1 Simplify each expression. Each one has two different letters.

(a) $3x + 2y + 5x$ (1)

(b) $4a + 3b - 2a + b$ (1)

(c) $5m + 2n - m - 2n$ (1)

(d) $7p + 4 + 2q - 3 + p$ (1)

(4 marks)

2 Here are six cards.

$3x$ $2x$ x $2y$ $\frac{y}{3}$ $4x$

(a) Arrange the six cards into groups of like terms (2)

(b) Simplify each group (2)

(c) Write a simplified expression for the sum of all six cards (1)

(5 marks)

3 A rectangle measures $5p$ by $3p$.

(a) Write a simplified expression for its perimeter (1)

(b) A square of side p is cut out of one corner. Write down the perimeter of that small square (1)

(c) Choose one of these and justify it using algebra: the perimeter of the remaining shape is $2p$ less than before; it is $4p$ less than before; it is unchanged. (2)

(6 marks)

4 Simplify each expression.

(a) $6i - 3i - 14 + 9i - 4$ (1)

(b) $3j - 4 + 8j - 11 - j$ (1)

(c) $2a + 3a + 4b - a - 5b$ (1)

(d) $8 - 3t + 5t - 12 + t$ (1)

(4 marks)

5 Three pupils each simplified $4x + 3 - x + 2$ and got a different answer: Aisha wrote $3x + 5$, Boro wrote $8x$, and Cala wrote $3x + 1$.

(a) Work out the correct answer (1)

(b) Write down the mistake Boro made (2)

(c) Write down the mistake Cala made (2)

(5 marks)

6 **Open question.** Write **three different expressions** that all simplify to $5x$. Each one must have at least three terms.

(3 marks)

7 **Extension.** A pupil says: *if I add two expressions together, the answer always has more terms than either of them did.*

(a) Find two expressions whose sum has **fewer** terms than one of them started with (2)

(b) Find two expressions whose sum has **no** terms at all (2)

(4 marks)