

First name: _____ Last name: _____

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Exponential Rules Homework

1. Simplify and write the answer in scientific notation using exponential laws. Show work!

1. $(5.1 \times 10^{-8}) - (3.4 \times 10^{-8})$	2. $(3.6 \times 10^7)(6 \times 10^{-5})$
3. $\frac{5 \times 10^5}{4 \times 10^{-5}}$	4. $\frac{(7 \times 10^5)(8 \times 10^{-6})}{4 \times 10^7}$
5. $(1.32 \times 10^{-4}) + (8 \times 10^{-5})$	6. $(25 \times 10^{11}) - (9.3 \times 10^9)$

2. Simplify. Show work!

1. $(5p^3)(-m^8p^2)$

2. $(10g^3h^8v^6)(11gh^8)$

3. $(-2^2x^3y^4)((-3)^2x^4y^4)$

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$$4. \quad \frac{84a^2}{108a^6}$$

$$5. \quad \frac{24hg^3}{16hg^2}$$

$$6. \quad (-d^5)^2(-5d^{-6}e^{-6})^3$$

$$7. \quad \frac{-8z^6j^5}{(4z^5j^6)^4}$$

$$8. \quad (7w^6m^2)(9w^3m^3)$$

$$9. \quad \sqrt{4 \cdot 2 \cdot 6 \cdot 8 \cdot 3 \cdot 2}$$

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

$$11. \quad \left(\frac{x^{-8}}{y^{11}} \right)^{-2}$$

$$12. \quad \frac{(2x^3) \cdot (x^4)^2}{8x^{11}}$$

$$13. \quad \left(\frac{5x^{13}y^5z^2}{3 \cdot 5^2} \right)^0$$

$$14. \quad \left(\frac{x^{r+4}}{x^{r+1}} \right)^{-3}$$

$$15. \quad \left(\frac{x^{6m}}{x^{2m+3}} \right)^2 \left(\frac{x^4}{x^m} \right)^3$$

$$16. \frac{(-3a^{-2}b^7)^3 \cdot (2a^{-3}b^{-5})^4}{4^{-2}a^2b^{-3}}$$

$$17. \frac{(-2a^{-4}b^2)^3}{4ab^{10}} \cdot \frac{12^{-1}a^3b}{(3a^5b^0)^{-2}}$$

$$18. \sqrt{a^2b^6c^{10}}$$

$$3. \text{ Simplify } \frac{(x^5)^2(x^7)^3}{(x^4)^6}. \text{ Then evaluate when } x = 2.$$

4. a) What is the length of a rectangle if its area is $40x^2y^2$ and its width is $5xy$?

b) If the area is 160cm^2 , what are the dimensions?

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5. The base of a triangle is represented by $3x^3y^7$ and the height of a triangle is represented by $4x^5y^2$. Find, in terms of x , the area of the triangle.

For the following problem, express each number in scientific notation, then solve the problem.

6. In Wisconsin in 2001, approximately 1,300,000 cows produced 2.21×10^{10} lb of milk. On average, how much milk did each cow produce?
7. Humans shed about 1.44×10^7 particles of skin every day. How many particles would be shed in a year? (Assume 365 days in a year.)