Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Power Propertied of Exponents

Simplify the following expressions without negative exponents.

1) $\left(2^{5}\right)^{3}$ (2) $\left(3x\right)^{4}$ (3) $\left(\frac{4}{5}\right)^{2}$

4) $\left(6x^{3}\right)^{3}$ (5) $\left(\frac{2a^{3}}{b^{5}}\right)^{7}$ (6) $\left(4x^{8}\right)^{-2}$

7) $\left(\frac{1}{7^{2}h^{9}}\right)^{-1}$ (8) $\left(\frac{2x^{4}y^{2}}{5x^{-3}y^{5}}\right)^{3}$ (9) $\left(\frac{9m^{5}n^{-7}}{27m^{6}n^{5}}\right)^{-4}$

10) $\frac{\left(4x\right)^{2}\left(5y\right)^{-3}}{\left(2x^{3}y^{5}\right)^{2}}$ (11) $\left(5r^{6}\right)^{4}\left(\frac{1}{3}r^{-2}\right)^{5}$ (12) $\left(4t^{-1}s\right)^{3}\left(2^{-1}ts^{-2}\right)^{-3}$

13) $\frac{5g^{6}}{15g^{0}h^{-1}}∙\left(\frac{h}{9g^{15}j^{7}}\right)^{-3}$ (14) $\frac{6a^{2}b^{4}}{18a^{-3}b^{4}}∙\left(\frac{8b^{12}}{40a^{-8}b^{5}}\right)^{2}$

15) $\frac{2\left(x^{4}y^{4}\right)^{0}}{2^{4}x^{3}y^{5}z}÷\frac{8z^{10}}{32x^{-2}y^{5}}$ (16) $\frac{5g^{6}}{15g^{0}h^{-1}}÷\left(\frac{h}{g^{15}j^{7}}\right)^{-3}$

17) Rewrite $4^{3}$ as a power of 2.

18) Rewrite $9^{2}$ as a power of 3.

19) Solve the equation for x. $3^{2}∙3^{x}=3^{8}$

20) Solve the equation for x. $\left(2^{x}\right)^{4}=4^{8}$