ALGEBRAIC FRACTIONS

Simplifying - Just simplifying like a normal fraction you can cancel down terms on top & bottom

Eg1 $\frac{^{3}\cancel{15}a^{\cancel{3}^{2}}\cancel{b^{2}}}{\cancel{5}\cancel{a}\,b^{\cancel{3}}} \Rightarrow \frac{3a^2}{b}$

Divide by ① 5 ② a ③ b^2

Eg2 $\frac{x^2-4}{x^2+3x+2}$ ① factorise top & bottom

$\Rightarrow \frac{(x-2)(\cancel{x+2})}{(x+1)(\cancel{x+2})}$ ② Divide by $(x+2)$

$\Rightarrow \frac{x-2}{x+1}$

Multiplying & Dividing

Treat like normal fractions for $\times$ simply x both top & bottom
$\div$ turn 2nd fraction upside down & then multiply

Eg1 $\frac{5}{2\cancel{x}} \times \frac{3\cancel{x}}{10}$

$\frac{^{3}\cancel{15}x}{2\cancel{10}x}$

$\Rightarrow \frac{3}{2}$

Divide by ① 5 ② x

Eg2 $\frac{x^2-9}{x^2-64} \div \frac{x^2+2x-15}{x+8}$ & factorise

$\Rightarrow \frac{(x-3)(x+3)\times(\cancel{x+8})}{(x-8)(\cancel{x+8})\times(\cancel{x-3})(x+5)}$

$\Rightarrow \frac{x+3}{(x-8)(x+5)}$

Now divide by ① x-3 ② x+8

Adding & Subtracting

Again like normal fractions ① Find common denominator ② Make equivalent fractions

Eg1 $\frac{1^{\times 5}}{2x^{\times 5}} + \frac{1^{\times 2}}{5x^{\times 2}}$

$\frac{5}{10x} + \frac{2}{10x}$

$\Rightarrow \frac{7}{10x}$

Eg2 $\frac{2}{x+5} - \frac{3}{x-2}$ To get common denominator $\times(x+5)(x-2)$

$\frac{2(x-2) - 3(x+5)}{(x+5)(x-2)}$

$\frac{2x-4-3x-15}{(x+5)(x-2)}$

Note the minus outside the brackets

$\frac{-3x-19}{(x+5)(x-2)}$