

7-2

Reteaching (continued)

Multiplying Powers With the Same Base

Exercises

Simplify each expression.

1. $a^2 a^3 = a^5$

2. $3n^3 n^5 = 3n^8$

3. $8k^3 \cdot 3k^6 = 24k^9$

4. $(8p^5)(6p^4) = 48p^9$

5. $21d^{\frac{1}{2}} \cdot 2d^{\frac{1}{4}} = 42d^{\frac{3}{4}}$

6. $(-6.1m^4)(3m^2) = -18.3m^6$

7. $h^5 \cdot h^2 \cdot h^{10} = h^{17}$

8. $(-9q^{-8})(6q^{11}) = -54q^3$

9. $(16r^{-7})(-2r) = -\frac{32}{r^6}$

10. $(y^3 z^{13})(y^2 z^{-6}) = y^5 z^7$

11. $\left(-3x^{\frac{1}{2}}\right)(5w^8)\left(4x^{\frac{1}{3}}\right) = -60x^{\frac{5}{6}}w^8$

12. $(15fg^2)(f^3g^{-3})(-8f^{-1}g^6) = -120f^3g^5$

13. $m^{-6} \cdot m^3 \cdot n^{-2} = \frac{1}{m^3 n^2}$

14. $-6j^{-3}k \cdot 7jk^5 = -\frac{42k^6}{j^2}$

15. $-2uvw^{-1} \cdot 3u^2v^{-2}w = -\frac{6u^3}{v}$

Simplify each expression. Write each answer in scientific notation.

16. $(4 \times 10^3)(2 \times 10^5) = 8.0 \times 10^8$

17. $(1 \times 10^4)(6 \times 10^3) = 6.0 \times 10^7$

18. $(7 \times 10^2) \cdot 10^5 = 7.0 \times 10^7$

19. $(8 \times 10^9)(3 \times 10^{-5}) = 2.4 \times 10^5$

20. $(2 \times 10^5)(5 \times 10^6) = 1.0 \times 10^{12}$

21. $(7 \times 10^{-8})(3 \times 10^{-6}) = 2.1 \times 10^{-13}$

Write each answer in scientific notation.

22. The distance light travels in one year (one light-year) is about 5.87×10^{12} mi. A star called Proxima Centauri is 4.2 light-years away from Earth. About how many miles from Earth is Proxima Centauri? 2.4654×10^{13} mi

23. After the Revolutionary War, the U.S. national debt was approximately 7.5×10^7 dollars. In 2008, the debt was approximately 1.33×10^5 times the original amount. What was the national debt in 2008? $\$9.975 \times 10^{12}$

Complete each equation.

24. $4^{\square} \cdot 4^3 = 4^{13}$ 10

25. $8^6 \cdot 8^5 = 8^{\square}$ 11

26. $3^4 \cdot 3^{\square} = 3^{10}$ 6

27. $k^{11} \cdot k^{\square} = k^2$ -9

28. $w^{\square} \cdot w^{\frac{2}{5}} = w^{\frac{4}{5}}$ $\frac{2}{5}$

29. $x^2 \cdot x^{\square} \cdot x = x^9$ 6

30. $p^{-5} \cdot p^{\square} = p^3 \cdot p^2$ 10

31. $n^5 \cdot n^{-17} n^{\square} = n^{13}$ 25

32. $t^5 u^2 \cdot t^{\square} u = t^{-4} u^3$ -9