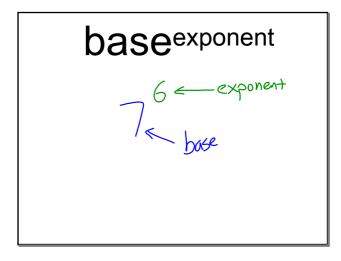
Do Now:		
1.) 12 - 7		
2.) 4 + 7		
3.) 3 ²		
4.) 3 ³		

Expression	Expanded Expression	Number of Factors	Product as a Power
1 2>* 1 4	7.7.9.9.9.9	6	26
3 ³ * 3 ¹	3.3.3.3	4	3
72 * 73	7.7.7.7.7	15	75

- 1. How are the exponents in the first and last column related? Add expurents
- 2. Write the product a¹³ * a²¹ as a single power.

7.NS 8.EE SWBAT multiply and divide expressions with exponents. SWBAT understand patterns. Calculators: No



Product of Powers Property To multiply exponents with the same base add their exponents. $a^{m} * a^{n} = a^{m+n}$ Same Same Same

Tell whether the product of powers can be used to simplify the expression.

145.148 = 145+1 = (1413)

No

0) f! f?=f 14

4. f¹* f⁷

Simplify:

$$x^4 * x^7 = \checkmark^{4+7} = \checkmark^{1}$$

Simplify:

$$a^5 * a^8 = (a^{13})$$

Simplify. Write your answer as a power.

$$5^{3}b^{2} * 5^{2}b^{4} = (5^{3} \cdot 5^{3})(5^{3} \cdot 5^{4})$$

$$= (5^{5} \cdot 5^{6})$$

Simplify.

$$5^{3}b^{2} * 5^{2}b^{4} = 5^{5}b^{6}$$

$$= (3_{1})25 b^{6}$$

$$= (3_{1})25 b^{6}$$

$$= (3_{1})25 \times \frac{5}{3}$$

$$3_{1})25 \times \frac{5}{3}$$

Simplify. Write your answer as a power.

 $3^2x^2 * 3x^3$

Simplify.

 $3^2x^2 * 3x^3$

How can we divide exponents?

$$\frac{a^5}{a^3} = \frac{14 \cdot \cancel{3} \cdot \cancel{3} \cdot \cancel{3}}{\cancel{1} \cdot \cancel{1} \cdot \cancel{3}} = \frac{\cancel{3} \cdot \cancel{3}}{\cancel{1}} = \cancel{3}$$

$$\frac{1}{\cancel{1}} \cdot \cancel{1} \cdot \cancel{1} \cdot \cancel{3} \cdot \cancel{3} = \cancel{3}$$
Subtract exponents

Quotient of Powers Property

To divide powers with the same base, subtract their exponents. $\underline{\underline{q}^m} = \underline{\underline{q}^{m-n}}$

Simplify. Write your answer as a power.

a.) $\frac{7^6}{7^2} = 76^{-3} = 74$ b.) $\frac{4x^{85}}{10x^{3}} = \frac{4x^{3}}{10^{10}} = \frac{4x^{3}}{10^{10}} = \frac{4x^{5}}{10^{10}} = \frac{4x^{5}}{10^{10}} = \frac{2x^{5}}{5}$ $= \frac{2x^{5}}{5}$

Simplify. Write your answer as a power.

a.)
$$\frac{5^6}{5^7} = \frac{767 - 8060m}{5^{6-1}} = \frac{5^5}{5^5}$$

b.)
$$\frac{7c^9}{21c^6} = \frac{1 \cdot c^3}{3} = \frac{c^3}{3} \frac{\frac{7:7}{7:7} \cdot \frac{1}{3}}{\frac{21:7}{3}}$$

Simplify:
$$(3.1)(m^5.m^3) = 3m^{5+3} = 3m^7$$

$$3m^5 * m^2$$

$$= 6m^4$$

$$= \frac{3m^7 * m^7 + m^3}{6m^4} = \frac{3m^7}{6m^3} = \frac{3m^7}{6m^3} = \frac{3m^7}{6m^3} = \frac{1}{3}$$

Simplify:

a.)
$$\frac{5x^4 * 6x^6}{10x^5}$$

b.)
$$\frac{f^3g^4}{f\varrho^2}$$

Evaluate the expression.

Evaluate the expression.

$$\left(\frac{3^8}{3^6}\right)^3$$

Evaluate the expression.

2.
$$\left(\frac{2^9}{2^8}\right)^5$$

Exit Pass 4.6

Describe and correct the error in simplifying $2^5 * 2^4$.

"Don't blame the sea if you cannot catch a fish."

Working individually or with a partner, complete the workbook.

Workbook pg.



4.6 MC3.notebook November 18, 2015

Reflections of Today's Lesson 4.6 Rules of Exponents

7.NS 8.EE

- \bullet SWBAT multiply and divide expressions with exponents.
- SWBAT understand patterns.
- Calculators: No

<u>Homework</u>

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