

18 HW

Pg 543 #1's 6-14, 16-23, 25-28

Pg 945 #1's 1-39 (odd)

8.1 Apply Exponent Properties Involving Products pp. 489-494

Chapter 8 Review HW

EXAMPLE

Simplify $(3y^3)^4 \cdot y^5$.

$$\begin{aligned}
 (3y^3)^4 \cdot y^5 &= 3^4 \cdot (y^3)^4 \cdot y^5 && \text{Power of a product property} \\
 &= 81 \cdot y^{12} \cdot y^5 && \text{Power of a power property} \\
 &= 81y^{17} && \text{Product of powers property}
 \end{aligned}$$

#5, 6, 7, 10, 12 LEAVE IN EXPONENTIAL FORM

EXERCISES

Simplify the expression.

- 6. $4^4 \cdot 4^3$ 4^7
- 7. $(-3)^7(-3)$ $(-3)^8$
- 8. $z^3 \cdot z^5 \cdot z^5$ z^{13}
- 9. $(y^4)^5$ y^{20}
- 10. $[(-7)^4]^4$ $(-7)^{16}$
- 11. $[(b+2)^8]^3$ $(b+2)^{24}$
- 12. $(6^4 \cdot 31)^5$ $6^{20} \cdot 31^5$
- 13. $-(8xy)^2$ $-64x^2y^2$
- 14. $(2x^2)^4 \cdot x^5$ $16x^{13}$

EXAMPLES 1, 2, 3, 4, and 5 on pp. 489-491 for Exs. 6-15

15. EARTH SCIENCE The order of magnitude of the mass of Earth's atmosphere is 10^{18} kilograms. The order of magnitude of the mass of Earth's oceans is 10^3 times greater. What is the order of magnitude of the mass of Earth's oceans?

DEFINITIONS

SIMPLIFY means to evaluate numbers

EX] $(2x^2y)^3 = 2^3 \times 6y^3 = 8x^6y^3$

LEAVE IN THIS FORM IF DIRECTIONS SAY "LEAVE" LEAVE IN EXPONENTIAL FORM

8.2

Apply Exponent Properties Involving Quotients

pp. 495–501

EXAMPLE

Simplify $\left(\frac{x^3}{y}\right)^4 \cdot \frac{2}{x^5}$.

$$\left(\frac{x^3}{y}\right)^4 \cdot \frac{2}{x^5} = \frac{(x^3)^4}{y^4} \cdot \frac{2}{x^5}$$

$$= \frac{x^{12}}{y^4} \cdot \frac{2}{x^5}$$

$$= \frac{2x^{12}}{y^4 x^5}$$

$$= \frac{2x^7}{y^4}$$

Power of a quotient property

Power of a power property

Multiply fractions.

Quotient of powers property

EXAMPLES

1, 2, and 3

on pp. 495–496

for Exs. 16–24

EXERCISES

Simplify the expression.

16. $\frac{(-3)^7}{(-3)^3} (-3)^4 = (81)$

17. $\frac{5^2 \cdot 5^4}{5^3} = 125$

$\frac{m^3}{n^3}$

18. $\left(\frac{m}{n}\right)^3$

20. $\left(-\frac{1}{x}\right)^4 = \frac{1}{x^4}$

21. $\left(\frac{7x^5}{y^2}\right)^2 = \frac{49x^{10}}{y^4}$

22. $\frac{1}{p^2} \cdot p^6 = p^4$

19. $\frac{17^{12}}{17^8} = 17^4$

23. $\frac{6}{7r^{10}} \cdot \left(\frac{r^5}{s}\right)^5 = \frac{6R^{25}}{7R^{10}S^5} = \frac{6R^{15}}{7S^5}$

8.3

Define and Use Zero and Negative Exponents

pp. 503–508

EXAMPLE

Evaluate $(2x^0y^{-5})^3$.

$$\begin{aligned}(2x^0y^{-5})^3 &= 2^3 \cdot x^0 \cdot y^{-15} && \text{Power of a power property} \\ &= 8 \cdot 1 \cdot y^{-15} && \text{Definition of zero exponent} \\ &= \frac{8}{y^{15}} && \text{Definition of negative exponents}\end{aligned}$$

EXERCISES

Evaluate the expression.

