Name:_____ Date:_____ Period:_____

Notes: Simplify Expressions with Negative Exponents

Flip the fraction into the _____ and make the _____ positive!

All previous exponent rules still apply; you just have to remember your _____ _____!

$$a^{-m} = \frac{1}{a^m}$$

WITH NUMBERS

$2^{-2} = \frac{1}{2^2} =$

WITH VARIABLES

$x^{-4} =$

Simplify each expression. Rewrite using only positive exponents.

1. x^{-8}

2. $5y^{-6}$

3. $\frac{1}{m^{-2}}$

4. $\frac{4x^{-3}}{3y^{-7}}$

5. $\frac{3}{8}x^{-9}y^{2}z^{-4}$

6. $\frac{3^{-2}x^{-9}}{2^{-2}y^{-5}z^{8}}$

PUT IT ALL TOGETHER!

7. $\frac{3^{-1}m^{-5}n^{5}}{2^{-2}m^{7}n^{6}} \cdot 3m^{-4}n^{6}$

8. $\frac{2x^{5}y^{6}}{16x^{8}y^{2}} \cdot (2xy)^{3}$

9. $\left(\frac{-4a^{7}b^{6}}{6a^{8}b^{4}}\right)^{-2} \cdot \left(\frac{1}{2}a^{4}b\right)^{-2} + \left(-9a^{-6}b^{-6}\right)$

10. $\frac{(2x^{-3}y^{4})^{3}}{4x^{3}y}\left(2x^{2}y^{-2}\right)^{5} - 4x^{-2}y$

Name:_____ Date:_____Period:_____

A.___ Simplify Expressions with Negative Exponents

Simplify each expression. Rewrite using only positive exponents.

1. x^{-2}

2. b^{-1}

3. $7x^{-5}$

4. $6x^{-5}y^{-3}z^{2}$

5. $\frac{1}{a^{-8}}$

6. $\frac{b^{-3}c^{4}}{a^{-6}}$

7. $\frac{5x^{-5}z^{4}}{8y^{-9}}$

8. $\frac{3}{4}x^{-3}y^{-9}z^{-4}$

9. $\frac{5^{-2}x^{-9}}{4^{-2}y^{5}z^{-2}}$

10. $\frac{(-4)^{2}m^{4}n^{-7}}{(-2)^{-2}q^{5}r^{-3}}$

11. $\frac{(-3)^{2}b^{-3}c^{-5}\,d^{8}}{-3^{2}a^{-2}}$

12. $\frac{6^{-2}x^{-9}y^{7}}{3^{2}w^{4}z^{-3}}$

PUT IT ALL TOGETHER!

13. $\frac{6x^{-7}y^{4}}{3x^{-8}y^{12}} \cdot 4x^{-3}yz$

14. $\frac{3x^{17}y^{6}}{5x^{-4}y^{10}} \cdot (3x^{-1}y)^{2}$

15. $\left(\frac{3a^{3}b^{4}}{-9a^{3}b^{6}}\right)^{-2}(a^{-2})^{4} + 4a^{-8}b^{4}$

16. $\frac{4x^{-2}y^{2}}{2^{-3}x^{2}y^{7}} \cdot (x^{-4}y^{-5})^{-3} - 12x^{8}y^{10}$