F3 *Algebraic Manipulation* — Mental Maths Questions

M F3 A *(no calculator)*

1. Expand $2(x - 4)$ $(2x - 8)$
2. Solve for x and y:

   $x + y = 3$

   $x - y = 1$ $(x = 2,\ y = 1)$
3. Expand

   (a) $2x(1 + x)$ $(2x + 2x^2)$

   (b) $(x + 1)(x + 2)$ $(x^2 + 3x + 2)$

   (c) $(x + 4)(x - 4)$ $(x^2 - 16)$
4. Factorise

   (a) $x^2 - 3x$ $(x(x - 3))$

   (b) $2x + x^2$ $(x(2 + x))$

   (c) $x^2 + 4x + 4$ $((x + 2)^2)$

   (d) $x^2 + 5x + 6$ $((x + 3)(x + 2))$

M F3 B *(no calculator)*

1. Expand

   $3(x + 3)$ $(3x + 9)$
2. Solve for x and y:

   $x + 2y = 5$

   $x + y = 3$ $(x = 1,\ y = 2)$
3. Expand

   (a) $3x(x - 1)$ $(3x^2 - 3x)$

   (b) $(x - 1)(x + 2)$ $(x^2 + x - 2)$

   (c) $(x + 2)(x - 2)$ $(x^2 - 4)$
4. Factorise

   (a) $2x^2 - 4x$ $(2x(x - 2))$

   (b) $5x - 15x^2$ $(5x(1 - 3x))$

   (c) $x^2 - 6x + 9$ $((x - 3)^2)$

   (d) $x^2 - x - 6$ $((x - 3)(x + 2))$

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