7 MUST KNOW QUESTIONS TO *CONQUER*

ALGEBRAIC FRACTIONS

1	(a) Simplify the expression $\frac{24x^2y^3}{2ax} \div \frac{4y^2}{3a}$.
2	Express as a single fraction $\frac{5x+6}{2x^2-x-6} - \frac{2}{x-2}$.
3	Simplify (a) $\frac{2a^2}{5bc} \div \frac{14a}{15c}$ (b) $\frac{36}{2p-14q} \times \frac{p^2-49q^2}{3}$
4	(a) Express as a single fraction in its simplest form, $1 - \frac{2f-g}{f+3h}$. (b) Simplify $\frac{y^2+2y-3}{2y-10} \div \frac{(y-1)^2}{y-5}$.
5	Simplify the following algebraic fractions. (a) $\frac{b}{7c^2} \times \frac{2}{bc} \div \frac{1}{c^2}$. (b) $\frac{4x^2-y^2}{2x+y} \times \frac{5}{x^2-6x-7}$
6	Simplify $\frac{7x}{2} - \frac{3(4-2x)}{5}$.
7	Simplify $\frac{x}{x^2-4} - \frac{2}{2-x}$.

Answer Key

1	Solution: $$\frac{24x^2y^3}{2ax} \times \frac{3a}{4y^2}$$ $$= 9xy$$ Ans: $9xy$	
2	Solution: $$\frac{5x+6}{(2x+3)(x-2)} - \frac{2}{x-2}$$ $$\frac{5x+6}{(2x+3)(x-2)} - \frac{4x+6}{(2x+3)(x-2)}$$ $$\frac{5x+6-4x-6}{(2x+3)(x-2)}$$ $$\frac{x}{(2x+3)(x-2)}$$ Ans: Shown	
3	Solutions: (a) $\frac{2a^2}{5bc} \times \frac{15c}{14a} = \frac{3a}{7b}$ (b) $\frac{36}{2p-14q} \times \frac{p^2-49q^2}{3}$ $= \frac{36}{2(p-7q)} \times \frac{(p+7q)(p-7q)}{3}$ $= 6(p+7q)$ $= 6p+42q$ Ans: (a) $\frac{3a}{7b}$ (b) $6p+42q$	
4	(a) $1 - \frac{2f-g}{f+3h}$ $= \frac{f+3h}{f+3h} - \frac{2f-g}{f+3h}$ $= \frac{f+3h-2f-g}{f+3h}$ $= \frac{-f+3h+g}{f+3h}$ (b) $\frac{(y+3)(y-1)}{2(y-5)} \times \frac{y-5}{(y-1)^2}$ $= \frac{y+3}{2(y-1)}$ Ans: (a) Shown (b) $\frac{y+3}{2(y-1)}$	

5	Solutions: (a) $\dfrac{2}{7c}$ $= \dfrac{b}{7c^2} \times \dfrac{2}{bc} \div \dfrac{1}{c^2}$ $= \dfrac{b}{7c^2} \times \dfrac{2}{bc} \times c^2$ $= \dfrac{2}{7c}$ (b) $\dfrac{5(2x-y)}{(x+1)(x-7)}$ $= \dfrac{4x^2-y^2}{2x+y} \times \dfrac{5}{x^2-6x-7}$ $= \dfrac{(2x+y)(2x-y)}{2x+y} \times \dfrac{5}{(x+1)(x-7)}$ $= \dfrac{5(2x-y)}{(x+1)(x-7)}$ Ans: Shown	
6	Solution: $\dfrac{7x}{2} - \dfrac{3(4-2x)}{5}$ $$= \dfrac{7x}{2} \times \dfrac{5}{5} - \dfrac{3(4-2x)}{5} \times \dfrac{2}{2}$$ $$= \dfrac{35x}{10} - \dfrac{6(4-2x)}{10}$$ $$= \dfrac{35x - 6(4-2x)}{10}$$ $$= \dfrac{35x - 24 + 12x}{10}$$ $$= \dfrac{47x - 24}{10}$$	
7	Solution: $$\dfrac{\dfrac{x}{x^2-4} - \dfrac{2}{2-x}}{\dfrac{x}{x^2-4} + \dfrac{2}{x-2}}$$ $$\dfrac{x + 2(x+2)}{(x-2)(x+2)}$$ $$\dfrac{3x + 4}{(x-2)(x+2)}$$	