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Secondary Math 2 **13.2 Notes** **Multiplying & Dividing Rational Expressions**

Review:

Multiplying Fractions: Multiply straight across

a) $\frac{1}{2} \cdot \frac{1}{2} = \boxed{\frac{1}{4}}$

b) $\frac{x}{7} \cdot \frac{5}{3x^2} = \frac{5x}{21x^2} = \boxed{\frac{5}{21x}}$

Dividing Fractions: Flip the second and multiply

a) $\frac{1}{2} \div \frac{1}{2} = \frac{1}{2} \cdot \frac{2}{1} = \frac{2}{2} = \boxed{1}$

b) $\frac{x}{7} \div \frac{5}{3x^2} = \frac{x}{7} \cdot \frac{3x^2}{5} = \boxed{\frac{3x^3}{35}}$

Multiplication:

$\frac{x^2 - 4x - 12}{x + 3} \cdot \frac{5x + 15}{5x^4 + 15x^3 + 10x^2}$

① FACTOR ② MULTIPLY ③ CANCEL

$\frac{(x-6)(x+2)}{(x+3)} \cdot \frac{5(x+3)}{5x^2(x^2+3x+2)} = \frac{5(x-6)(x+2)(x+3)}{5x^2(x+3)(x+2)(x+1)} = \boxed{\frac{(x-6)}{x^2(x+1)}}$

$(x+2)(x+1)$

Division:

$\frac{30x^4 - 40x^3}{5x} \div \frac{3x^2 - 4x}{1}$

① FACTOR ② FLIP ③ MULTIPLY ④ CANCEL

$\frac{10x^3(3x-4)}{5x} \cdot \frac{1}{x(3x-4)} = \frac{2\,10x^{3\,1}(3x-4)}{1\,5x^2(3x-4)} = \frac{2x}{1} = \boxed{2x}$

Pass these off to me in order to start your assignment!

$\frac{8x^3 + 24x^2}{4x^4 - 16x^3} \cdot \frac{2x - 8}{x - 5}$

$\frac{8x^2(x+3)}{4x^3(x-4)} \cdot \frac{2(x-4)}{(x-5)} = \frac{4\,16x^2(x+3)(x-4)}{4x^3(x-4)(x-5)} = \boxed{\frac{4(x+3)}{x(x-5)}}$

x^1

$\frac{3x^2 - 6x}{x^2 + 7x - 18} \div \frac{6x^2 + 12x}{2x + 18}$

$\frac{3x(x-2)}{(x-2)(x+9)} \cdot \frac{2(x+9)}{6x(x+2)} = \frac{6x(x-2)(x+9)}{6x(x-2)(x+9)(x+2)} = \boxed{\frac{1}{x+2}}$