Basic Algebra Test #1

1. Simplify fully: $3k^4 + 4k^4$

2. Simplify fully: $3x + 4x^2 - 7x + x^2$

3. Simplify fully: $4x^2 \times 5x$

4. Simplify fully: $xy \times 5y^2$

5. Simplify fully: $\frac{x^2}{2x}$

6. Simplify fully: $10xy \div 5y$

7. Expand: $4(x + 5)$

8. Expand: $x(x + 3)$

9. Expand and simplify: $2(x + 5) + 3(x + 6)$

10. Expand and simplify: $x(x - 1) + 5(x + 3)$

11. Factorise fully: $4x + 12$

12. Factorise fully: $x^2 + 5x$

13. Solve: $8x = 12$

14. Solve: $2 + x = ^-35$

15. Solve: $5x + 2 = 10$

16. Solve: $5 = 2 + 4x$

17. Solve: $2x + 1 = 9x$

18. Solve: $5x - 4 = x + 3$

19. Calculate: $A = 4 - 2x$ when $x = 3$

20. Calculate: $B = \frac{5}{x+3}$ when $x = 5$

Answers: Basic Algebra Test #1

1.	$3k^4 + 4k^4$		$= 7k^4$
2.	$3x + 4x^2 - 7x + x^2$		$= 5x^2 - 4x$ (or $5x^2 + {}^-4x$ etc)
3.	$4x^2 \times 5x$	$= 4 \times 5 \times x^2 \times x$	$= 20x^3$
4.	$xy \times 5y^2$	$= 1 \times 5 \times x \times y \times y^2$	$= 5xy^3$
5.	$\frac{x^2}{2x}$	$= \frac{\cancel{x} \times x}{\cancel{x} \times 2}$	$= \frac{x}{2}$ (or $\frac{1}{2}x$)
6.	$10xy \div 5y$	$= \frac{\cancel{5y} \times 2x}{\cancel{5y} \times 1}$	$= 2x$
7.	$4(x + 5)$	$= 4 \times x + 4 \times 5$	$= 4x + 20$
8.	$x(x + 3)$	$= x \times x + x \times 3$	$= x^2 + 3x$
9.	$2(x + 5) + 3(x + 6)$	$= 2x + 10 + 3x + 18$	$= 5x + 28$
10.	$x(x - 1) + 5(x + 3)$	$= x^2 - 1x + 5x + 15$	$= x^2 + 4x + 15$ (any order)
11.	$4x + 12$	$= 4 \times x + 4 \times 3$	$= 4(x + 3)$
12.	$x^2 + 5x$	$= x \times x + 5 \times x$	$= x(x + 5)$
13.	$8x = 12$	$\frac{\cancel{8} \times x}{\cancel{8}} = \frac{12}{8}$	$x = \frac{3}{2} = 1.5$
14.	$2 + x = {}^-35$	$\cancel{+2} \ \cancel{-2} + x = {}^-35 - 2$	$x = {}^-37$
15.	$5x + 2 = 10$	$5x \ \cancel{+2} \ \cancel{-2} = 10 - 2$	$x = \frac{8}{5} = 1.6$
16.	$5 = 2 + 4x$	$- 2$ then $\div 4$ both sides	$x = \frac{3}{4} = 0.75$
17.	$2x + 1 = 9x$	$\cancel{2x} \ \cancel{-2x} + 1 = 9x - 2x$	$x = \frac{1}{7} = 0.143$
18.	$5x - 4 = x + 3$	$5x - x \ \cancel{-4} \ \cancel{+4} = \cancel{x} \ \cancel{-x} + 3 + 4$	$x = \frac{7}{4} = 1.75$
19.	$A = 4 - 2x$ if $x = 3$	$= 4 - (2 \times 3) \quad = 4 - 6$	$\Rightarrow A = {}^-2$
20.	$B = \frac{5}{x+3}$ if $x = 5$	$= \frac{5}{5+3}$	$\Rightarrow B = \frac{5}{8} = 0.625$