

**Practice 8-4****More Multiplication Properties of Exponents**.....  
Simplify each expression.

1.  $(4a^5)^3$

2.  $(2^{-3})^4$

3.  $(m^{-3}n^4)^{-4}$

4.  $(x^5)^2$

5.  $2^5 \cdot (2^4)^2$

6.  $(4x^4)^3(2xy^3)^2$

7.  $(a^4)^{-5} \cdot a^{13}$

8.  $(3f^4g^{-3})^3(f^2g^{-2})^{-1}$

9.  $x^3 \cdot (x^3)^5$

10.  $(d^2)^{-4}$

11.  $(a^3b^4)^{-2}(a^{-3}b^{-5})^{-4}$

12.  $(x^2y)^4$

13.  $(12b^{-2})^2$

14.  $(m^{-5})^{-3}$

15.  $(x^{-4})^5(x^3y^2)^5$

16.  $(a^3)^6$

17.  $b^{-9} \cdot (b^2)^4$

18.  $(4^{-1}s^3)^{-2}$

(over)

19.  $(5a^3b^5)^4$

20.  $(b^{-3})^6$

21.  $(y^6)^3$

22.  $a^{-4} \cdot (a^4b^3)^2$

23.  $(x^4y^3)$

24.  $d^3 \cdot (d^2)^5$

**Simplify. Write each answer in scientific notation.**

25.  $10^{-9} \cdot (2 \times 10^2)^2$

26.  $(3 \times 10^{-6})^3$

27.  $10^4 \cdot (4 \times 10^6)^3$

28.  $(9 \times 10^7)^2$

29.  $10^{-3} \cdot (2 \times 10^3)^5$

30.  $(7 \times 10^5)^3$

31.  $(3 \times 10^5)^4$

32.  $(4 \times 10^8)^{-3}$

33.  $(1 \times 10^{-5})^{-5}$