

Homework Questions?

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Dividing Monomials

Simplify each monomial. All exponents must be positive in final answer.

$$1) \frac{\cancel{3} \cancel{16} x^3}{\cancel{10} x} = \frac{8x^2}{5}$$

$$2) \frac{\cancel{2} \cancel{24} x^2}{\cancel{12} x^5} = \frac{2}{x^3}$$

$$3) \frac{\cancel{4} \cancel{16} x^4 y^2}{\cancel{4} x y^5} = \frac{4x^3}{y^3}$$

$$4) \frac{\cancel{3} \cancel{15} x^4}{\cancel{25} x^2 y^5} = \frac{3x^2}{5y^5}$$

$$5) \frac{\cancel{1} \cancel{16} x^2 y^3}{\cancel{32} x^3 y^2} = \frac{y}{2x}$$

$$6) \frac{\cancel{7} \cancel{14} x^4 y^7}{\cancel{16} x^{12} y^2} = \frac{7y^5}{8x^8}$$

$$7) \frac{\cancel{8} \cancel{24} x^4 y^2}{\cancel{9} y^3} = \frac{8x^4}{3y}$$

$$8) \frac{\cancel{5} \cancel{25} x^4 y^4}{\cancel{15} x y^2} = \frac{5x^3 y^2}{3}$$

$$9) \frac{\cancel{1} \cancel{4} x y^6 z^{12}}{\cancel{12} x y^2 z^{16}} = \frac{y^4}{3z^4}$$

$$10) \frac{\cancel{8} \cancel{64} x^3 z^7}{\cancel{40} x y^4 z} = \frac{8x^2 z^6}{5y^4}$$

$$11) \frac{\cancel{7} \cancel{28} a}{\cancel{8} a} = \frac{7}{2}$$

$$12) \frac{\cancel{1} \cancel{12} p^5}{\cancel{12} p^4} = p$$

$$13) \frac{\cancel{6} \cancel{24} x^4 y^3}{\cancel{7} \cancel{28} x^5 y^3 z} = \frac{6}{7xz}$$

$$14) \frac{\cancel{1} \cancel{16} xyz}{\cancel{48} x^4 z^3} = \frac{y}{3x^3 z^2}$$

Simplify:

$$\left(\frac{6x^4y^3}{4x^3y^5}\right)^3$$

Part C

What would your strategy be if the entire fractional expression is raised to a power?

Simplify $\left(\frac{6x^4y^3}{4x^3y^5}\right)^3$.

1. Applying the exponent first

- a. Apply the exponent to everything within the parentheses first. What do you get? (Your answer here should be a fractional expression)

$$\left(\frac{6x^4y^3}{4x^3y^5}\right)^3 = \frac{216x^{12}y^9}{64x^9y^{15}}$$

- b. Simplify the expression above that you got by applying the 3rd power to the entire fractional expression.

This is tough without a calculator

$$\frac{27x^3}{8y^6}$$

- c. Final simplified answer?

2. Simplify within the parentheses first

- a. Simplify within the parentheses first. What do you get?

$$\left(\frac{6x^4y^3}{4x^3y^5}\right)^3 = \left(\frac{3x}{2y^2}\right)^3$$

$$\frac{6x^4y^3}{4x^3y^5} = \frac{3x}{2y^2}$$

- b. Apply the 3rd power to your simplified expression.

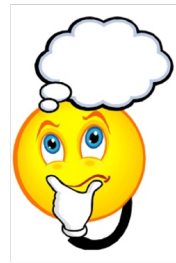
$$\left(\frac{3x}{2y^2}\right)^3$$

- c. Final simplified answer?

$$\frac{27x^3}{8y^6}$$

What do you think?

When you have a fractional expression raised to a power, is it more efficient to apply the exponent first then simplify, or to simplify first and then apply the exponent?



Division of Monomials Raised to a Power

Simplify each monomial. Show your work/thinking; all final answers must have positive exponents.

1. $\left(\frac{2x^4y^{12}}{y^{10}}\right)^3$

2. $\left(\frac{4x^7y^{20}}{xy^{18}}\right)^3$

3. $\left(\frac{10x^7y^{20}}{5x^{10}y^{18}}\right)^3$

4. $\left(\frac{18x^{13}y^{17}}{12x^{12}y^{12}}\right)^3$

$$\left(\frac{10x^7y^{20}}{5x^{10}y^{18}}\right)^3$$

$$\left(\frac{2y^2}{x^3}\right)^3 = \frac{8y^2 \cdot y^2 \cdot y^2}{x^3 \cdot x^3 \cdot x^3} = \frac{8y^6}{x^9}$$

5. $\left(\frac{7x^{11}y^5}{14x^{11}y^{25}}\right)^3$

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

$$7. \quad \left(\frac{44x^{23}y^{84}}{66x^{20}y^{87}} \right)^3$$

$$8. \quad \left(\frac{420x^{108}y^{15}z^3}{840x^{112}y^4z^6} \right)^5$$

$$9. \quad \left(\frac{x^{47}y^{20}}{-2x^{45}y^{20}} \right)^4$$

$$10. \quad \left(\frac{-25x^{118}y^{112}}{5x^{114}y^{115}} \right)^2$$

$$11. \quad \left[\left(\frac{24y^{18}z^5}{18x^2y^{20}} \right) \cdot \left(\frac{15x^{10}y^4}{20z^2} \right) \right]^3$$

$$12. \quad \left[\left(\frac{18x^{32}y^{58}}{5x^{37}y^{32}} \right) \cdot \left(\frac{-25x^4}{9y^{10}} \right) \right]^4$$

Homework

Finish classwork