Homework Helpers

Grade 8
Module 1
G8-M1-Lesson 1: Exponential Notation

Use what you know about exponential notation to complete the expressions below.

1. \((\frac{-2}{2}) \times \cdots \times (\frac{-2}{2}) = (\frac{-2}{2})^{35}\)
   
   When the base (the number being repeatedly multiplied) is negative or fractional, I need to use parentheses. If I don’t, the number being multiplied won’t be clear. Some may think that the 2 or only the numerator of the fraction gets multiplied.

2. \((\frac{9}{2}) \times \cdots \times (\frac{9}{2}) = (\frac{9}{2})^{12}\)

3. \(8 \times \cdots \times 8 = 8^{56}\)
   
   The exponent states how many times the 8 is multiplied. It is multiplied 56 times so that is what is written in the blank.

4. Rewrite each number in exponential notation using 3 as the base.
   a. \(9 = 3 \times 3 = 3^2\)
   b. \(27 = 3 \times 3 \times 3 = 3^3\)
   c. \(81 = 3 \times 3 \times 3 \times 3 = 3^4\)
   d. \(243 = 3 \times 3 \times 3 \times 3 \times 3 = 3^5\)

   All I need to do is figure out how many times to multiply 3 in order to get the number I’m looking for in parts (a)–(d).

5. Write an expression with \((-2)\) as its base that will produce a negative product.
   One possible solution is shown below.
   \((-2)^3 = (-2) \times (-2) \times (-2) = -8\)

   To produce a negative product, I need to make sure the negative number is multiplied an odd number of times. Since the product of two negative numbers results in a positive product, multiplying one more time will result in a negative product.
G8-M1-Lesson 2: Multiplication of Numbers in Exponential Form

Let $x$, $a$, and $b$ be numbers and $b \neq 0$. Write each expression using the fewest number of bases possible.

1. $(-7)^3 \cdot (-7)^4 = (-7)^{3+4}$

2. $x^5 \cdot x^6 = x^{5+6}$

I have to be sure that the base of each term is the same if I intend to use the identity $x^m \cdot x^n = x^{m+n}$ for Problems 1–4.

3. $\left(\frac{2}{3}\right)^7 \cdot \left(\frac{2}{3}\right)^5 = \left(\frac{2}{3}\right)^{7+5}$

For this problem, I know that $8 = 2^3$, so I can transform the 8 to have a base of 2.

4. $2^4 \cdot 8^2 = 2^4 \cdot (2^3)^2 = 2^4 \cdot 2^6 = 2^{4+6}$

In this problem, I see two bases, $a$ and $b$. I can use the commutative property to reorder the $a$'s so that they are together and reorder the $b$'s so they are together.

5. $ab^3 \cdot a^4 b^5 = a \cdot a^4 \cdot b^3 \cdot b^5 = a^{1+4} \cdot b^{3+5}$

When the bases are the same for division problems, I can use the identity $x^m = x^{m-n}$.

6. $\frac{(-3)^5}{(-3)^2} = (-3)^{5-2}$

The number 27 is the same as $3 \times 3 \times 3$ or $3^3$.

7. $\frac{a^2 b^5}{b^2} = \frac{a^2 \cdot b^5}{b^2} = a^2 b^{5-2}$

8. $\frac{27}{3^2} = \frac{3^3}{3^2} = 3^{3-2}$
G8-M1-Lesson 3: Numbers in Exponential Form Raised to a Power

Lesson Notes

Students will be able to rewrite expressions involving powers to powers and products to powers. The following two identities will be used:

For any number $x$ and any positive integers $m$ and $n$, $(x^m)^n = x^{mn}$.

For any numbers $x$ and $y$ and positive integer $n$, $(xy)^n = x^ny^n$.

Show (prove) in detail why $(3 \cdot x \cdot y)^5 = 3^5 \cdot x^5 \cdot y^5$.

$(3 \cdot x \cdot y)^5 = (3 \cdot x \cdot y) \cdot (3 \cdot x \cdot y) \cdot (3 \cdot x \cdot y) \cdot (3 \cdot x \cdot y) \cdot (3 \cdot x \cdot y)$

$= (3 \cdot 3 \cdot 3 \cdot 3) \cdot (x \cdot x \cdot x \cdot x \cdot x) \cdot (y \cdot y \cdot y \cdot y)$

$= 3^5 \cdot x^5 \cdot y^5$

By the definition of exponential notation

By the commutative and associative properties

By the definition of exponential notation or by the first law of exponents

If I am going to use the first law of exponents to explain this part of my proof, I might want to show another line in my work that looks like this:

$3^{1+1+1+1+1} \cdot x^{1+1+1+1+1} \cdot y^{1+1+1+1+1}$. 

