8-5 Division Properties of Exponents

First, let's review some dividing and reducing

$$\frac{5}{20} = \qquad \frac{15}{5} = \qquad \frac{-21}{14} = \qquad \frac{2xy}{5x} = \qquad \frac{3a}{12ac} =$$

What about dividing exponents?

Helpful Hints to Remember

$$\frac{x^6}{x^2} =$$

$$\frac{h^4}{h^7} =$$

Let's try a few:

1. $\dfrac{x^9}{x^4} =$

2. $\dfrac{3x^2 y}{24xy^2} =$

3. $\dfrac{10a^2 b}{-5a^4 b^3} =$

What if we need to divide negative powers? We need to do some rearranging first!!

Take a look at this example.

$$\frac{3x^{-9}}{6x^{-11}} =$$

1. $\dfrac{-4x^9}{16x^{-4}} =$

2. $\dfrac{a^3 b^2 c^{-4}}{a^{-2} b^5 c^{-9}} =$

So now let's put all of our skills together. Take a look at this completed example.

Helpful Hints to Remember:

$$\left(\frac{3a^2}{2b}\right)^3 = \left(\frac{3a^2}{2b}\right)\left(\frac{3a^2}{2b}\right)\left(\frac{3a^2}{2b}\right) = \frac{2\ a^6}{8b^3}$$

Mixed Review:

1.
$$\left(\frac{r^4 t^3}{r^2 t}\right)^4 =$$

2.
$$\left(\frac{5k^2}{2k^{-2}}\right)^2 =$$

3.
$$\frac{(2a^7)(3a^2)}{6a^3} =$$

3.
$$\frac{27k^5 m^8}{(4k^3)(9m^2)} =$$

Practice 8-5

Name _____

1) $\dfrac{40\,x^4\,yz^2}{-8\,x^2\,y^4\,z^2}$

2) $\dfrac{3a^2b^7}{9ab^2}$

3) $\left(\dfrac{a^3k^2}{k^6}\right)^3$

4) $\dfrac{60\,m^2\,n^3}{6m^8\,n^9}$

5) $\dfrac{-4b^7a^3d^{11}}{2b^4a^3d^2}$