

## Topic: Algebraic Fractions

Topic/Skill	Definition/Tips	Example
1. Algebraic Fraction	A fraction whose <b>numerator</b> and <b>denominator</b> are <b>algebraic expressions</b> .	$\frac{6x}{3x - 1}$
2. Adding/ Subtracting Algebraic Fractions	For $\frac{a}{b} \pm \frac{c}{d}$ , the <b>common denominator</b> is $bd$  $\frac{a}{b} \pm \frac{c}{d} = \frac{ad}{bd} \pm \frac{bc}{bd} = \frac{ad \pm bc}{bd}$	$\begin{aligned} & \frac{1}{x} + \frac{x}{2y} \\ &= \frac{1(2y)}{2xy} + \frac{x(x)}{2xy} \\ &= \frac{2y + x^2}{2xy} \end{aligned}$
3. Multiplying Algebraic Fractions	<b>Multiply the numerators together</b> and the <b>denominators together</b> .  $\frac{a}{b} \times \frac{c}{d} = \frac{ac}{bd}$	$\begin{aligned} & \frac{x}{3} \times \frac{x+2}{x-2} \\ &= \frac{x(x+2)}{3(x-2)} \\ &= \frac{x^2 + 2x}{3x - 6} \end{aligned}$
4. Dividing Algebraic Fractions	<b>Multiply the first fraction by the reciprocal of the second fraction</b> .  $\frac{a}{b} \div \frac{c}{d} = \frac{a}{b} \times \frac{d}{c} = \frac{ad}{bc}$	$\begin{aligned} & \frac{x}{3} \div \frac{2x}{7} \\ &= \frac{x}{3} \times \frac{7}{2x} \\ &= \frac{7x}{6x} = \frac{7}{6} \end{aligned}$
5. Simplifying Algebraic Fractions	<b>Factorise</b> the numerator and denominator and <b>cancel common factors</b> .	$\frac{x^2 + x - 6}{2x - 4} = \frac{(x+3)(x-2)}{2(x-2)} = \frac{x+3}{2}$