In the lesson today, we learned to use the identity to simplify these expressions. If the directions say show in detail, or prove, I know I need to use the identities and properties I knew before this lesson to show that the identity I learned today actually holds true.
G8-M1-Lesson 4: Numbers Raised to the Zeroth Power

Let $x, y, f, g$ be numbers ($x, y, f, g \neq 0$). Simplify each of the following expressions.

1. \[
\frac{x^6}{x^6} = x^{6-6} = x^0 = 1
\]
   In class, I know we defined a number raised to the zero power as 1.

2. \[
\frac{x^3y^4}{x^3y^4} = x^{3-3}y^{4-4} = x^0y^0 = 1 \cdot 1 = 1
\]

3. \[
4^5 \cdot \frac{1}{4^5} = \frac{4^5}{4^5} = 4^{5-5} = 4^0 = 1
\]
   I have to use the rule for multiplying fractions. I multiply the numerator times the numerator and the denominator times the denominator.

4. \[
3^7 \cdot \frac{1}{3^5} \cdot 3^5 \cdot \frac{1}{3^7} \cdot 3^2 \cdot \frac{1}{3^2} = \frac{3^7 \cdot 1 \cdot 3^5 \cdot 1 \cdot 3^2 \cdot 1}{3^5+5+2} = \frac{3^{7+5+2}}{3^{14}} = \frac{3^{14}}{3^{14}} = 3^{0} = 1
\]

5. \[
\frac{f^4g^3}{g^3f^4} = \frac{f^4 \cdot g^3}{f^4 \cdot g^3} = f^{4-4} \cdot g^{3-3} = f^0 g^0 = 1 \cdot 1 = 1
\]

6. \[
\left(8^2(2^6)\right)^0 = (8^2)^0 \cdot (2^6)^0 = 8^0 \cdot 2^0 = 1 \cdot 1 = 1
\]
   There is a power outside of the grouping symbol. That means I must use the third and second laws of exponents to simplify this expression.
G8-M1-Lesson 5: Negative Exponents and the Laws of Exponents

Lesson Notes

You will need your Equation Reference Sheet. The numbers in parentheses in the solutions below correlate to the reference sheet.

Examples

1. Compute: \((-2)^4 \cdot (-2)^3 \cdot (-2)^{-2} \cdot (-2)^0 \cdot (-2)^{-2}\)
   \[\begin{align*}
   &= (-2)^{4+3+(-2)+0+(-2)} \\
   &= (-2)^3 \\
   &= -8
   \end{align*}\]

   Negative exponents follow the same identities as positive exponents and exponents of zero.

2. Without using (10), show directly that \((y^{-1})^6 = y^{-6}\).
   \[
   (y^{-1})^6 = \left(\frac{1}{y^1}\right)^6 \quad By \ definition \ of \ negative \ exponents \ (9)
   \]
   \[
   = \frac{1^6}{y^6} \quad By \ \frac{y^m}{y^n} = \frac{x^m}{x^n} \ (14)
   \]
   \[
   = \frac{1}{y^6} \quad By \ definition \ of \ negative \ exponents \ (9)
   \]
   \[
   = y^{-6}
   \]

3. Without using (13), show directly that \(\frac{6^{-9}}{6^3} = 6^{-12}\).
   \[
   \frac{6^{-9}}{6^3} = 6^{-9} \cdot \frac{1}{6^3} \quad By \ product \ formula \ for \ complex \ fractions
   \]
   \[
   = \frac{1}{6^9} \cdot \frac{1}{6^3} \quad By \ definition \ of \ negative \ exponents \ (9)
   \]
   \[
   = \frac{1}{6^{9+3}} \quad By \ product \ formula \ for \ complex \ fractions
   \]
   \[
   = \frac{1}{6^{12}} \quad By \ x^m \cdot x^n = x^{m+n} \ (10)
   \]
   \[
   = 6^{-12} \quad By \ definition \ of \ negative \ exponents \ (9)
   \]
G8-M1-Lesson 6: Proofs of Laws of Exponents

Lesson Notes
You will need your Equation Reference Sheet. The numbers in parentheses in the solutions below correlate to the reference sheet.

