

Dividing Monomials

Engage-warm up

The expression $\frac{x^5}{x^3}$ can be simplified by expanding the powers and dividing

out common factors: $\frac{x^5}{x^3} = \frac{\cancel{x \cdot x \cdot x \cdot x \cdot x}}{\cancel{x \cdot x \cdot x}} = x^2$. Use this information to complete the table.

	Expand	Simplify
$\frac{x^4}{x^2} = x^{4-2} = x^2$	$\frac{\cancel{x} \cdot \cancel{x} \cdot x \cdot x}{\cancel{x} \cdot \cancel{x}}$	x^2
$\frac{a^7}{a^3} = a^{7-3} = a^4$	$\frac{\cancel{a} \cdot \cancel{a} \cdot \cancel{a} \cdot a \cdot a \cdot a \cdot a}{\cancel{a} \cdot \cancel{a} \cdot \cancel{a}}$	a^4
$\frac{x^5}{x^8} = x^{5-8} = x^{-3}$	$\frac{\cancel{x} \cdot \cancel{x} \cdot \cancel{x} \cdot \cancel{x} \cdot \cancel{x}}{\cancel{x} \cdot \cancel{x} \cdot \cancel{x} \cdot \cancel{x} \cdot \cancel{x} \cdot \cancel{x} \cdot \cancel{x} \cdot \cancel{x}}$	$\frac{1}{x^3}$
$\frac{x^6}{x^8} = x^{6-8} = x^{-2}$	$\frac{\cancel{x} \cdot \cancel{x} \cdot \cancel{x} \cdot \cancel{x} \cdot \cancel{x} \cdot \cancel{x}}{\cancel{x} \cdot \cancel{x} \cdot \cancel{x} \cdot \cancel{x} \cdot \cancel{x} \cdot \cancel{x} \cdot \cancel{x} \cdot \cancel{x}}$	$\frac{1}{x^2}$
$\frac{x^3}{x^3} = x^{3-3} = x^0 = 1$	$\frac{\cancel{x} \cdot \cancel{x} \cdot \cancel{x}}{\cancel{x} \cdot \cancel{x} \cdot \cancel{x}}$	1

What patterns do you see in the table?

The factors were being removed

What is the rule for dividing monomials?

Subtract the exponents
~~NO~~ negative exponents in final answer

What is the rule for zero exponents?

Value is always 1