

$$A = 20000 (1.05)^{10}$$

$$A = \$32,577.89$$

# U2L7 - Review Problems

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1. What is the growth factor in the equation  $y = 34 \cdot 4^x$  ?

$$y = a \cdot b^x \quad b = 4$$

2. What is the initial amount in the function  $y = 15 \cdot 3^x$  ?

$$y = a \cdot b^x \quad a = 15$$

3. What is the decay factor in the function  $y = 17 \cdot 0.2^x$  ?

$$y = a \cdot b^x \quad b = 0.2$$

4. A population of fish in the lake decreases 6% annually. What is the decay factor?

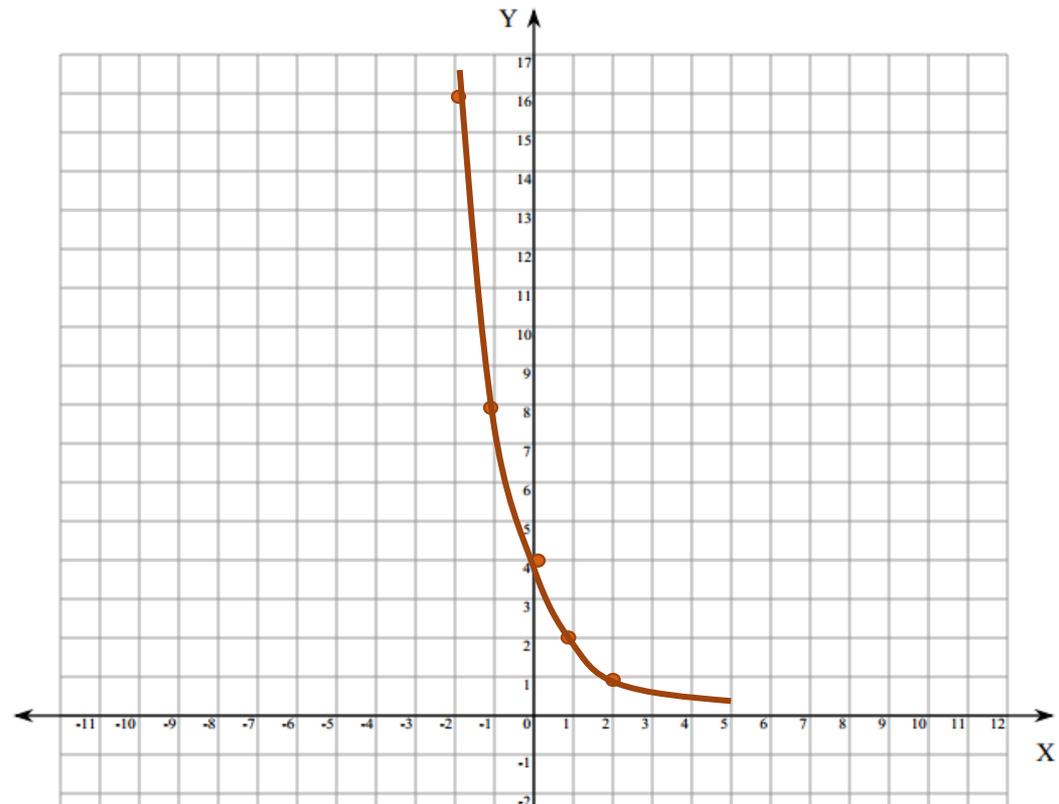
Since the population is going down by 6%, **the decay factor is 0.94.**

# U2L6 - Review Problems



4) What is the graph of  $y = 4 \cdot \left(\frac{1}{2}\right)^x$  ?

x		y
-2	$4 \cdot (1/2)^{-2}$	16
-1	$4 \cdot (1/2)^{-1}$	8
0	$4 \cdot (1/2)^0$	4
1	$4 \cdot (1/2)^1$	2
2	$4 \cdot (1/2)^2$	1



# U2L6 - Review Problems



1) Does the table represent an exponential function?

		+1	+1	+1	
x	1	2	3	4	
y	-1	1	3	5	
		$\times -1$	$\times 3$	$\times \frac{5}{3}$	

No, the table does not represent an exponential function.

# U2L6 - Review Problems

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2.) Evaluate the function  $f(x) = 10 \cdot 2^x$  for  $x = 5$ .

$$f(x) = 10 \cdot 2^x$$

$$f(5) = 10 \cdot 2^5$$

$$f(5) = 10 \cdot 32$$

$$f(5) = 320$$

# U2L6 - Review Problems



3.) An initial population of 10 rabbits triples every half year. The function  $f(x) = 10 \cdot 3^x$  gives the population after  $x$  half year periods. How many rabbits will there be after 3 years?

$$f(x) = 10 \cdot 3^x$$

$x$  represents the number of half-year periods

In 3 years, there are **6** half-year periods.

$$f(6) = 10 \cdot 3^6$$

$$f(6) = 10 \cdot 729$$

$$f(6) = 7290$$

After 3 years, there will be 7290 rabbits.