Examples
1. A very contagious strain of bacteria was contracted by two people who recently travelled overseas. When the couple returned, they then infected three people. The next week, each of those three people infected three more people. This infection rate continues each week. By the end of 5 weeks, how many people would be infected?
   
   Week of Return  |   2 + 3
   Week 1          |   (3 × 3) + (2 + 3)
   Week 2          |   (3² × 3) + (3 × 3) + (2 + 3)
   Week 3          |   (3³ × 3) + (3² × 3) + (3 × 3) + (2 + 3)
   Week 4          |   (3⁴ × 3) + (3³ × 3) + (3² × 3) + (3 × 3) + (2 + 3)
   Week 5          |   (3⁵ × 3) + (3⁴ × 3) + (3³ × 3) + (3² × 3) + (3 × 3) + (2 + 3)

   The 3 people infected upon return each infect 3 people. Therefore, in week 1, there are 9 new infected people, or (3 × 3) = 3². Those 9 people infect 3 people each, or 27 new people. (3² × 3) = 3³

2. Show directly that $r^{-10} \cdot r^{-12} = r^{-22}$.
   
   $r^{-10} \cdot r^{-12} = \frac{1}{r^{10}} \cdot \frac{1}{r^{12}}$
   
   By definition of negative exponents (9)
   
   $= \frac{1}{r^{10+12}}$
   
   By product formula for complex fractions
   
   $= \frac{1}{r^{22}}$
   
   By $x^m \cdot x^n = x^{m+n}$ for whole numbers $m$ and $n$ (6)
   
   $= r^{-22}$
   
   By definition of negative exponents (9)
G8-M1-Lesson 7: Magnitude

1. What is the smallest power of 10 that would exceed 6,234,579? 
   
   \[ M = 6,234,579 < 9,999,999 < 10,000,000 = 10^7 \]
   
   The smallest power of 10 that would exceed 6,234,579 is \( 10^7 \).

2. Which number is equivalent to 0.001: \( 10^3 \) or \( 10^{-3} \)? How do you know?
   
   \( 10^{-3} \) is equivalent to 0.001. Positive powers of 10 create large numbers, and negative powers of 10 create numbers smaller than one. The number \( 10^{-3} \) is equal to the fraction \( \frac{1}{10^3} \), which is the same as \( \frac{1}{1000} \) and 0.001. Since 0.001 is a small number, its power of 10 should be negative.

3. Jessica said that 0.0001 is bigger than 0.1 because the first number has more digits to the right of the decimal point. Is Jessica correct? Explain your thinking using negative powers of 10 and the number line.
   
   \( 0.0001 = \frac{1}{10000} = 10^{-4} \) and \( 0.1 = \frac{1}{10} = 10^{-1} \). On a number line \( 10^{-1} \) is closer to 0 than \( 10^{-4} \); therefore, \( 10^{-1} \) is larger than \( 10^{-4} \).

4. Order the following numbers from least to greatest:
   
   \[ 10^2 \quad 10^{-4} \quad 10^0 \quad 10^{-3} \]
   
   \[ 10^{-4} < 10^{-3} < 10^0 < 10^2 \]

   Since all of the bases are the same, I just need to make sure I have the exponents in order from least to greatest.
G8-M1-Lesson 8: Estimating Quantities

1. A 250 gigabyte hard drive has a total of $250,000,000,000$ bytes of available storage space. A 3.5 inch double-sided floppy disk widely used in the 1980's could hold about $8 \times 10^5$ bytes. How many double-sided floppy disks would it take to fill the 250 gigabyte hard drive?

$$250,000,000,000 \approx 3 \times 10^{11}$$

$$\frac{3 \times 10^{11}}{8 \times 10^5} = \frac{3}{8} \times \frac{10^{11}}{10^5}$$

$$= 0.375 \times 10^{11-5}$$

$$= 0.375 \times 10^6$$

$$= 375,000$$

It would take 375,000 floppy disks to fill the 250 gigabyte hard drive.

2. A calculation of the operation $2,000,000 \times 3,000,000,000,000$ gives an answer of $6 \times 10^{15}$. What does the answer of $6 \times 10^{15}$ on the screen of the calculator mean? Explain how you know.

