Basic Algebra Test #2

1. Simplify fully: $4k^2 - 8k^2$

2. Simplify fully: $3g + 4k - 7gk + g + 2k$

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

4. Simplify fully: $10xy \times 5x \times y^2$

5. Simplify fully: $\frac{4x^2}{2x}$

6. Simplify fully: $12x \div 3x^2$

7. Expand: $2(x - 7)$

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

9. Expand and simplify: $6(x + 4) - 3(x + 3)$

10. Expand and simplify: $x(x + 3) + x(x - 2)$

11. Factorise fully: $3x - 15$

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

13. Solve: $\frac{x}{8} = 1.2$

14. Solve: $x + 14.2 = 3.5$

15. Solve: $4x + 17 = 10$

16. Solve: $5 = 4x - 6$

17. Solve: $3x + 9 = 5x$

18. Solve: $7x - 1 = 3x + 9$

19. Calculate: $C = 24 + xy$ when $x = 3$ and $y = ^-4$

20. Calculate: $D = \frac{x - 8}{x - 7}$ when $x = 4$

Answers: Basic Algebra Test #2

1. $4k^2 - 8k^2$ $= {}^{-}4k^2$

2. $3g + 4k - 7gk + g + 2k$ $= 4g + 6k - 7gk$ (any order)

3. $2x^2 \times 5x^3$ $= 2 \times 5 \times x^2 \times x^3$ $= 10x^5$

4. $10xy \times 5x \times y^2$ $= 10 \times 5 \times x \times x \times y \times y^2$ $= 50x^2y^3$ or $50y^3x^2$

5. $\frac{4x^2}{2x}$ $= \frac{\cancel{2x} \times 2x}{\cancel{2x} \times 1}$ $= 2x$

6. $12x \div 3x^2$ $= \frac{\cancel{3x} \times 4}{\cancel{3x} \times x}$ $= \frac{4}{x}$ or $4x^{-1}$ (but **not** $= 4x$)

7. $2(x - 7)$ $= 2 \times x + 2 \times {}^{-}7$ $= 2x - 14$ or $2x + {}^{-}14$

8. $x(x + y)$ $= x \times x + x \times y$ $= x^2 + xy$

9. $6(x + 4) - 3(x + 3)$ $= 6x + 24 - 3x - 9$ $= 3x + 15$

10. $x(x + 3) + x(x - 2)$ $= x^2 + 3x + x^2 - 2x$ $= 2x^2 + x$ (accept $2x^2 + 1x$)

11. $3x - 15$ $= 3 \times x + 3 \times {}^{-}5$ $= 3(x - 5)$ or $3(x + {}^{-}5)$

12. $x^2 + xy$ $= x \times x + x \times y$ $= x(x + y)$

13. $\frac{x}{8} = 1.2$ $\frac{x \times \cancel{8}}{\cancel{8}} = 1.2 \times 8$ $x = 9.6$

14. $x + 14.2 = 3.5$ $x \cancel{+14.2} \cancel{-14.2} = 3.5 - 14.2$ $x = {}^{-}10.7$

15. $4x + 17 = 10$ $4x \cancel{+17} \cancel{-17} = 10 - 17$ $x = \frac{-7}{4} = {}^{-}1.75$

16. $5 = 4x - 6$ $+ 6$ then $\div 4$ both sides $x = \frac{11}{4} = 2.75$

17. $3x + 9 = 5x$ $\cancel{3x} \cancel{-3x} + 9 = 5x - 3x$ $x = \frac{9}{2} = 4.5$

18. $7x - 1 = 3x + 9$ $7x - 3x \cancel{-1} \cancel{+1} = \cancel{3x} \cancel{-3x} + 9 + 1$ $x = \frac{5}{2} = 2.5$

19. $C = 24 + xy$ if $x = 3$ and $y = {}^{-}4$ $= 24 + (3 \times {}^{-}4)$ $\Rightarrow C = 12$

20. $D = \frac{x - 8}{x - 7}$ if $x = 4$ $= \frac{4 - 8}{4 - 7}$ $= \frac{-4}{-3}$ $\Rightarrow D = \frac{4}{3} = 1.333$