25. 14^0 ①

26. 3^{-4}

$$\frac{1}{3^4} = \frac{1}{81}$$

27. $\left(\frac{2}{3}\right)^{-3}$

$$\frac{2^{-3}}{3^{-3}} = \frac{1}{2^3} = \frac{1}{8}$$

$$\frac{3^3}{2^3} = \frac{27}{8}$$

$$\frac{27}{8}$$

28. $7^{-5} \cdot 7^5 = 7^0 = 1$

EXAMPLES
1, 2, and 4
on pp. 503–505

ODDS WERE IN BACK OF BOOK

$$29) \left(\frac{1^{-3}}{2^{-3}} \right) = \frac{2^3}{1^3} = 8$$

$$31) \frac{1}{2^{-5}} = 2^5 = 32$$

$$37) \frac{x^{-4}}{y^{-5}} = \frac{y^5}{x^4}$$

$$39) 3(-2z)^5 = 3(-2)^5 z^5 = -96z^5$$

$$11) 3^3 \cdot 6 \cdot 2 \cdot 2^2 = 540^8$$

$$15) \frac{(-2)^5}{3^5} = \frac{-32}{243}$$

$$21) \frac{4^3 \cdot 15}{3^3} \cdot \frac{1}{y^6} =$$

$$\frac{64 \cdot 15}{27 y^6} =$$

$$\left(\frac{64 \cdot 15}{27} \right) \cdot \frac{1}{y^6} =$$

$$23) \frac{5^2 \cdot 6 \cdot 8}{2^2 \cdot 4 \cdot y^2} =$$

$$\left(\frac{25 \cdot 6 \cdot 8}{4} \right) \cdot \frac{1}{y^2} =$$

Chapter 8

Simplify the expression. In exercises involving numerical bases only, write your answer using exponents.

- 8.1 1. $5^3 \cdot 5^4 \cdot 5^7$ 2. $6 \cdot 6^7 \cdot 6^8$ 3. $(-2)^3 \cdot (-2)^6$ 4. $(2^8)^2 \cdot 2^{16}$
- 5. $(-4)^3 \cdot (-4)^6$ 6. $(8 \cdot 4)^5 \cdot 8^5 \cdot 4^5$ 7. $m^5 \cdot m^2 \cdot m^7$ 8. $n^2 \cdot n^4 \cdot n^5 \cdot n^{11}$
- 9. $(y^3)^5 \cdot y^{15}$ 10. $(-2x)^3 \cdot -8x^3$ 11. $(3d^2)^3 \cdot 2d^2 \cdot 54d^8$ 12. $(-4s^2)^3 \cdot (2s^3)^6 - 4096s^{24}$
- 8.2 13. $\frac{8^7}{8^2}$ 14. $\frac{4^6 \cdot 4^2}{4^3} \cdot 4^5$ 15. $\left(-\frac{2}{3}\right)^5 \cdot \frac{2^5}{3^5}$ 16. $10^{12} \cdot \frac{1}{10^7}$
- 17. $7^9 \cdot \left(\frac{1}{7}\right)^4 \cdot 7^5$ 18. $\frac{1}{r} \cdot t^{13} \cdot t^4$ 19. $\left(\frac{p}{q}\right)^7 \cdot \frac{p}{q}$ 20. $\left(\frac{6x^9}{3y^5}\right)^2 \cdot \frac{4x^{10}}{y^8}$
- 21. $\left(\frac{4y^3}{3}\right)^3 \cdot \frac{1}{y^6} \cdot \frac{64y^9}{27}$ 22. $\left(\frac{2}{t^2}\right)^3 \cdot \left(\frac{3u^4}{z^2}\right)^4 \cdot \frac{648u^{10}}{z^6}$ 23. $\frac{(5x^3y^4)^2 \cdot 25x^2y^6}{(2x^2y)^4}$
- 8.3 Evaluate the expression. 25. $3^{-4} \cdot \frac{1}{81}$ 26. $(-5)^{-3} - \frac{1}{125}$ 27. 7^0
- 29. $\left(\frac{1}{2}\right)^{-3} \cdot 8$ 30. $(3^{-2})^3 \cdot \frac{1}{729}$ 31. $\frac{1}{2^{-5}} \cdot 32$ 32. $\frac{8^{-4}}{8^{-6}} \cdot 64$
- 8.3 Simplify the expression. Write your answer using only positive exponents. 33. $y^{-10} \cdot \frac{1}{y^{10}}$ 34. $(3c)^{-4} \cdot \frac{1}{81c^3}$ 35. $10b^{-3} \cdot c^5 \cdot \frac{10c^5}{b^3}$ 36. $(2d^5e^{-2})^{-3} \cdot \frac{e^6}{8d^{15}}$
- 37. $\frac{x^4}{y^5} \cdot \frac{y^4}{x^4}$ 38. $\frac{1}{6r^{-5}u^3} \cdot 6u^3$ 39. $\frac{3}{(-22)^{-5}} - \frac{96z^5}{16e^9}$

EXTRA PRACTICE