The answer means $6 \times 10^{15}$. This is known because

$$(2 \times 10^6) \times (3 \times 10^9) = (2 \times 3) \times (10^6 \times 10^9)$$

$$= 6 \times 10^{6+9}$$

$$= 6 \times 10^{15}$$

3. An estimate of the number of neurons in the brain of an average rat is $2 \times 10^8$. A cat has approximately $8 \times 10^8$ neurons. Which animal has a greater number of neurons? By how much?

$$8 \times 10^8 > 2 \times 10^8$$

$$\frac{8 \times 10^8}{2 \times 10^8} = \frac{8}{2} \times \frac{10^8}{10^8}$$

$$= 4 \times 10^{8-8}$$

$$= 4 \times 1$$

$$= 4$$

The cat has 4 times as many neurons as the rat.
G8-M1-Lesson 9: Scientific Notation

Definitions

A positive decimal is said to be written in scientific notation if it is expressed as a product \( d \times 10^n \), where \( d \) is a decimal greater than or equal to 1 and less than 10 and \( n \) is an integer.

The integer \( n \) is called the order of magnitude of the decimal \( d \times 10^n \).

Examples

1. Write the number 32,000,000,000 in scientific notation.
   \[ 32,000,000,000 = 3.2 \times 10^{10} \]

   I will place the decimal between the 3 and 2 to achieve a value that is greater than 1 and smaller than 10. I will need to multiply 3.2 by \( 10^{10} \) because I need to write an equivalent form of 32,000,000,000.

2. What is the sum of \( 5.4 \times 10^7 \) and \( 8.24 \times 10^9 \)?
   \[ (5.4 \times 10^7) + (8.24 \times 10^9) \]
   \[ = (5.4 \times 10^7) + (8.24 \times 10^2 \times 10^7) \]
   \[ = (5.4 \times 10^7) + (8.24 \times 10^{2+7}) \]
   \[ = (5.4 \times 10^7) + (824 \times 10^7) \]
   \[ = (5.4 + 824) \times 10^7 \]
   \[ = 829.4 \times 10^7 \]
   \[ = (8.294 \times 10^2) \times 10^7 \]
   \[ = 8.294 \times 10^9 \]

   By first law of exponents
   By associative property of multiplication
   By distributive property
   I know that "\( \times 10^2 \)" multiplies 8.24 by 100.

   To add terms, they need to be like terms. I know that means that the magnitudes, or the powers, need to be equal.

   The last step is to write this in scientific notation.
3. The Lector Company recently posted its quarterly earnings for 2014.

Quarter 1: $2.65 \times 10^6$ dollars
Quarter 2: $1.6 \times 10^8$ dollars
Quarter 3: $6.1 \times 10^6$ dollars
Quarter 4: $2.25 \times 10^8$ dollars

What is the average earnings for all four quarters? Write your answer in scientific notation.

\[
\text{Average Distance} = \frac{(2.65 \times 10^6) + (1.6 \times 10^8) + (6.1 \times 10^6) + (2.25 \times 10^8)}{4}
\]
\[
= \frac{(2.65 \times 10^6) + (1.6 \times 10^2 \times 10^6) + (6.1 \times 10^6) + (2.25 \times 10^2 \times 10^6)}{4}
\]
\[
= \frac{(2.65 \times 10^6) + (160 \times 10^6) + (6.1 \times 10^6) + (225 \times 10^6)}{4}
\]
\[
= \frac{(2.65 + 160 + 6.1 + 225) \times 10^6}{4}
\]
\[
= \frac{393.75 \times 10^6}{4}
\]
\[
= \frac{393.75}{4} \times 10^6
\]
\[
= 98.4375 \times 10^6
\]
\[
= 9.84375 \times 10^7
\]

The average earnings in 2014 for the Lector Company is $9.84375 \times 10^7$ dollars.
G8-M1-Lesson 10: Operations with Numbers in Scientific Notation

1. A lightning bolt produces $1.1 \times 10^{10}$ watts of energy in about 1 second. How much energy would that bolt of lightning produce if it lasted for 24 hours? (Note: 24 hours is 86,400 seconds.)

