FOUNDATION & HIGHER

HIGHER EXTENDS

Name ..... Class .....

A4: Manipulating expressions

Expand, factorise and simplify, including algebraic fractions

20 marks · 25 minutes · Non-calculator

1) Expand and simplify $3(2x - 5) - 2(x - 4)$

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[Question 1: 2 marks]

2) Factorise fully $12a^2b - 18ab^2$

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[Question 2: 2 marks]

3) Expand and simplify $(x + 6)(x - 4)$

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[Question 3: 2 marks]

4) Factorise $2x^2 + 7x - 15$

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[Question 4: 2 marks]

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5) Simplify fully $\dfrac{x^2 - 9}{x^2 + x - 6}$

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[Question 5: 2 marks]

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6) Simplify

(a) $(3a^2b)^3$

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(1)

(b) $\dfrac{12x^5}{4x^2}$

.....

(1)

[Question 6: 2 marks]

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7) Expand and simplify $(2x - 3)^2$

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[Question 7: 2 marks]

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8) Factorise $x^2 - 49$

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[Question 8: 1 marks]

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9) Expand and simplify $(x + 1)(x + 2)(x - 3)$

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[Question 9: 3 marks]

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10) Write $\frac{3}{x+2} + \frac{2}{x-1}$ as a single fraction in its simplest form.

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[Question 10: 2 marks]

End of paper – 20 marks in total

Answers and brief mark scheme

Q	Answer	Method / notes
1	$4x - 7$	$6x - 15 - 2x + 8$ (M1); A1.
2	$6ab(2a - 3b)$	Partly factorised (M1); A1.
3	$x^2 + 2x - 24$	Four terms with 3 correct (M1); A1.
4	$(2x - 3)(x + 5)$	Brackets that expand to give two of the three terms (M1); A1.
5	$\frac{x - 3}{x - 2}$	$(x + 3)(x - 3)$ or $(x + 3)(x - 2)$ (M1); A1.
6	(a) $27a^6b^3$ (b) $3x^3$	B1 each.
7	$4x^2 - 12x + 9$	Four terms with 3 correct (M1); A1.
8	$(x + 7)(x - 7)$	B1.
9	$x^3 - 7x - 6$	Two brackets expanded (M1); third multiplied out (M1); A1.
10	$\frac{5x + 1}{(x + 2)(x - 1)}$	$\frac{3(x - 1) + 2(x + 2)}{(x + 2)(x - 1)}$ (M1); A1.