

Multiplying and Dividing Monomials

Simplify the expressions below. Simplify as much as possible before applying the exponent to the monomial.

1.
$$\frac{2x^2y}{3x} \cdot \frac{9xy^2}{y^4}$$

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

3.
$$\frac{20x^3y}{4xy^2} \cdot \frac{-6xy}{-x}$$

4.
$$(8x^8y^7)^2 \cdot \left(-\frac{3}{6}x^4\right)^3$$

5.
$$\frac{16x^5y^{10}z^8}{32x^{10}y^{12}z^{10}}$$

6.
$$\frac{5x^9y^3z^4}{3xz^5} \cdot \frac{6y^5z}{x^2y^2z^3} \cdot \frac{2x^3z^5}{4xy^2}$$

7.
$$\left(\frac{-2x^{22}y}{6x^{30}y^5}\right)^3$$

8.
$$\left(\frac{12x^{23}y^{84}}{18x^{20}y^{87}}\right)^3$$

$$9. \left(\frac{18x^{32}y^{58}}{5x^{37}y^{52}} \right)^4 \cdot \left(\frac{-25x^4}{9y^{10}} \right)^4$$

$$10. \left(\frac{420x^{108}y^{15}z^3}{840x^{112}y^4z^6} \right)^5$$

$$11. \left(\frac{16x^{24}y^{15}z^{35}}{-8x^{20}y^{15}z^{39}} \right)^5$$

$$12. \frac{(3x^2y^3)^3}{(-7x^5y^2)^2}$$

$$13. \frac{(-5x^5y^3)^2}{(2x^5y^4)^3}$$

$$14. \left(\frac{16x^5y}{x^7y^{10}} \right) \cdot \left(\frac{x^{43}y^{52}}{4x^{41}y^{58}} \right)^4$$

$$15. \left(\frac{-25x^{18}y^{12}}{x^{14}y^{13}} \right) \cdot \left(\frac{x^{100}y^5}{5x^{108}} \right)^2$$

$$16. \left(\frac{24y^{18}z^5}{18x^2y^{20}} \right)^3 \cdot \left(\frac{15x^{10}y^4}{20z^2} \right)^2$$