

$$\textcircled{24} \frac{5.2 \times 10^{13}}{1.3 \times 10^7}$$

Divide      Divide + sub exp

$$\boxed{4 \times 10^6}$$

$$\textcircled{25} \frac{3.6 \times 10^{-10}}{9 \times 10^{-6}}$$

$$\boxed{.4 \times 10^{-4}}$$

$$\textcircled{26} \frac{6.5 \times 10^4}{5 \times 10^6}$$

$$\boxed{1.3 \times 10^{-2}}$$

$$\textcircled{27} \frac{8.4 \times 10^{-5}}{2 \times 10^{-8}}$$

$$\boxed{4.2 \times 10^3}$$

$$\textcircled{28} \frac{4.65 \times 10^{-4}}{3.1 \times 10^2}$$

$$\boxed{1.5 \times 10^{-6}}$$

$$\textcircled{29} \frac{3.5 \times 10^6}{5 \times 10^8}$$

$$\boxed{\begin{array}{l} .7 \times 10^{-2} \\ \text{rewrite } 7 \times 10^{-3} \end{array}}$$

$$\textcircled{30} 3600 \text{ sec} = 1 \text{ hr}$$

\* write in sci notation, since picoseconds is.

$$\begin{array}{l} \text{Total} \\ \text{sec} \\ \text{hr} \end{array} \triangleright \frac{3.6 \times 10^3}{3.6 \times 10^{15}} = \boxed{1 \times 10^{-12}}$$

$$\textcircled{31} \frac{3.16 \times 10^3}{7.228 \times 10^4} \begin{array}{l} \text{deer pop} \\ \text{acres} \end{array} = \begin{array}{l} .437 \times 10^{-1} \\ \text{rewrite} \\ 4.37 \times 10^{-2} \\ \text{deer/acre} \end{array}$$

$$\textcircled{32} \frac{1.998 \times 10^{30} \text{ (sun)}}{5.69 \times 10^{26} \text{ (saturn)}} \approx .35114 \times 10^4$$

about 3,511 times greater.

$$\textcircled{33} \left(\frac{3}{8}\right)^2 = \frac{3^2}{8^2} = \left(\frac{9}{64}\right)$$

$$\textcircled{34} \left(\frac{1}{a}\right)^3 = \frac{1^3}{a^3} = \frac{1}{a^3}$$

$$\textcircled{35} \left(\frac{3x}{y}\right)^4 = \frac{3^4 x^4}{y^4} = \frac{81x^4}{y^4}$$

$$\textcircled{36} \left(\frac{2x}{3y}\right)^5 = \frac{2^5 x^5}{3^5 y^5} = \frac{32x^5}{243y^5}$$

$$\textcircled{37} \left(\frac{6}{5^2}\right)^3 = \frac{6^3}{(5^2)^3} = \frac{216}{5^6} = \frac{216}{15,625}$$

$$\textcircled{38} \left(\frac{2^2}{2^3}\right)^5 = \frac{(2^2)^5}{(2^3)^5} = \frac{2^{10}}{2^{15}} = \frac{1,024}{32,768} = \frac{1}{32}$$

(39)  $\left(\frac{8}{n^5}\right)^6 = \frac{8^6}{(n^5)^6} = \frac{262,144}{n^{30}}$

(40)  $\left(\frac{2p}{9}\right)^3 = \frac{(2p)^3}{9^3} = \frac{2^3 p^3}{9^3} = \frac{8p^3}{729}$

(41)  $\left(\frac{2}{5}\right)^{-1} = \frac{2^{-1}}{5^{-1}} = \frac{5}{2}$

(42)  $\left(\frac{5}{4}\right)^{-4} = \frac{5^{-4}}{4^{-4}} = \frac{4^4}{5^4} = \frac{256}{625}$

(43)  $\left(\frac{7x^{\frac{3}{2}}}{5y^4}\right)^{-2} = \frac{7^{-2} x^{\frac{3}{2} \cdot -2}}{5^{-2} y^{4 \cdot -2}} = \frac{7^{-2} x^{-3}}{5^{-2} y^{-8}} = \frac{5^2 y^8}{7^2 x^3} = \frac{25y^8}{49x^3}$

(44)  $\left(\frac{2x^{\frac{1}{6}}}{3y^4}\right)^{-3} = \frac{2^{-3} x^{\frac{1}{6} \cdot -3}}{3^{-3} y^{4 \cdot -3}} = \frac{2^{-3} x^{-\frac{1}{2}}}{3^{-3} y^{-12}} = \frac{3^3 y^{12}}{2^3 x^{\frac{1}{2}}} = \frac{27y^{12}}{8x^{\frac{1}{2}}}$

(45)  $\left(\frac{3x^{\frac{1}{2}}}{15}\right)^2 = \frac{3^2 x^{\frac{1}{2} \cdot 2}}{15^2} = \frac{9x}{225}$

(46)  $\left(\frac{6n^2}{3n}\right)^{-3} = \frac{6^{-3} n^{2 \cdot -3}}{3^{-3} n^{-3}} = \frac{6^{-3} n^{-6}}{3^{-3} n^{-3}} = \frac{6^{-3} n^{-3}}{3^{-3}} = \frac{3^3}{6^3 n^3} = \frac{27}{216n^3} = \frac{1}{8n^3}$

(47)  $\left(\frac{b^{\frac{4}{5}}}{b^7}\right)^{-5} = \frac{b^{\frac{4}{5} \cdot -5}}{b^{7 \cdot -5}} = \frac{b^{-4}}{b^{-35}} = b^{-31} = \frac{1}{b^{31}}$

(48)  $\left(\frac{3}{5c^2}\right)^0 = 1$  (any # to the zero power equals 1)

(49)  $125m^3$  (simplify  $5^3$ ) (50)  $\frac{x^5}{y^2}$  (make  $y^{-2}$  pos)

(51)  $(2c)^4 = 2^4 c^4 = 32c^4$  (dist exp) (52)  $x^0 y = y$  ( $x^0 = 1$ ) (53)  $\frac{d^7}{d} = d^6$

Remember what we talked about in class...  
 move negative exponents to opposite position to make positive