

Name Answer Key  
Notes: Exponents Day #5, Negative Exponents

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

Rewrite without negative exponents.

1)  $8^{-1}$   $\frac{1}{8}$

2)  $3^{-2} = \frac{1}{3^2} = \frac{1}{9}$

3)  $y^{-7}$   $\frac{1}{y^7}$

4)  $w^{-12}$   $\frac{1}{w^{12}}$

5)  $(3x)^{-1}$   $\frac{1}{3x}$

6)  $(5a)^{-2}$   $\frac{1}{(5a)^2} = \frac{1}{25a^2}$

7)  $4c^{-3}$   $\frac{4}{c^3}$

8)  $2pr^{-5}$   $\frac{2p}{r^5}$

9)  $-6q^{-2}$   $-\frac{6}{q^2}$

10)  $-18a^2b^{-3}$   $-\frac{18a^2}{b^3}$

11)  $\frac{1}{x^{-2}}$   $x^2$

12)  $\frac{1}{z^{-3}}$   $z^3$

13)  $-\frac{2x}{a^{-4}}$   $-2xa^4$

14)  $\frac{3b}{-5c^{-1}}$   $\frac{3bc}{-5}$

15)  $\frac{a^{-1}}{b^{-1}}$   $\frac{b}{a}$

16)  $\frac{2n^{-3}}{3p^{-3}}$   $\frac{2p^3}{3n^3}$

17)  $-\frac{xy^{-1}}{9z^{-2}}$   $-\frac{xz^2}{9y}$

18)  $\frac{4ab^{-2}}{-3c^{-2}}$   $\frac{4ac^2}{-3b^2}$

19)  $6c^3c^{-2}$

$$\frac{6c^3}{c^2}$$

20)  $6x^4x^{-10}$

$$\frac{6x^4}{x^{10}}$$

21)  $(2^0x^{-3})^4$

$$x^{-3 \cdot 4} = x^{-12}$$

$$\boxed{\frac{1}{x^{12}}}$$

22)  $\frac{(ab)^{-1}}{cd^{-2}}$

$$\frac{d^2}{abc}$$

23)  $\frac{w(xy)^{-2}}{(3tv)^{-2}} = \frac{w(3tv)^2}{(xy)^2}$

$$\frac{w3^2t^2v^2}{x^2y^2} = \boxed{\frac{9w^2t^2v^2}{x^2y^2}}$$

24)  $\left(\frac{3}{4}\right)^{-1}$

$$\boxed{\frac{4}{3}}$$

25)  $\left(\frac{2}{5}\right)^{-2}$

$$\left(\frac{5}{2}\right)^2 = \frac{5^2}{2^2} = \boxed{\frac{25}{4}}$$

26)  $\left(\frac{2a}{9c}\right)^{-2}$

$$\frac{(9c)^2}{(2a)^2} = \boxed{\frac{81c^2}{4a^2}}$$

27)  $\left(\frac{5x}{3yz}\right)^{-3} = \frac{(3yz)^3}{(5x)^3}$

$$\frac{3^3y^3z^3}{5^3x^3} = \boxed{\frac{27y^3z^3}{125x^3}}$$

28)  $\frac{a^{12}b^{-3}}{a^5b^5} = \frac{a^{12}}{a^5b^5b^3} = \frac{a^{12}}{a^5b^8}$

$$\boxed{\frac{a^7}{b^8}}$$

29)  $\left(\frac{4c^{-5}}{8d^0}\right)^3 = \left(\frac{4}{8c^5}\right)^3$

~~$$\frac{1}{8c^5}$$~~

$$\left(\frac{1}{2c^5}\right)^3 = \frac{1^3}{2^3c^{5 \cdot 3}}$$

$$\boxed{\frac{1}{8c^{15}}}$$

30)  $\left(\frac{x^{-8}}{y^{11}}\right)^{-2} = \left(\frac{1}{x^8y^{11}}\right)^{-2} = \left(x^8y^{11}\right)^2$

$$x^{8 \cdot 2} y^{11 \cdot 2}$$

$$\boxed{x^{16} y^{22}}$$