FOUNDATION & HIGHER

SAME AT BOTH TIERS

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

A3: Algebra vocabulary

Reason about expressions, equations, formulae, identities and inequalities

20 marks · 25 minutes · Non-calculator

1) Explain the difference between an expression and an equation. Give an example of each.

.....

.....

[Question 1: 2 marks]

2) Explain why $2(x + 3) \equiv 2x + 6$ is an identity.

.....

.....

[Question 2: 2 marks]

3) Is $A = \pi r^2$ an equation, a formula or an identity? Explain.

.....

.....

[Question 3: 2 marks]

4) Jo says $3x + 2 = 11$ is true for every value of x. Explain why she is wrong.

.....

.....

[Question 4: 2 marks]

5) Explain why $4x$ is a factor of $12x^2 + 8x$.

.....

.....

[Question 5: 2 marks]

6) Write an equation that has the solution $x = 5$. Show that it works.

.....

.....

[Question 6: 2 marks]

7) Explain why $x + 3 > 7$ is an inequality. Give two values of x that satisfy it.

.....

.....

[Question 7: 2 marks]

8) In the expression $5xy + 2$, is 5 a term or a factor? Explain.

.....

.....

[Question 8: 2 marks]

9) Is $x^2 + 4 = 0$ an identity? Explain.

.....

.....

[Question 9: 2 marks]

10) Explain why $x(x + 1) \equiv x^2 + x$.

.....

.....

[Question 10: 2 marks]

End of paper – 20 marks in total

Answers and brief mark scheme

Q	Answer	Method / notes
1	Explanation	An expression has no equals sign, an equation does and can be solved (C1); examples (B1).
2	Explanation	True for all values of x (C1); expanding gives the same expression (C1).
3	Formula	It connects quantities and works out one from the other (C1); B1.
4	Explanation	Only true when $x = 3$ (M1); so it is an equation (C1).
5	Explanation	$12x^2 + 8x = 4x(3x + 2)$ (M1); C1.
6	e.g. $2x = 10$	Valid equation (B1); check shown (C1).
7	e.g. 5, 10	Uses $>$ not = (C1); two values greater than 4 (B1).
8	A factor	5 multiplies x and y within the term $5xy$ (C2).
9	No	Not true for any value of x as $x^2 \geqslant 0$ (C2).
10	Explanation	Expanding: $x \times x + x \times 1$ (M1); identical for all x (C1).