# U2L5 - Review Problems

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1) What is the simplified form of  $\frac{2x^4 y^{-4} z^{-3}}{3x^2 y^{-3} z^4}$

$$\frac{2x^{4-2} y^{-4-(-3)} z^{-3-4}}{3}$$

$$\frac{2x^2 y^{-1} z^{-7}}{3}$$

$$\frac{2x^2}{3yz^7}$$

# U2L5 - Review Problems

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3) What is the simplified form of  $\left(\frac{3}{x^3}\right)^4$

$$\left(\frac{3}{x^3}\right)^4 = \frac{3^4}{(x^3)^4} = \frac{81}{x^{12}}$$

# U2L5 - Review Problems

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4) What is the simplified form of  $\left(\frac{3a}{2b}\right)^{-3}$

$$\left(\frac{3a}{2b}\right)^{-3} = \left(\frac{2b}{3a}\right)^3 = \frac{(2b)^3}{(3a)^3} = \frac{2^3 b^3}{3^3 a^3}$$

$$= \frac{8b^3}{27a^3}$$

# U2L4 - Review Problems

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4) Simplify  $(2x^0y^2)^{-3} \cdot 2yx^3$

$$\begin{aligned}(2x^0y^2)^{-3} \cdot 2yx^3 &= 2^{-3} \cdot (x^0)^{-3} \cdot (y^2)^{-3} \cdot 2yx^3 \\ &= 2^{-3} \cdot x^0 \cdot y^{-6} \cdot 2yx^3 \\ &= (2^{-3+1}) \cdot (x^{0+3}) \cdot (y^{-6+1}) \\ &= 2^{-2} \cdot x^3 \cdot y^{-5} \\ &= \frac{x^3}{2^2 y^5} = \frac{x^3}{4y^5}\end{aligned}$$

# U2L4 - Review Problems

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5) Simplify  $(8.9 \times 10^5)^4$

$$\begin{aligned}(8.9 \times 10^5)^4 &= (8.9^4) \times (10^5)^4 \\ &= 6274.2241 \times 10^{20} \\ &= (6.2742241 \times 10^3) \times 10^{20} \\ &= 6.2742241 \times 10^{23}\end{aligned}$$

# U2L3 - Review Problems

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1) Simplify:  $4n^4 \cdot 2n^{-3}$

$$\begin{aligned}4n^4 \cdot 2n^{-3} &= (4 \cdot 2)(n^4 \cdot n^{-3}) \\ &= (8)(n^{4+(-3)}) \\ &= 8n^1 \\ &= 8n\end{aligned}$$

# U2L3 - Review Problems

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2) Simplify:  $2x^3y^{-3} \cdot 2x^{-1}y^3$

$$\begin{aligned}2x^3y^{-3} \cdot 2x^{-1}y^3 &= (2 \cdot 2)(x^3 \cdot x^{-1})(y^{-3} \cdot y^3) \\ &= (4)(x^{3+(-1)})(y^{-3+3}) \\ &= 4x^2y^0 \\ &= 4x^2\end{aligned}$$

# U2L3 - Review Problems

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3) Simplify:  $(7.1 \times 10^{-5})(6.7 \times 10^{-6})$

$$\begin{aligned}(7.1 \times 10^{-5})(6.7 \times 10^{-6}) &= (7.1 \cdot 6.7) \times (10^{-5} \cdot 10^{-6}) \\ &= (47.57) \times (10^{-11}) \\ &= (4.757 \times 10^1) \times (10^{-11}) \\ &= 4.757 \times 10^{-10}\end{aligned}$$

# U2L2 - Review Problems

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Write each number in scientific notation.

1.  $0.0007 = 7 \times 10^{-4}$

2.  $32,000,000 = 3.2 \times 10^7$

Write each number in standard notation.

3.  $3.5 \times 10^6 = 3,500,000$

4.  $1.27 \times 10^{-4} = 0.000127$

Order the number in each list from least to greatest.

5.  $5 \times 10^{-3}, 2 \times 10^4, 3 \times 10^0, 7 \times 10^{-1}$

$5 \times 10^{-3}$     $7 \times 10^{-1}$     $3 \times 10^0$     $2 \times 10^4$

# U2L1 - Review Problems

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Simplify each expression.

$$1.) 2^{-5} = \frac{1}{2^5} = \frac{1}{32}$$

$$2.) m^0 = 1$$

$$3.) 5s^2t^{-1} = \frac{5s^2}{t}$$

$$4.) \frac{4}{x^{-3}} = 4x^3$$

# U2L1 - Review Problems



Evaluate the expression for  $a = 2$  and  $b = -4$ .

$$5.) a^3 b^{-1}$$

$$\frac{a^3}{b}$$

$$\frac{2^3}{-4} = \frac{8}{-4} = -2$$

$$a^3 b^{-1}$$

$$2^3 (-4)^{-1}$$

$$\frac{2^3}{-4} = \frac{8}{-4} = -2$$

# 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.