3. $c^{-1}d^{3}x^{-4} = \dfrac{d^3}{cx^4}$

4. $\dfrac{x^{-3}y^{-4}}{-8z^5} = \dfrac{1}{-8z^5x^3y^4}$

5. $\dfrac{-10c^{-1}}{5^{-1}e^{-3}} = \dfrac{-10 \cdot 5^1 e^3}{c^1} = -\dfrac{50e^3}{c}$

6. $\dfrac{6^{-2}h^{-4}j^{0}m^{-2}}{9^{-1}n^{-3}q^{5}} = \dfrac{q^1n^3}{6^2h^4m^2q^5}$

$\dfrac{qn^3}{36h^4m^2q^5}$

$\dfrac{1n^3}{4h^4m^2q^5}$

Rewrite each problem so that everything has a Negative exponent.

1. $\frac{m^2 g^5}{c^7}$

2. $8a^6 b^{-4}$

3. $\frac{x^{-3} y^7 z}{m^3 h^{-5}}$

Is the value of each expression POSITIVE or NEGATIVE? Write POS or NEG

1. -5^2

2. $(-4)^8$

3. $-(-6)^4$

4. -2^3

5. $(-3)^5$

6. $-(-7)^9$

7. $(-6)^{-7}$

8. $(-10)^{-6}$

Properties of Exponents in Chapter 8

- Zero and Negative Exponents $5b^{-3}c^0$ $\frac{5}{b^3}$
- Multiplying powers with the same base $a^4 a^7 a = a^{12}$ * add exponents
- Raising a power to a power $(m^5)^8$ $m^{5\cdot 8} = m^{40}$ * multiply exponents
- Raising a product to a power $(5a^3b^4)^2$ * multiply all exp. $\rightarrow 25a^6b^{14}$
- Dividing powers with the same base $\frac{n^8}{n^2}$ * subt. exp $\rightarrow n^6$
- Raising a quotient to a power $\left(\frac{x^3}{y^7}\right)^4$ * multiply $\frac{x^{12}}{y^{28}}$

Examples of some of the rules of exponents we'll see in this Chapter

Simplify each.

1. $a^3 \cdot a^5 =$ a^8

2. $m^6 \cdot m^4 \cdot m =$ m^{11}

3. $(3x^5y^4)(7x^{-3}y) =$ $21x^2y^5$

Simplify each.

4. $\frac{g^6}{g^2} = g^4$

5. $\frac{b^4}{b^5} = \frac{1}{b^1}$ b^{-1}

6. $\frac{12m^{24}}{4m^6} = 3m^{18}$

Simplify each.

7. $(p^4)^3 = p^{12}$

8. $(3k^5)^2 = 9k^{10}$

Write each number as a power of 10 using positive exponents.

1. $10,000$ 10^4 10

2. $10,000,000$ 10^7

Sec 8-2: Scientific Notation

Scientific Notation:

A number greater than or equal to 1 but less than 10
times
a power of 10.

It's a compact way to write really big or really small numbers

2.5

Scientific Notation

$25{,}000 = 2.5 \times 10^4$

Standard Notation
or
Decimal Notation

Examples of numbers written in Scientific Notation.

0.000833

5.209×10^7 0.000 8.33×10^{-4}

52,090,000

Is each number written in scientific notation?

1. 63.91×10^{5} ≥ 10 NO

2. 1.0031×10^{-3} yes

3. 0.98974×10^{-6} < 1 NO.

Does each scientific notation number represent a "big" number or a "small" number?

1. 7.908×10^{-5} small

2. 3.74×10^{2} 374 big

3. 2.0027×10^{8} large #

4. 9.998×10^{-3} small

When in Scientific Notation:

A negative exponent means a SMALL number

A positive exponent means a BIG number

Write each number in Scientific Notation:

1. 82,500,000 8.25×10^{7}

2. 0.000056 5.6×10^{-5}

Write each number in Standard Notation
(also known as Decimal Notation)

1. 4.33×10^{-4} 0.000433

2. 5.0734×10^{7} 50,734,000

Each number is NOT in Scientific Notation. Rewrite it so that it IS in Scientific Notation.

1. 223×10^{5} 2.23×10^{7}

2. 4561×10^{-8} 4.561×10^{-5}

3. 0.00819×10^{-3}

8.19×10^{-6}

4. 0.0755×10^{4}

7.55×10^{2}

You can now finish Hwk #10

Pages 402-403

Problems 1-3, 10-12, 16-18

IXL #5 - V.1 & V.3 due today at 4pm!