

Friday, September 26, 2014

Please turn your homework (WS p. 35 1-14) into the tray.

Try these two problems quietly at your seat:

1. $(-6r^3s^9)^2$ 2. $[(2^3)^2]^3$

$$\begin{array}{l} -6^2 r^6 s^{18} \\ \underline{36 r^6 s^{18}} \end{array}$$

$$\begin{array}{l} 2^3 \cdot 2^3 \\ \underline{2^3 \cdot 6} \\ 2^{18} \end{array}$$

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Negative Exponents

Zero and Negative Exponents
 Any nonzero number to the zero power is 1. Any nonzero number to negative n power is the multiplicative inverse of its nth power. Exponents can also be used to represent very small numbers, and negative powers are the result of repeated division.

Examples:
 $5^0 = 1$ $x^0 = 1$

$7^{-3} = \frac{1}{7} \cdot \frac{1}{7} \cdot \frac{1}{7}$ or $\frac{1}{7^3}$

$0.0\dots 000000022$ 22^{-74}
 $\frac{1}{22^{74}}$
 2200000

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Write each expression using a positive exponent.

1. 6^{-3} $\frac{1}{6^3}$ 2. a^{-5} $\frac{1}{a^5}$

a. 7^{-2} $\frac{1}{7^2}$ b. 8^0 1 c. b^{-4} $\frac{1}{b^4}$

Write each fraction as an expression using a negative exponent other than -1.

1. $\frac{1}{5^2}$ 5^{-2} 2. $\frac{1}{36}$ 36^{-1} $\frac{1}{6^2}$ 6^{-2}

a. $\frac{1}{8^3}$ 8^{-3} b. $\frac{1}{c^5}$ c^{-5} c. $\frac{1}{27^3}$ 27^{-3} $(3^3)^{-1}$

$$\begin{array}{l} 3 \cdot 3 \cdot 3 \\ \underline{3 \cdot 3 \cdot 3} \\ 3 \cdot 3 \end{array}$$

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One human hair is about 0.001 inch in diameter. Write the decimal as a power of 10.

Step 1: Write the decimal as a fraction $\frac{0.001}{1} = \frac{1}{1000}$ 10^{-3}

Step 2: Turn the denominator into a power. $\frac{1}{10^3}$ (bottom)

Step 3: Create a negative exponent. 10^{-3}

A water molecule is about 0.0000000001 meter long. Write the decimal as a power of 10.

10^{-10}

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Multiply and Divide with Negative Exponents

1. $5^3 \cdot 5^5$

2. $\frac{w^{-1}}{w^{-4}}$

a. $3^8 \cdot 3^2$ b. $\frac{11^2}{11^4}$

c. $n^9 \cdot n^{-4}$ d. $\frac{b^{-4}}{b^{-7}}$

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Homework:
 WS p. 47 1-14

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$$5(a+6)$$

$$5a+30$$

$$7(b-9)$$

$$7b-63$$

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