   \[
   (1.1 \times 10^{10}) \times 86,400 \\
   = (1.1 \times 10^{10}) \times (8.64 \times 10^{4}) \\
   = (1.1 \times 8.64) \times (10^{10} \times 10^{4}) \\
   = 9.504 \times 10^{14} \\
   = 9.504 \times 10^{14}
   \]

   *A lightning bolt would produce $9.504 \times 10^{14}$ watts of energy if it lasted 24 hours.*

2. There are about 7,000,000,000 people in the world. In Australia, there is a population of about $2.306 \times 10^7$ people. What is the difference between the world’s and Australia’s populations?

   \[
   7,000,000,000 - 2.306 \times 10^7 \\
   = (7 \times 10^9) - (2.306 \times 10^7) \\
   = (7 \times 10^9) - (2.306 \times 10^7) \\
   = (700 \times 10^7) - (2.306 \times 10^7) \\
   = (700 - 2.306) \times 10^7 \\
   = 697.694 \times 10^7 \\
   = 6.97694 \times 10^9
   \]

   *The difference between the world’s and Australia’s populations is about $6.97694 \times 10^9$.***
3. The average human adult body has about $5 \times 10^{13}$ cells. A newborn baby's body contains approximately $2.5 \times 10^{12}$ cells.
   
   a. Find their combined cellular total.
      
      \[
      \text{Combined Cells} = (5 \times 10^{13}) + (2.5 \times 10^{12})
      = (5 \times 10^1 \times 10^{12}) + (2.5 \times 10^{12})
      = (50 \times 10^{12}) + (2.5 \times 10^{12})
      = (50 + 2.5) \times 10^{12}
      = 52.5 \times 10^{12}
      = 5.25 \times 10^{13}
      \]
      
      The combined cellular total is $5.25 \times 10^{13}$ cells.

   b. Given that the number of cells in the average elephant is approximately $1.5 \times 10^{27}$, how many human adult and baby combined cells would it take to equal the number of cells of an elephant?
      
      \[
      \frac{1.5 \times 10^{27}}{5.25 \times 10^{13}} = \frac{1.5}{5.25} \times \frac{10^{27}}{10^{13}}
      \approx 0.286 \times 10^{27-13}
      = 0.286 \times 10^{14}
      = 2.86 \times 10^{13}
      \]
      
      It would take $2.86 \times 10^{13}$ adult and baby combined cells to equal the number of cells of an elephant.
G8-M1-Lesson 11: Efficacy of Scientific Notation

1. Which of the two numbers below is greater? Explain how you know.
   \[ 8.25 \times 10^{15} \text{ and } 8.2 \times 10^{20} \]
   The number \( 8.2 \times 10^{20} \) is greater. When comparing each numbers order of magnitude, it is obvious that \( 20 > 15 \); therefore, \( 8.2 \times 10^{20} > 8.25 \times 10^{15} \).

2. About how many times greater is \( 8.2 \times 10^{20} \) compared to \( 8.25 \times 10^{15} \)?
   \[
   \frac{8.2 \times 10^{20}}{8.25 \times 10^{15}} = \frac{8.2}{8.25} \times \frac{10^{20}}{10^{15}}
   = 0.993939... \times 10^{20-15}
   \approx 0.99 \times 10^5
   = 99,000
   
   8.2 \times 10^{20} \text{ is about } 99,000 \text{ times greater than } 8.25 \times 10^{15}.
   
3. Suppose the geographic area of Los Angeles County is 4,751 sq. mi. If the state of California has area \( 1.637 \times 10^5 \) square miles, that means that it would take approximately 35 Los Angeles Counties to make up the state of California. As of 2013, the population of Los Angeles County was \( 1 \times 10^7 \). If the population were proportional to area, what would be the population of the state of California? Write your answer in scientific notation.
   \[
   1 \times 10^7 \times 35 = 35 \times 10^7
   = (3.5 \times 10) \times 10^7
   = 3.5 \times (10 \times 10^7)
   = 3.5 \times 10^8
   
   \text{The population of California is } 3.5 \times 10^8.
   
