

7 MUST KNOW QUESTIONS TO CONQUER ALGEBRA

1	Simplify the following. (a) $5(x + 3y) + 3(4x - 2y)$, (b) $\frac{2p-3q}{5} - \frac{3p-5q}{4}$.	[2] [2]
2	Factorise the following completely. (a) $-2ab - 18bc$, (b) $42d^2e - 56de + 35cde$.	[1] [1]
3	Simplify the following expressions. $4 - 3[2 - (3 - 2y)]$	[1] [1] [3]
4	Factorise the following expressions completely. (a) $25mp - 40mm$ (b) $-18ax + 24ay - 6a$ (c) $5u(2v - 3) - 2(6v - 9)$	[1] [1] [2]
5	Write an algebraic expression, in its simplest form, for each of the following statements. Divide $2t$ by $4v$. Add 15 to the product of h and m. Subtract $3c + 2$ from the sum of $2c$ and 3.	[1] [1] [1]
6	(a)(i) Given that $a = 5, b = -3, c = -1$, find the value of $ac^2 - 4b^2$. (ii) Given that $d = -\frac{1}{3}, e = \frac{5}{7}, f = \frac{3}{8}$, find the value of $\frac{de-5f}{def}$. (b) Express $\frac{2(x+3)}{5} - \frac{3(x-2)}{4}$ as a single fraction in its simplest form.	[1] [1] [1]
7	Express $\frac{y-3}{4} - \frac{y+5}{3} + 1$ as a single fraction in its lowest term.	[3]

Answer Key

1	Solutions: (a) $5x + 15y + 12x - 6y$ $= 17x + 9y$ (b) $\frac{4(2p-3q)-5(3p-5q)}{20}$ $= \frac{8p-12q-15p+25q}{20}$ $= \frac{-7p+13q}{20}$ Ans: (a) $17x + 9y$ (b) $\frac{-7p+13q}{20}$	
2	Ans: (a) $-2b(a + 9c)$ (b) $7de(6d - 8 + 5c)$	
3	Solutions: $4 - 3[2 - (3 - 2y)]$ $= 4 - 3(2y - 1)$ $= 4 - 6y + 3$ $= 7 - 6y$ Ans: (a) $y^2 - xy - 3x$ (b) $-18x + 12$ (c) $7 - 6y$	
4	Solutions: (c) $5u(2v - 3) - 6(2v - 3)$ $= (5u - 6)(2v - 3)$ Ans: (a) $5m(5p - 8n)$ (b) $6a(-3x + 4y - 1)$ (c) $(5u - 6)(2v - 3)$	
5	Ans: (a) $\frac{t}{2v}$, (b) $hm + 15$, (c) $-c + 1$	
6	Solutions: (a)(i) $ac^2 - 4b^2$ $= (5)(-1)^2 - 4(-3)^2$ $= -31$ (ii) $\frac{de-5f}{def}$ $= \frac{(-\frac{1}{3})(\frac{5}{7}) - 5(\frac{3}{8})}{(-\frac{1}{3})(\frac{5}{7})(\frac{3}{8})}$ $= 23\frac{2}{3}$ o.e. [e.g $\frac{71}{3}$, 23.7 (3s.f3), 23.6] (b) $\frac{2(x+3)}{5} - \frac{3(x-2)}{4}$ $= \frac{8(x+3)}{20} - \frac{15(x-2)}{20}$ $= \frac{8(x+3)-15(x-2)}{20}$ $= \frac{8x+24-15x+30}{20}$ $= \frac{-7x+54}{20}$ o.e. Ans: (ai) -31 (a ii) $23\frac{2}{3}$ o.e. (bi) $15a + 9$ (bii) $10b + 7$ o.e. (ci) $x(a + b + y)$ (cii) $2a(1 - 7ab + 11b^2)$ (d) $\frac{-7x+54}{20}$ o.e.	
7	Solution: $\frac{y-3}{4} - \frac{y+5}{3} + 1$ $= \frac{3(y-3)}{12} - \frac{4(y+5)}{12} + \frac{12}{12}$ $= \frac{3(y-3)-4(y+5)+12}{12}$ $= \frac{3y-9-4y-20+12}{12}$ $= \frac{-y-17}{12}$	