

## Exponent Rules

Simplify each expression and express the result without using negative exponents.

- $(u^4v)(2v^2)$
- $(x^5y^3)(-4y^3)$
- $(5x^3y^2)(-7x^4y)$
- $(7xy^5)(9xy)$
- $(-5z^3)^2$
- $(-2x^4)^5$
- $\frac{27m^5n^6}{9mn^3}$
- $\frac{-21x^3y^2}{-7x}$
- $\frac{42x^7y^4}{-6x^3y^2}$
- $-7(x^2)^5$
- $(3x^4)^2$
- $2(x^3y)^3$
- $(-2xy)^3$
- $(2u)^4(5u)$
- $\left(\frac{y}{2x}\right)^4$
- $-\left(\frac{2x}{3y}\right)^2$
- $\left(\frac{42xy}{21y}\right)^4$
- $\left(\frac{5a}{3b}\right)^3$
- $\frac{(-2x^2y^3)^3}{4xy}$
- $\frac{(-3xy^5)^2}{3xy^2}$
- $x^{-17}$
- $t^{-1}$
- $3x^{-3}$
- $(a^{-3})^{-4}$
- $(3x)^{-2}$
- $3x^{-2}$
- $(x^{-2})^7$
- $(8x)^{-2}$
- $(x^{-2}y^4)^{-3}$
- $(-x^5y^{-3})^{-7}$
- $2x^{-4}y$
- $(2x)^{-4}y$
- $12x^3y^{-4}z^2$
- $a^3(2b^3)^{-4}(16)$
- $9(3x^2y^0)^{-3}$
- $(4x)^2(2y)^{-3}$
- $\left(\frac{x}{y}\right)^{-1}$
- $(9x^0y)^{-2}(6xy)^2$
- $4(-x^{12}y^{-9})^{-2}$
- $3(-6xyz)^{-2}$
- $2xy(x^3y^{-5})^{-2}$
- $\frac{8m^2n^2}{20m^5n}$
- $\frac{30x^{12}y^2}{9x^8y^7}$
- $\frac{10x^{-1}y^2}{25x^6y^{-6}}$
- $\left(\frac{16yz^2}{24x^3y^4z^2}\right)^2$
- $\left(\frac{4xyz^2}{2x^3yz}\right)^{-3}$
- $\left(\frac{24a^5b^{-6}}{48a^2b^{-7}}\right)^{-1}$
- $\left(\frac{23a}{46b}\right)^{-2}$
- $\frac{(2x)^{-3}}{(3y)^2}$
- $\frac{(4x)^2}{(10y)^{-1}}$

51.  $\frac{(6x)^{-1}}{(2y)^2}$

52.  $\frac{(3x)^{-3}}{(9y)^{-1}}$

53.  $(-2x^2y^{-3})^2(3x^{-1}y)$

54.  $\left(\frac{16a^5b^{-8}c^7}{8a^{-2}b^{-3}c^5}\right)^3$

55.  $\left(\frac{35x^{-5}y^2z^4}{7x^{-3}y^{-3}z^5}\right)^2$

56.  $\left(\frac{75a^6bc^5}{50a^2b^{-2}c^7}\right)^4$

57.  $[(yz)^{-4}(z^4)]^2$

58.  $\left(\frac{15a^{-1}b^3}{9a^{-2}b^{-2}}\right)^{-2}$

59.  $\frac{x^{12}}{y} \cdot \frac{(2x^3y^2)^{-3}}{(xy)^3}$

60.  $\frac{(3x^2y^2)^{-2}}{(2x^{-1}y^0)^3} \cdot \frac{3x^2}{4y}$

61.  $(2x^3y^{-3}z^3)^{-2}(5x^{-1}y^2z^3)^2$

62.  $(10xy^2z^{-3})^2(5x^3y^{-2}z^{-1})^{-2}$

63.  $[x^0(2xy^{-3})^2y]^3(-3x^{-1}y^3)^{-2}$

Answers:

1.  $2u^4v^3$

2.  $-4x^5y^6$

3.  $-35x^7y^3$

4.  $63x^2y^6$

5.  $25z^6$

6.  $-32x^{20}$

7.  $3m^4n^3$

8.  $3x^2y^2$

9.  $-7x^4y^2$

10.  $-7x^{10}$

11.  $9x^8$

12.  $2x^9y^3$

13.  $-8x^3y^3$

14.  $80u^5$

15.  $\frac{y^4}{16x^4}$

16.  $-\frac{4x^2}{9y^2}$

17.  $16x^4$

18.  $\frac{125a^3}{27b^3}$

19.  $-2x^5y^8$

20.  $3xy^8$

21.  $\frac{1}{x^{17}}$

22.  $\frac{1}{t}$

23.  $\frac{3}{x^3}$

24.  $a^{12}$

25.  $\frac{1}{9x^2}$

26.  $\frac{3}{x^2}$

27.  $\frac{1}{x^{14}}$

28.  $\frac{1}{64x^2}$

29.  $\frac{x^6}{y^{12}}$

30.  $-\frac{y^{21}}{x^{35}}$

31.  $\frac{2y}{x^4}$

32.  $\frac{y}{16x^4}$

33.  $\frac{12x^3z^2}{y^4}$

34.  $\frac{a^3}{b^{12}}$

35.  $\frac{1}{3x^6}$

36.  $\frac{2x^2}{y^3}$

37.  $\frac{y}{x}$

38.  $\frac{4x^2}{9}$

39.  $\frac{4y^{18}}{x^{24}}$

40.  $\frac{1}{12x^2y^2z^2}$

41.  $\frac{2y^{11}}{x^5}$

42.  $\frac{2n}{5m^3}$

43.  $\frac{10x^4}{3y^5}$

44.  $\frac{2y^8}{5x^7}$

45.  $\frac{4}{9x^6y^6}$

46.  $\frac{x^6}{8z^3}$

47.  $\frac{2}{a^3b}$

48.  $\frac{4b^2}{a^2}$

49.  $\frac{1}{72x^3y^2}$

50.  $160x^2y$

51.  $\frac{1}{24xy^2}$

52.  $\frac{y}{3x^3}$

53.  $\frac{12x^3}{y^5}$

54.  $\frac{8a^{21}c^6}{b^{15}}$

55.  $\frac{25y^{10}}{x^4z^2}$

56.  $\frac{81a^{16}b^{12}}{16c^8}$

57.  $\frac{1}{y^8}$

58.  $\frac{9}{25a^2b^{10}}$

59.  $\frac{1}{8y^{10}}$

60.  $\frac{x}{96y^5}$

61.  $\frac{25y^{10}}{4x^8}$

62.  $\frac{4y^8}{x^4z^4}$

63.  $\frac{64x^8}{9y^{21}}$