   \text{Since it takes about 35 Los Angeles Counties to make up the state of California, then what I need to do is multiply the population of Los Angeles County by 35.}
   
   \text{The expression } 35 \times 10^7 \text{ is not in scientific notation because 35 is too large (it has to be less than 10). I can rewrite 35 as } 3.5 \times 10 \text{ because } 35 = 3.5 \times 10.$
G8-M1-Lesson 12: Choice of Unit

1. What is the average of the following two numbers?
   \[ 3.257 \times 10^3 \text{ and } 3.1 \times 10^3 \]
   The average is
   \[
   \frac{3.257 \times 10^3 + 3.1 \times 10^3}{2} = \frac{(3.257 + 3.1) \times 10^3}{2}
   = \frac{6.357 \times 10^3}{2}
   = 3.1785 \times 10^3
   \]
   To find the average, I need to add the two numbers and then divide by 2. Since the numbers are raised to the same power of 10, I really only need to add 3.257 and 3.1.

2. Assume you are given the data below and asked to decide on a new unit in order to make comparisons and discussions of the data easier.

<table>
<thead>
<tr>
<th>Data</th>
<th>New Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.9 \times 10^{15}</td>
<td>3.75 \times 10^{19}</td>
</tr>
<tr>
<td>9.26 \times 10^{16}</td>
<td>7.02 \times 10^{19}</td>
</tr>
<tr>
<td>4.56 \times 10^{17}</td>
<td>2.4 \times 10^{3}</td>
</tr>
</tbody>
</table>

I need to examine the exponents to see which is most common or which exponent most numbers would be close to. Since I'm deciding the unit, I just need to make sure my choice is reasonable.

a. What new unit would you select? Name it and express it using a power of 10.
   I would choose to use \(10^{18}\) as my unit. I'm ignoring the number with \(10^3\) because it is so much smaller than the other numbers. Most of the other numbers are close to \(10^{18}\). I will name my unit Q.

b. Rewrite at least two pieces of data using the new unit.
   \[
   \frac{1.9 \times 10^{15}}{10^{18}} = 1.9 \times 10^{15-18} = 1.9 \times 10^{-3} = 0.0019
   \]
   1.9 \times 10^{15} rewritten in the new unit is 0.0019Q.
   \[
   \frac{7.02 \times 10^{19}}{10^{18}} = 7.02 \times 10^{19-18} = 7.02 \times 10^{1} = 70.2
   \]
   7.02 \times 10^{19} rewritten in the new unit is 70.2Q.

To rewrite the data, I will take the original number and divide it by the value of my unit, Q, which is \(10^{18}\).
G8-M1-Lesson 13: Comparison of Numbers Written in Scientific Notation and Interpreting Scientific Notation Using Technology

1. If \( a \times 10^n < b \times 10^n \), what are some possible values for \( a \) and \( b \)? Explain how you know. 

   *When two numbers are each raised to the same power of 10, in this case the power of \( n \), then you only need to look at the numbers \( a \) and \( b \) when comparing the values (Inequality \( A \) guarantees this). Since we know that \( a \times 10^n < b \times 10^n \), then we also know that \( a < b \). Then a possible value for \( a \) is 5 and a possible value for \( b \) is 6 because 5 < 6.*

2. Assume that \( A \times 10^{-5} \) is not written in scientific notation and \( A \) is positive. That means that \( A \) is greater than zero but not necessarily less than 10. Is it possible to find a number \( A \) so that \( A \times 10^{-5} < 1.1 \times 10^5 \) is not true? If so, what number could \( A \) be?

   *Since \( 10^{-5} = 0.00001 \) and \( 1.1 \times 10^5 = 110000 \), then a number for \( A \) bigger than \( 1.1 \times 10^{10} \) would show that \( A \times 10^{-5} < 1.1 \times 10^5 \) is not true.*

   *If \( A = 1.1 \times 10^{10} \), then by substitution
     \[
     A \times 10^{-5} = (1.1 \times 10^{10}) \times 10^{-5} = 1.1 \times 10^{10+(-5)} = 1.1 \times 10^5.
     \]

   *If \( A = 1.1 \times 10^{10} \), then \( A \times 10^{-5} = 1.1 \times 10^5 \). Therefore \( A \) can be any number as long as \( A > 1.1 \times 10^{10} \).*

3. Which of the following two numbers is greater?
\[
2.68941 \times 10^{27} \text{ or } 2.68295 \times 10^{27}
\]

   *Since \( 2.68941 > 2.68295 \), then \( 2.68941 \times 10^{27} > 2.68295 \times 10^{27} \).*

   *Since both numbers are raised to the same power (Inequality \( A \) again), all I need to compare is 2.68941 and 2.68295.*