FOUNDATION

4.8F Expanding and Factorising: Foundation Tier Practice

Total Marks

EDEXCEL Edexcel 1MA1 · Calculator allowed · about 55 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 Expand and simplify: 3(2x + 4).

(Total for Question 1 is 2 marks)

2 Expand fully: (x + 5) + (2x + 3).

(Total for Question 2 is 2 marks)

3 Expand and simplify: 4(x - 2) - 2x.

(Total for Question 3 is 2 marks)

4 Factorise fully: 6y + 9.

(Total for Question 4 is 3 marks)

5 Factorise fully: 8m - 12n.

(Total for Question 5 is 3 marks)

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6 Factorise the quadratic: $x^2 + 5x + 6$.

(Total for Question 6 is 4 marks)

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7 Factorise the quadratic: $x^2 + 7x + 12$. Give the answer in bracket form.

(Total for Question 7 is 4 marks)

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8 A small charity sells charity bags. The cost to make each bag is given by the expression $2x + 3$, where x is the number of special stickers used. The charity makes 5 identical bags. Write an expression for the total cost for the 5 bags and then expand and simplify it.

(a) Write an expression for the total cost for the 5 bags. **(2)**

.....

(b) Expand and simplify the expression from part (a). **(4)**

(Total for Question 8 is 6 marks)

9 A rectangular label has length (3x + 2) cm and width (x - 1) cm. Find an expression for the area of the label and then expand and simplify it.

(a) Write an expression for the area of the rectangle. **(2)**

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(b) Expand and simplify the expression from part (a). **(4)**

(Total for Question 9 is 6 marks)

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10 Remove common factors and factorise fully: $12p^2q - 8pq^2 + 4pq$.

(a) Write down the highest common factor that can be removed from all three terms. **(2)**

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(b) Factorise the expression fully after removing the common factor. **(6)**

(Total for Question 10 is 8 marks)

Mark scheme · 4.8F Expanding and Factorising: Foundation Tier Practice

Question 1

- **M1** multiply each term by 3: 3*2x and 3*4 shown
- **A1** 6x + 12 cao
- **Answer: 6x + 12**

Question 2

- **M1** collect like terms shown: x + 2x and 5 + 3
- **A1** 3x + 8 cao
- **Answer: 3x + 8**

Question 3

- **M1** expand 4(x - 2) to 4x - 8 or equivalent
- **A1** 2x - 8 cao
- **Answer: 2x - 8**

Question 4

- **M1** identify common factor 3 and show factoring step: 3(2y + 3) or equivalent
- **A1** 3(2y + 3) cao
- **B1** final answer written in fully factorised form, 3(2y + 3) oe
- **Answer: 3(2y + 3)**

Question 5

- **M1** identify common factor 4 and show factoring step: 4(2m - 3n) or equivalent
- **A1** 4(2m - 3n) cao
- **B1** final answer written in fully factorised form, 4(2m - 3n) oe
- **Answer: 4(2m - 3n)**

Question 6

- **M1** find two numbers multiplying to 6 and adding to 5 (2 and 3) shown
- **M1** split middle term or show factors used: $x^2 + 2x + 3x + 6$
- **A1** (x + 2)(x + 3) cao
- **B1** final answer given in bracket form (x + 2)(x + 3) oe
- **Answer: (x + 2)(x + 3)**

Question 7

- **M1** identify pair 3 and 4 that multiply to 12 and add to 7
- **M1** split middle term or show factors: $x^2 + 3x + 4x + 12$
- **A1** (x + 3)(x + 4) cao
- **B1** final answer presented in bracket form (x + 3)(x + 4) oe
- **Answer: (x + 3)(x + 4)**

Question 8

- (a) **M1** show 5 times the cost of one bag: 5(2x + 3) or equivalent
- (a) **A1** 5(2x + 3) cao
- **(a) Answer: 5(2x + 3)**
- (b) **M1** show multiplication by 5 applied to both terms: 5*2x and 5*3 shown
- (b) **M1** state the intermediate expanded terms 10x and 15 explicitly
- (b) **A1** 10x + 15 cao
- (b) **B1** final simplified expression given as 10x + 15 oe
- **(b) Answer: 10x + 15**

Question 9

- (a) **M1** area = length * width shown: (3x + 2)(x - 1)
- (a) **A1** (3x + 2)(x - 1) cao
- **(a) Answer: (3x + 2)(x - 1)**
- (b) **M1** multiply out brackets correctly: 3x*x, 3x*(-1), 2*x, 2*(-1) shown
- (b) **M1** write each term found: $3x^2$, -3x, 2x, -2
- (b) **A1** combine like terms correctly to give $3x^2$ - x - 2 cao
- (b) **B1** final simplified form presented as $3x^2$ - x - 2 oe
- **(b) Answer: $3x^2$ - x - 2**

Question 10

- (a) **M1** identify common factor 4pq or equivalent shown
- (a) **A1** 4pq cao
- **(a) Answer: 4pq**
- (b) **M1** factor out 4pq from each term and show intermediate division: $12p^2q \div 4pq = 3p$, $-8pq^2 \div 4pq = -2q$, $4pq \div 4pq = 1$
- (b) **M1** write the expression as 4pq(3p - 2q + 1) or equivalent bracket contents shown
- (b) **M1** show multiplication back check for at least one term, e.g. $4pq * 3p = 12p^2q$
- (b) **A1** 4pq(3p - 2q + 1) cao
- (b) **B1** correct ordering of terms in the brackets (3p - 2q + 1) oe
- (b) **B1** final answer presented in fully factorised form 4pq(3p - 2q + 1) oe
- **(b) Answer: 4pq(3p - 2q + 1)**