Exponent Properties Thin Slicing Lesson

INTRO (TO INFORMALLY WORK THROUGH WITH THE STUDENTS HUDDLED AROUND ME)

$x^2 \cdot x^5 =$

1. $(x \cdot x) \cdot (x \cdot x \cdot x \cdot x \cdot x) =$
   $(x \cdot x \cdot x \cdot x \cdot x \cdot x \cdot x) = x^7$

2. $\frac{x^5}{x^3} = \frac{x \cdot x \cdot x \cdot x \cdot x}{x \cdot x} =$
   $\frac{\cancel{x} \cdot \cancel{x} \cdot x \cdot x \cdot x}{\cancel{x} \cdot \cancel{x}} = x^3$

3. $\left(x^2\right)^5 = x^2 \cdot x^2 \cdot x^2 \cdot x^2 \cdot x^2 =$
   $(x \cdot x) \cdot (x \cdot x) \cdot (x \cdot x) \cdot (x \cdot x) \cdot (x \cdot x) = x^{10}$

4. $x^0 = 1$ (anything with a zero exponent is ALWAYS equal to 1)

TASK #1

1. $a^{17} \cdot a^5 =$
2. $y^6 \cdot y =$
3. $b^8 \cdot b^{-4}$
4. $x^2 y \cdot x^9 y^6$
5. $a^0 b^2 c^8 \cdot a^6 b^{-1} c^{-12} =$

6. What pattern do you notice when MULTIPYING terms with exponents

TASK #2

1. $\frac{a^{17}}{a^5} =$
2. $\frac{y^6}{y} =$
3. $\frac{b^8}{b^{-4}} =$
4. $\frac{x^2 y}{x^9 y^6} =$
5. $\frac{a^0 b^2 c^8}{a^6 b^{-1} c^{-12}} =$

6. What pattern do you notice when DIVIDING terms with exponents

TASK #3

1. $\left(x^3\right)^4$
2. $\left(5^2\right)^3$
3. $\left(a^2 b^7\right)^3$
4. $\left(3xy^4\right)^2$

5. What pattern do you notice when an exponent is raised by another exponent?

TASK #4

1. $5^{-2} =$
2. $x^{-3} y^5 =$
3. $\frac{a^2 b^{-3}}{c^{-5}} =$
4. $\left(\frac{15x^4 y^3 z^8}{5x^2 y^{-6} z^0}\right)^{-3} =$

CHALLENGE TASK

Prove that 3^{2n+3} is equivalent to $27 \cdot (9)^n$

Exponent Properties – Notes to My Future Forgetful Self

Guided Example:

$$\left(\frac{x^3y^6z^{-5}}{x^4y^{-2}z}\right)^2 = \left(\frac{y^6 \cdot y^{\square}}{x^{\square} z \cdot z^{\square}}\right)^2$$

$$= \left(\frac{y^{\square}}{x^{\square} \cdot z^{\square}}\right)^2 = \frac{y^{\square}}{x^{\square} \cdot z^{\square}}$$

Example 1:

$$\left(\frac{24a^3b^{-5}}{8a^{-2}b^2}\right)^3 =$$

Things to Remember:

Example 2:

Create your own example and solve it.

Exponent Properties – Notes to My Future Forgetful Self

Guided Example:

$$\left(\frac{x^3y^6z^{-5}}{x^4y^{-2}z}\right)^2 = \left(\frac{y^6 \cdot y^{\square}}{x^{\square} z \cdot z^{\square}}\right)^2$$

$$= \left(\frac{y^{\square}}{x^{\square} \cdot z^{\square}}\right)^2 = \frac{y^{\square}}{x^{\square} \cdot z^{\square}}$$

Example 1:

$$\left(\frac{24a^3b^{-5}}{8a^{-2}b^2}\right)^3 =$$

Things to Remember:

Example 2:

Create your own example and solve it.