Basic Algebra Test #3

1. Simplify fully: $3 + 4x - 5 + x$

2. Simplify fully: $2x^2 + 2x^3 + 4x^2 + 5x^3$

3. Simplify fully: $4e^3 \times 2e$

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

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

6. Simplify fully: $\frac{x^3}{4x}$

7. Expand: $3(x - 2)$

8. Expand: $x(2x + 5)$

9. Expand and simplify: $2(x - 4) + 3(x - 3)$

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

11. Factorise fully: $15x + 20$

12. Factorise fully: $x^3 + x^2y$

13. Solve: $4.2x = 18$

14. Solve: $x - 3.7 = 2.5$

15. Solve: $7x - 8 = 10$

16. Solve: $3 = 2x - 13$

17. Solve: $8x + 57 = 5x$

18. Solve: $5x - 12 = 3x - 19$

19. Calculate: $E = 2x - 5y$ when $x = 3$ and $y = 4$

20. Calculate: $F = \frac{2 + x}{5 + 2x}$ when $x = {}^{-}3$

Answers: Basic Algebra Test #3

1. $3 + 4x - 5 + x$ $= 5x - 2$ or $5x + {}^{-}2$

2. $2x^2 + 2x^3 + 4x^2 + 5x^3$ $= 7x^3 + 6x^2$ or $6x^2 + 7x^3$

3. $4e^3 \times 2e$ $= 8e^4$

4. $x^2y \times 4x \times 3y$ $= 4 \times 3 \times x^2 \times x \times y \times y$ $= 12x^3y^2$

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

6. $\frac{x^3}{4x}$ $= \frac{\cancel{x} \times x^2}{\cancel{x} \times 4}$ $= \frac{x^2}{4}$ or $\frac{1}{4}x^2$

7. $3(x - 2)$ $= 3 \times x + 3 \times {}^{-}2$ $= 3x - 6$ or $3x + {}^{-}6$

8. $x(2x + 5)$ $= 2x \times x + x \times 5$ $= 2x^2 + 5x$

9. $2(x - 4) + 3(x - 3)$ $= 2x - 8 + 3x - 9$ $= 5x - 17$ or $5x + {}^{-}17$

10. $3(x + 3) - 2(x - 2)$ $= 3x + 9 - 2x + 4$ $= x + 13$ (accept $1x + 13$)

11. $15x + 20$ $= 5 \times 3x + 5 \times 4$ $= 5(3x + 4)$

12. $x^3 + x^2y$ $= x^2 \times x + x^2 \times y$ $= x^2(x + y)$ but **not** $x(x^2 + xy)$

13. $4.2x = 18$ $\frac{\cancel{4.2} \times x}{\cancel{4.2}} = \frac{18}{4.2}$ $x = 4.2857$

14. $x - 3.7 = 2.5$ $x \cancel{- 3.7} \cancel{+ 3.7} + = 2.5 + 3.7$ $x = 6.2$

15. $7x - 8 = 10$ $7x \cancel{- 8} \cancel{+ 8} = 10 + 8$ $x = \frac{18}{7} = 2.571$

16. $3 = 2x - 13$ $+ 13$ then $\div 2$ both sides $x = 8$

17. $8x + 57 = 5x$ $\cancel{8x} \cancel{- 8x} + 57 = 5x - 8x$ $x = \frac{57}{-3}$ $x = {}^{-}19$

18. $5x - 12 = 3x - 19$ $5x - 3x \cancel{- 12} \cancel{+ 12} = \cancel{3x} \cancel{- 3x} - 19 + 12$ $x = \frac{-7}{2} = {}^{-}3.5$

19. $E = 2x - 5y$ if $x = 3$ and $y = 4$ $= (2 \times 3) - (5 \times 4)$ $\Rightarrow E = {}^{-}14$

20. $F = \frac{2 + x}{5 + 2x}$ if $x = {}^{-}3$ $= \frac{2 - 3}{5 - 6}$ $= \frac{-1}{-1}$ $\Rightarrow F = 1$