Name: _____ Date: _____

Lesson 1.3 The Power of a Power

Simplify each expression. Write your answer in exponential notation.

1. $(6^5)^3$

2. $(9^6)^4$

3. $(34^8)^2$

4. $(18^6)^7$

5. $(p^5)^4$

6. $\left[\left(\frac{6}{7}\right)^6\right]^3$

7. $[(4b)^4]^4$

8. $[(28x)^7]^2$

9. $[(-22)^5]^7$

10. $[(-2q)^4]^2$

Simplify each expression. Write your answer in exponential notation.

11. $(2^5 \cdot 2^3)^2$

12. $(q^7 \cdot q)^4$

13. $\left[\left(\frac{5}{6}\right)^3 \cdot \left(\frac{5}{6}\right)^2\right]^3$

14. $\left[\left(-\frac{9}{10}\right)^4 \cdot \left(-\frac{9}{10}\right)^8\right]^2$

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Simplify each expression. Write your answer in exponential notation.

15. $(2^3 \cdot 2^6)^4 \div 2^8$

16. $(11^6 \cdot 11^6)^2 \div 11^9$

17. $(q^7 \cdot q^3)^4 \div q^5$

18. $(y^9 \cdot y)^3 \div y^{13}$

19. $\dfrac{(3^3 \cdot 3^5)^4}{(3^8)^2}$

20. $\dfrac{(w^9 \cdot w^5)^4}{(w^2)^{11}}$

21. $(u^3 \cdot u^6)^4 \div 8u^2$

22. $(p^2 \cdot p^5)^9 \div 7p^3$

23. $\dfrac{\left(\frac{3}{7}\right)^5 \cdot \left(\frac{9}{7}\right)^2}{\left(\frac{3^4}{7^3}\right)^2}$

24. $\dfrac{\left(\frac{y}{5}\right)^2 \cdot \left(\frac{y^3}{5}\right)^5}{\left(\frac{y^2}{5}\right)^6}$