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

**Knowledge Organiser**