FOUNDATION & HIGHER

HIGHER EXTENDS

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

A6: Identities

Equations and identities; show that expressions are equivalent

20 marks · 25 minutes · Non-calculator

1) Show that $(x + 3)^2 - (x - 3)^2 \equiv 12x$

[Question 1: 2 marks]

2) Show that $2(3x - 1) - 3(x - 4) \equiv 3x + 10$

[Question 2: 2 marks]

3) $(x + a)^2 + b \equiv x^2 + 8x + 5$

Find the values of a and b.

a = ... b = ...

[Question 3: 3 marks]

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4) $4(2x - p) + qx \equiv 11x - 12$

Find the values of p and q.

p = ... q = ...

[Question 4: 3 marks]

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5) Show that $(2n + 1)^2 - (2n - 1)^2 \equiv 8n$

[Question 5: 2 marks]

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6) Is each one an equation or an identity?

(a) $5(x - 2) = 5x - 10$

.....

(1)

(b) $5(x - 2) = 20$

.....

(1)

[Question 6: 2 marks]

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7) $(x+5)(x-2) \equiv x^2 + ax + b$. Find the values of a and b.

a = ... b = ...

[Question 7: 2 marks]

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8) $a(x+3) + b(x-1) \equiv 5x + 7$. Find the values of a and b.

a = ... b = ...

[Question 8: 4 marks]

End of paper – 20 marks in total

Answers and brief mark scheme

Q	Answer	Method / notes
1	Shown	$x^2 + 6x + 9 - (x^2 - 6x + 9)$ (M1); $= 12x$ (A1).
2	Shown	$6x - 2 - 3x + 12$ (M1); $= 3x + 10$ (A1).
3	$a = 4,\ b = -11$	$x^2 + 2ax + a^2 + b$ (M1); $a = 4$ (A1); $b = 5 - 16 = -11$ (A1).
4	$p = 3,\ q = 3$	$8x - 4p + qx$ (M1); $8 + q = 11$ so $q = 3$ (A1); $4p = 12$ so $p = 3$ (A1).
5	Shown	$4n^2 + 4n + 1 - (4n^2 - 4n + 1)$ (M1); $= 8n$ (A1).
6	(a) identity (b) equation	B1 each.
7	$a = 3,\ b = -10$	B1 each.
8	$a = 3,\ b = 2$	$a + b = 5$ (M1); $3a - b = 7$ (M1); solve (M1); both correct (A1).