

## Routine Algebra Test #1

1. Simplify fully:  $4x^2 \times 5x^3$
2. Simplify fully:  $xy \times 5xy^2$
3. Simplify fully:  $\frac{4x^2}{2x}$
4. Simplify fully:  $\frac{4xy}{6x^2}$
5. Expand and simplify:  $4(x + 5)$
6. Expand and simplify:  $x(4 - x)$
7. Expand and simplify:  $(x + 5)(x + 6)$
8. Expand and simplify:  $(x - 1)(x + 3)$
9. Factorise fully:  $4x + 12$
10. Factorise fully:  $x^2 - 5x$
11. Factorise fully:  $x^2 + 7x + 12$
12. Factorise fully:  $x^2 - 2x - 35$
13. Solve:  $5x + 2 = 10$
14. Solve:  $5 = 2 - 4x$
15. Solve:  $2x + 1 = 9x$
16. Solve:  $5x - 4 = x + 3$
17. Solve:  $3(x + 6) = 2(3 - x)$
18. Solve:  $\frac{5}{x} = 3$
19. Calculate  $A = 4 - 2x$  when  $x = -2$
20. Calculate  $B = \frac{5}{x - 3}$  when  $x = 5$

## Answers: Routine Algebra Test #1

1.  $4x^2 \times 5x^3 = 4 \times 5 \times x^2 \times x^3 = 20x^5$
2.  $xy \times 5xy^2 = 1 \times 5 \times x \times x \times y \times y^2 = 5x^2y^3$
3.  $\frac{4x^2}{2x} = \frac{\cancel{2x} \times 2x}{\cancel{2x} \times 1} = 2x$
4.  $\frac{4xy}{6x^2} = \frac{\cancel{2x} \times 2y}{\cancel{2x} \times 3x} = \frac{2y}{3x}$  ( or  $\frac{2}{3}xy^{-1}$  )
5.  $4(x + 5) = 4 \times x + 4 \times 5 = 4x + 20$
6.  $x(4 - x) = x \times 4 - x \times x = 4x - x^2$  ( or  $-x^2 + 4x$  )
7.  $(x + 5)(x + 6) = x^2 + 6x + 5x + 30 = x^2 + 11x + 30$  (any order)
8.  $(x - 1)(x + 3) = x^2 + 3x - 1x - 3 = x^2 + 2x - 3$  (any order)
9.  $4x + 12 = 4 \times x + 4 \times 3 = 4(x + 3)$
10.  $x^2 - 5x = x \times x + -5 \times x = x(x - 5)$
11.  $x^2 + 7x + 12$       $12 = 12 \times 1, 6 \times 2$  or  $4 \times 3$       $= (x + 4)(x + 3)$  or  $(x + 3)(x + 4)$
12.  $x^2 - 2x - 35$       $-35 = -35 \times 1, -7 \times 5, 7 \times -5$       $= (x + 5)(x - 7)$  or  $(x - 7)(x + 5)$
13.  $5x + 2 = 10$       $5x + 2 - 2 = 10 - 2$       $x = \frac{8}{5} = 1.6$
14.  $5 = 2 - 4x$       $- 2$  then  $\div -4$  both sides      $x = \frac{-3}{4} = -0.75$
15.  $2x + 1 = 9x$       $2x - 2x + 1 = 9x - 2x$       $x = \frac{1}{7} = 0.143$
16.  $5x - 4 = x + 3$       $5x - x - 4 + 4 = x - x + 3 + 4$       $x = \frac{7}{4} = 1.75$
17.  $3(x + 6) = 2(3 - x)$       $3x + 18 = 6 - 2x$       $3x + 2x = 6 - 18$       $x = \frac{-12}{5} = -2.4$
18.  $\frac{5}{x} = 3$       $5 = 3 \times x$       $x = \frac{5}{3} = 1.666$
19.  $A = 4 - 2x$  if  $x = -2$       $= 4 - (2 \times -2)$       $= 4 - -4$       $\Rightarrow A = 8$
20.  $B = \frac{5}{x-3}$  if  $x = 5$       $= \frac{5}{5-3}$       $= \frac{5}{2}$       $\Rightarrow B = 2.5$