FOUNDATION & HIGHER

SAME AT BOTH TIERS

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

A1: Algebraic notation

Reason with and interpret algebraic notation

20 marks · 25 minutes · Non-calculator

1) Use $a = 2$ to explain why $3a$ and a^3 are different.

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[Question 1: 2 marks]

2) Sam writes $n \times n \times 5$ as $5n^2$. Is he correct? Explain.

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[Question 2: 2 marks]

3) Show that $2a \times 3b \times a = 6a^2b$

[Question 3: 2 marks]

4) Kim says $(3x)^2 = 3x^2$. Explain her mistake.

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[Question 4: 2 marks]

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5) Use an example to explain why $\frac{a}{b}$ is not usually equal to $\frac{b}{a}$.

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[Question 5: 2 marks]

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6) Is $4(x + 2)$ the same as $4x + 2$? Explain.

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[Question 6: 2 marks]

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7) Think of a number n. Double it, add 6, halve the result, then subtract n. Show that the answer is always 3.

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[Question 7: 3 marks]

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8) Show that $5 \times p \div 10 = \frac{p}{2}$

[Question 8: 2 marks]

9) Zoe says $-x^2$ is the same as $(-x)^2$. Use $x = 3$ to show she is wrong.

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[Question 9: 2 marks]

10) Show that $m^4 \div m = m^3$

[Question 10: 1 marks]

End of paper – 20 marks in total

Answers and brief mark scheme

Q	Answer	Method / notes
1	Explanation	$3a = 6$, $a^3 = 8$ (M1); $3a$ means $3 \times a$, a^3 means $a \times a \times a$ (C1).
2	Yes	$n \times n = n^2$ and number written first (C1); B1.
3	Shown	$6 \times a \times a \times b$ (M1); $6a^2b$ (C1).
4	$9x^2$	The 3 must also be squared (C1); $9x^2$ (B1).
5	Explanation	e.g. $\frac{2}{4} = 0.5$ but $\frac{4}{2} = 2$ (M1); conclusion (C1).
6	No	The 2 must also be multiplied by 4: $4x + 8$ (C1); B1.
7	Shown	$2n + 6$ (M1); $n + 3$ (M1); $n + 3 - n = 3$ (C1).
8	Shown	$\frac{5p}{10}$ (M1); $\frac{p}{2}$ (C1).
9	$-9 \neq 9$	$-3^2 = -9$, $(-3)^2 = 9$ (M1); conclusion (C1).
10	Shown	Subtract indices, $4 - 1 = 3$ (C1).