

# Multi-Variable Expressions with Negative Exponents

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Rewrite the expressions using positive exponents, then simplify. Your final answer should have positive exponents only.

## A. One-variable practice

1.  $\frac{x^3}{x^{-2}} =$  \_\_\_\_\_

3.  $\frac{2a^{-3}}{a} =$  \_\_\_\_\_

2.  $\frac{y^{-1}}{y^4} =$  \_\_\_\_\_

4.  $\frac{5m^2}{m^{-1}} =$  \_\_\_\_\_

## B. Multi-variable practice

5.  $\frac{3x^2y^8}{6x^{-4}y^4} =$  \_\_\_\_\_

7.  $\frac{10a^4b^{-2}}{5a^2b^3} =$  \_\_\_\_\_

6.  $\frac{4a^{-1}b^5}{2a^3b^2} =$  \_\_\_\_\_

8.  $\frac{15x^3y^4}{5x^{-2}y^3} =$  \_\_\_\_\_

## C. Challenge (Simplify completely.)

9.  $\frac{9x^{-2}y^5}{6x^{-4}y^4} =$  \_\_\_\_\_

12.  $\frac{16x^5y^{-3}}{8x^{-1}y^2} =$  \_\_\_\_\_

10.  $\frac{12a^3b^{-4}}{6a^{-2}b} =$  \_\_\_\_\_

13.  $\frac{42x^{-4}y^5}{6x^2y^{-2}} =$  \_\_\_\_\_

11.  $\frac{18x^2y^{-6}}{6x^{-3}y} =$  \_\_\_\_\_

14.  $\frac{60p^{-6}q^3}{20p^2q^{-1}} =$  \_\_\_\_\_

# Multi-Variable Expressions with Negative Exponents

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Rewrite the expressions using positive exponents, then simplify. Your final answer should have positive exponents only.

## A. One-variable practice

1. 
$$\frac{x^3}{x^{-2}} = \underline{x^5}$$

3. 
$$\frac{2a^{-3}}{a} = \underline{\frac{2}{a^4}}$$

2. 
$$\frac{y^{-1}}{y^4} = \underline{\frac{1}{y^5}}$$

4. 
$$\frac{5m^2}{m^{-1}} = \underline{5m^3}$$

## B. Multi-variable practice

5. 
$$\frac{3x^2y^8}{6x^{-4}y^4} = \underline{\frac{x^6y^4}{2}}$$

7. 
$$\frac{10a^4b^{-2}}{5a^2b^3} = \underline{\frac{2a^2}{b^{-5}}}$$

6. 
$$\frac{4a^{-1}b^5}{2a^3b^2} = \underline{\frac{2b^3}{a^4}}$$

8. 
$$\frac{15x^3y^4}{5x^{-2}y^3} = \underline{3x^5y}$$

## C. Challenge (Simplify completely.)

9. 
$$\frac{9x^{-2}y^5}{6x^{-4}y^4} = \underline{\frac{3x^2y}{2}}$$

12. 
$$\frac{16x^5y^{-3}}{8x^{-1}y^2} = \underline{\frac{2x^6}{y^5}}$$

10. 
$$\frac{12a^3b^{-4}}{6a^{-2}b} = \underline{\frac{2a^5}{b^5}}$$

13. 
$$\frac{42x^{-4}y^5}{6x^2y^{-2}} = \underline{\frac{7x^7}{x^6}}$$

11. 
$$\frac{18x^2y^{-6}}{6x^{-3}y} = \underline{\frac{3x^5}{y^7}}$$

14. 
$$\frac{60p^{-6}q^3}{20p^2q^{-1}} = \underline{\frac{3q^4}{p^8}}$$