

Algebra 1B Live Lesson

U2L4 - More Multiplication Properties of
Exponents
(Chapter 7-4 in textbook)



Agenda



1. Review selected problems and topics from U2L4 (Chapter 7-4 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. Definitions (fill in as we go)
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

U2L4 - Objectives



- Raise a power to a power
- Raise a product to a power

U2L4 - Vocabulary



- Power
- Base
- Exponent

U2L4 – Multiplying Powers



There is a property of exponents to help us simplify a power raised to a power, or a product raised to a power.

Let's try to figure it out.

$$\begin{aligned}(7^6)^3 &= (7^6)(7^6)(7^6) \\ &= 7^{6+6+6} \\ &= 7^{18}\end{aligned}$$

$$\begin{aligned}(x^5)^2 &= (x^5)(x^5) \\ &= x^{5+5} \\ &= x^{10}\end{aligned}$$

U2L4 – Raising a power to a power



Property Raising a Power to a Power

Words To raise a power to a power, multiply the exponents.

Algebra $(a^m)^n = a^{mn}$, where $a \neq 0$ and m and n are integers

Examples $(5^4)^2 = 5^{4 \cdot 2} = 5^8$ $(m^3)^5 = m^{3 \cdot 5} = m^{15}$

U2L4 – A power raised to a power



What is the simplified form of $(n^4)^7$?

$$\begin{aligned}(n^4)^7 &= n^{4 \cdot 7} \\ &= n^{28}\end{aligned}$$

U2L4 – A power raised to a power



What is the simplified form of $(p^{-5})^4$?

$$\begin{aligned}(p^{-5})^4 &= p^{-5 \cdot 4} \\ &= p^{-20} \\ &= \frac{1}{p^{20}}\end{aligned}$$

U2L4 – Simplifying Expressions with Powers



What is the simplified form of $y^3(y^5)^{-2}$?

$$y^3(y^5)^{-2} = y^3y^{5 \cdot (-2)}$$

$$= y^3y^{-10}$$

$$= y^{3+(-10)}$$

$$= y^{-7}$$

$$= \frac{1}{y^7}$$

U2L4 – Simplifying Expressions with Powers



What is the simplified form of $(r^{-5})^{-2}r^3$?

$$\begin{aligned}(r^{-5})^{-2} r^3 &= r^{-5 \cdot -2} r^3 \\ &= r^{10} r^3 \\ &= r^{13}\end{aligned}$$

U2L4 – Raise a product to a power



You can use repeated multiplication to simplify an expression like $(4m)^3$.

$$(4m)^3$$

$$= 4m \cdot 4m \cdot 4m$$

$$= 4 \cdot 4 \cdot 4 \cdot m \cdot m \cdot m$$

$$= 4^3 m^3$$

$$= 64m^3$$

U2L4 – Raise a product to a power



take note

Property Raising a Product to a Power

Words To raise a product to a power, raise each factor to the power and multiply.

Algebra $(ab)^n = a^n b^n$, where $a \neq 0$, $b \neq 0$, and n is an integer

Example $(3x)^4 = 3^4 x^4 = 81x^4$

U2L4 – Raise a product to a power



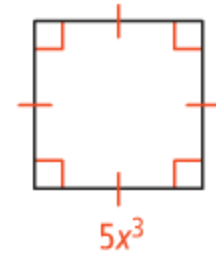
Multiple Choice Which expression represents the area of the square?

(A) $10x^3$

(B) $5x^6$

(C) $25x^5$

(D) $25x^6$



$$(5x^3)^2 = 5^2(x^3)^2$$

$$= 5^2x^6$$

$$= 25x^6$$

U2L4 – Simplifying an Expression with Products



What is the simplified form of $(n^5)^2 (4mn^{-2})^3$?

$$\begin{aligned}(n^5)^2(4mn^{-2})^3 &= (n^5)^2 4^3 m^3 (n^{-2})^3 \\ &= n^{10} 4^3 m^3 n^{-6} \\ &= 4^3 m^3 n^{10} n^{-6} \\ &= 4^3 m^3 n^{10 + (-6)} \\ &= 64m^3 n^4\end{aligned}$$

U2L4 – Simplifying an Expression with Products



What is the simplified form of $(6ab)^3(5a^{-3})^2$?

$$\begin{aligned}(6ab)^3(5a^{-3})^2 &= 6^3 a^3 b^3 \cdot 5^2 (a^{-3})^2 \\ &= 216a^3 b^3 \cdot 25a^{-6} \\ &= 216 \cdot 25a^{3+(-6)} b^3 \\ &= 5400a^{-3} b^3 \\ &= \frac{5400b^3}{a^3}\end{aligned}$$

U2L4 – Scientific Notation



What is the simplified form of $(4 \times 10^5)^3$?

$$\begin{aligned}(4 \times 10^5)^3 &= 4^3 \times (10^5)^3 \\ &= 64 \times 10^{15} \\ &= 6.4 \times 10^1 \times 10^{15} \\ &= 6.4 \times 10^{16}\end{aligned}$$

Questions?



- 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.