1 A trader buys n bags of rice at $135{,}000$ shillings each and pays $28{,}000$ shillings for transport.

(a) Write an expression for his total cost (1)

(b) Find the cost of 4 bags (1)

(c) He spent $973{,}000$ shillings. Find the number of bags (2)

(d) He has $600{,}000$ shillings. Write an inequality for the number of bags he can afford, and find the largest whole number. (2)

(8 marks)

2 A rectangle has width w cm and a length 7 cm greater. Its perimeter is 50 cm.

(a) Write an equation for the perimeter and simplify it (2)

(b) Solve it to find the width (1)

(c) Find the area of the rectangle (1)

(5 marks)

3 Here are four expressions.

A $3(2x + 4)$ B $6x + 7$ C $2x + 4x + 12$ D $6(x + 2)$

(a) Write each one in its expanded and collected form (2)

(b) Which three are equal to each other? (1)

(c) Find a value of x for which B agrees with the other three (2)

(6 marks)

4 Matchsticks are used to make a row of squares. The first square needs 4 matchsticks, and every square after it needs 3 more.

(a) How many matchsticks for 5 squares? (1)

(b) One pupil writes the total for n squares as $1 + 3n$. Another writes it as $4 + 3(n - 1)$. Work out both when $n = 5$ (2)

(c) Expand and simplify $4 + 3(n - 1)$ (1)

(d) Explain why the two expressions must agree for every number of squares (2)

(6 marks)

5 A pattern of tiles is built like this: the first pattern has 1 tile, and each new pattern adds 4 more tiles.

(a) How many tiles in the second, third and fourth patterns? (1)

(b) Describe the rule in words (2)

(c) How many tiles in the tenth pattern? (1)

(4 marks)

6 Extension. Look at $5(x + 2)$ and $5x + 2$.

(a) Expand $5(x + 2)$ (1)

(b) Find a value of x for which the two expressions give different answers, and write down both (2)

(c) Is there any value of x for which they agree? Explain. (2)

(d) Change one number in $5x + 2$ so that the two expressions become equal for every value of x (2)

(6 marks)