Final Exam Review #2

Laws of Exponents
Scientific Notation

Law #1	Law #2	Law #3	Law #4	Law #5
$a^0 = 1$	$a^{-n} = \frac{1}{a^n}$	$a^m \cdot a^n = a^{m+n}$	$\frac{a^m}{a^n} = a^{m-n}$	$(a^m)^n = a^{mn}$

Practice Problem Set:

Using the laws of exponents, rewrite each expression as a single power with a positive exponent.

1. $11^3 \cdot 11^5$
2. 7^{-3}
3. $\frac{x^4}{x}$
4. $(8^4)^5$
5. $\frac{15^{-4}}{15^{-6}}$
6. $3^4 \cdot 3^{-9}$
7. y^{-12}
8. $\frac{(4^2)^{-3}}{4^{10}}$

Simplify each expression completely. Evaluate all numbers raised to a power.

9. $(-225)^0$
10. $(-5)^2$
11. $2^{-6} \cdot 2^2$
12. $\frac{5^3 \cdot 5^5}{5^6}$
13. $8^{12} \cdot (8^7)^{-2}$
14. $3^0 + (-2)^3$

15. Write each number in **standard form**.

5.23×10^{4} _____

4.16×10^{-6} _____

16. Write each number in **scientific notation**.

5,700,000,000 _____

0.0024 _____

Find the product or quotient. <u>Represent your final answer in scientific notation</u>.

17. $(3.1 \times 10^{-5})(2.2 \times 10^{11})$

18. $\dfrac{2.56 \times 10^{12}}{3.2 \times 10^{-14}}$

19. Which expression below is equivalent to $\dfrac{4.5 \times 10^{-12}}{3 \times 10^{5}}$?

A. $\dfrac{4.5}{3} \times 10^{-12 + 5}$

B. $\dfrac{4.5}{3} \times 10^{-12 - 5}$

C. $(4.5)(3) \times 10^{-12 + 5}$

D. $(4.5)(3) \times 10^{-12 - 5}$