

9.3 Practice Solutions

Simplify. Your answer should contain only positive exponents.			
1. 4^{-3} $\frac{1}{4^3}$	2. 7^{-3} $\frac{1}{7^3}$	3. $(-2)^{-6}$ $\frac{1}{(-2)^6}$	4. 2^0 1
5. $(-4)^0$ 1	6. $(\frac{3}{4})^0$ 1	7. $(2^{-3})^5$ $2^{-15} = \frac{1}{2^{15}}$	8. $(3^{-2})^2$ $3^{-4} = \frac{1}{3^4}$
9. $3^2 \cdot 5^0$ $3^2 \cdot 1 = 3^2$	10. $4^{-5} \cdot 4^{-2}$ $4^{-7} = \frac{1}{4^7}$	11. $\frac{3^4}{3^7}$ $3^{-3} = \frac{1}{3^3}$	12. $\frac{7^{-4}}{7^5}$ $7^{-9} = \frac{1}{7^9}$

Error Analysis
<p>13. Describe and correct the error in evaluating $\frac{5^4}{5^{-7}}$</p> <p style="color: red;">They added 4 and -7, you should subtract them!</p> <div style="text-align: center;"> $\frac{5^4}{5^{-7}} = 5^{\overset{5^{11}}{\cancel{-3}}} = \frac{1}{5^3}$ </div>

Rewrite using only positive exponents.			
14. x^{-4} $\frac{1}{x^4}$	15. $2y^{-3}$ $\frac{2}{y^3}$	16. $4^{-3}g^2$ $\frac{g^2}{4^3}$	17. $x^2y^{-3}z$ $\frac{x^2z}{y^3}$
18. $5m^{-3}n^{-4}$ $\frac{5}{m^3n^4}$	19. $\frac{2}{3}a^4b^{-5}c^{-2}$ $\frac{2a^4}{3b^5c^2}$	20. $4m^{-2}n$ $\frac{4n}{m^2}$	21. $2^{-3}x^0y^4$ $2^{-3} \cdot 1 \cdot y^4$ $\frac{y^4}{2^3}$

Simplify. Your answer should contain only positive exponents.

22. $5x^3y^{-4} \cdot 4xy^2$

$$20x^4y^{-2}$$

$$\frac{20x^4}{y^2}$$

23. $2a^{-5}b^7 \cdot 7a^0b^{-3}$

$$14a^{-5}b^4$$

$$\frac{14b^4}{a^5}$$

24. $(3x^{-5})^2$

$$3^2x^{-10} = 9x^{-10}$$

$$\frac{9}{x^{10}}$$

25. $(4d^2h^{-5})^3$

$$4^3d^6h^{-15} = 64d^6h^{-15}$$

$$\frac{64d^6}{h^{15}}$$

26. $\frac{3 \cdot 2x^8y^{-5}}{4x^{10}y^2}$

$$3x^{-2}y^{-7}$$

$$\frac{3}{x^2y^7}$$

27. $\frac{1r^6t}{4r^0t^4}$

$$\frac{1}{4}r^6t^{-3}$$

$$\frac{1r^6}{4t^3}$$

28. $\frac{3x^8y^{-5} \cdot 2xy^2}{5x^8y^{-5}}$

$$\frac{6x^9y^{-3}}{5x^8y^{-5}}$$

$$\frac{6}{5}x^1y^2$$

29. $\frac{12x^8y^{-5}}{(2x^4y)^2}$

$$\frac{3 \cdot 2x^8y^{-5}}{4x^8y^2}$$

$$3x^0y^{-7}$$

$$3 \cdot 1 \cdot y^{-7}$$

$$3 \cdot 1 \cdot y^{-7}$$

$$3 \cdot 1 \cdot y^{-7}$$

$$3 \cdot 1 \cdot y^{-7}$$

$$3 \cdot 1 \cdot y^{-7}$$

$$\frac{3}{y^7}$$

30.

★ **MULTIPLE CHOICE** Which expression is equivalent to $(-4 \cdot 2^0 \cdot 3)^{-2}$?

(A) -12

(B) $-\frac{1}{144}$

(C) 0

(D) $\frac{1}{144}$

$$(-4 \cdot 1 \cdot 3)^{-2}$$

$$(-12)^{-2}$$

$$\frac{1}{(-12)^2} = \frac{1}{144}$$

Fill in the missing exponents

31. $4^? = \frac{1}{4^5}$

$$-5$$

32. $\frac{7^{-5}}{7^{-5}} = 7^?$

$$2$$

33. $(2x^2y^4)^{-3} = \frac{1x^6}{8y^{12}}$

$$-2$$

34. $(a^3b^{-2})^? = \frac{a^{12}}{b^8}$

$$4$$

Simplify. Your answer should contain only positive exponents.

32. $\left(\frac{(2xy)(3xy^4)^5}{4x^{-2}y^5}\right)^0$

Yo, yo, yo, anything to the zero power is one!