1 Factorise each expression fully.

(a) $36x + 24$ (1)

(b) $45a - 30b$ (1)

(c) $28m + 42n$ (1)

(d) $54p - 81$ (1)

(4 marks)

2 Factorise each expression fully. Each has three terms.

(a) $2x + 4y + 6$ (1)

(b) $9a + 12b - 15$ (1)

(c) $10m - 20n + 30$ (1)

(3 marks)

3 Factorise each expression if it is possible. If it is not, say so and explain why.

(a) $6x + 13$ (2)

(b) $10y + 25$ (1)

(c) $7a + 12$ (2)

(d) $8m + 20$ (1)

(6 marks)

4 A right-angled triangle has an area of $5h + 20$ square units and a base of $(h + 4)$ units.

(a) Factorise $5h + 20$ (1)

(b) The area of a triangle is half the base times the height. Write down the height of this triangle (1)

(c) Check your answer by working out both the area and $\frac{1}{2} \times$ base $\times$ height when $h = 6$ (2)

(4 marks)

5 A rectangle has an area of $20x + 30$ square units and a height that is a whole number greater than 1.

(a) Write down three different possible heights for the rectangle (2)

(b) Write down the width that goes with each of your three heights (2)

(c) Which of your three answers is the fully factorised one, and how can you tell? (2)

(6 marks)

6 Open question. Write down **three different expressions** that each factorise to give a bracket of $(2x + 3)$.

(3 marks)

7 Extension. An expression is $ax + 12$, where a is a whole number.

(a) Give a value of a for which the expression factorises with a factor of 4 (2)

(b) Give a value of a for which the expression cannot be factorised at all (2)

(c) Explain how you can tell, from a alone, whether $ax + 12$ will factorise (2)

(5 marks)