Dividing like bases 9/14

Let's explore.....

$$\frac{2^5}{2^3} \qquad \frac{\cancel{2}\cdot\cancel{2}\cdot\cancel{2}\cdot 2\cdot 2}{\cancel{2}\cdot\cancel{2}\cdot\cancel{2}} = 2^2$$

$$2^{5-3} = 2^2$$

$$\frac{x^4}{x^3} = x^{4-3} = x$$

$$\frac{y^3}{y^4} = y^{3-4} = y^{-1} = \frac{1}{y}$$

$$\frac{z^4}{z^4} = z^{4-4} = z^0 = 1$$

$$\frac{x^3 y^4 z^8}{x^7 y z^8} =$$

$x^{3-7} = x^{-4}$ $y^{4-1} = y^3$

$$\frac{y^3}{x^4}$$

1. Simplify the top
2. Simplify the bottom
3. Reduce the coefficients like a fraction
4. Divide like bases

$$\left(x^3 y^{-2}\right)^5 =$$

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

x^{15} y^{-10}

$$\frac{x^{15}}{y^{10}}$$

$$\frac{-2x^{3}y^{-4}z^{7}}{x^{-5}y^{-3}z^{2}} = \frac{-2^{1}x^{8}z^{5}}{y}$$

$x^{3-(-5)}$ $y^{-4-(-3)}$ z^{7-2}

$$\left(\frac{3x^2y^5}{2x^7y^2}\right)^3 = \left(\frac{3^1y^3}{2^1x^5}\right)^3$$

$$\frac{3^3y^9}{2^3x^{15}} = \frac{27y^9}{8x^{15}}$$