Practice Worksheet #2: Sections 10.1–10.4

Topics: writing products using exponents, evaluating powers, exponent rules, and positive-exponent form

Directions: Show your work. Simplify completely. When asked, write answers using **only positive exponents**.

A. Write the product using exponents (Section 10.1).

1. $(-6)(-6)(-6)$
2. $4 \cdot 4 \cdot 4 \cdot k \cdot k$
3. $y \cdot y \cdot y \cdot y \cdot z$
4. $m \cdot m \cdot n \cdot n \cdot n \cdot n$

B. Evaluate (Section 10.1).

5. 2^7
6. $(-4)^3$
7. $(-1)^8$
8. $\left(\frac{5}{6}\right)^2$

C. Simplify. Write your answer as a single power (Section 10.2).

9. $10^4 \cdot 10^9$
10. $\frac{8^{12}}{8^7}$
11. $(q^6)^2$
12. $(4a^3b^2)^2$
13. $\left(\frac{2}{5}\right)^7 \left(\frac{2}{5}\right)^3$

D. Simplify (Section 10.3).

14. $\frac{9^5 \cdot 9^2}{9^4}$
15. $\frac{w^{14} \cdot w^3}{w^9}$
16. $\frac{p^{18}}{p^6 \cdot p^5}$

17. $\left(\frac{5}{9}x\right)^2$

E. Rewrite using only positive exponents (Section 10.4).

18. $7n^{-3}$
19. $\frac{20y^4}{5y^{-6}}$
20. $\frac{r^{-5}s^3}{r^2s^{-4}}$
21. $(3x^{-2}y)^{-1}$
22. $\frac{11}{a^{-2}}$

F. Applications (mixed 10.1–10.4).

23. A virus is 4200 micrometers long. If 1 micrometer $= 10^{-6}$ meters, what is the length in meters?
24. A number is multiplied by 10^6 and then divided by 10^4. Overall, what power of 10 is the number multiplied by?
25. A printer produces 5×10^4 pages per day. How many pages are printed in 4×10^1 days? (Write your answer in standard form.)