FOUNDATION & HIGHER

SAME AT BOTH TIERS

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

A1: Using algebraic notation

Solve problems by forming and using algebraic expressions

20 marks · 25 minutes · Non-calculator

1) A rectangle is $3x$ cm long and $(x + 2)$ cm wide. Its perimeter is 36 cm. Find its area.

..... cm^2

[Question 1: 4 marks]

2) Ben is b years old. Amy is 3 times as old as Ben. Cara is 5 years younger than Amy. Their ages total 51. How old is Ben?

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[Question 2: 3 marks]

3) Pens cost p pence each and rulers cost $3p$ pence each. Tom buys 6 pens and 2 rulers for £2.40. Find p.

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[Question 3: 3 marks]

4) A square has side $2a$ cm. The side length is doubled. By what factor does the area increase? Show your working.

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[Question 4: 2 marks]

5) An L-shape is made from a rectangle $2x$ by x joined to a square of side x. Find its area when $x = 5$

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[Question 5: 3 marks]

6) A cube has edge e cm. The total length of its edges (in cm) is numerically equal to its surface area (in cm^2). Find e.

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[Question 6: 3 marks]

7) Three consecutive odd numbers add up to 45. Find them.

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[Question 7: 2 marks]

End of paper – 20 marks in total

Answers and brief mark scheme

Q	Answer	Method / notes
1	72	$8x + 4 = 36$ (P1); $x = 4$ (P1); sides 12 and 6 (P1); 72 (A1).
2	8	$b + 3b + 3b - 5$ (P1); $7b - 5 = 51$ (P1); A1.
3	20	$6p + 6p$ (P1); $12p = 240$ (P1); A1.
4	4	$(4a)^2 = 16a^2$ against $4a^2$ (P1); A1.
5	75	$2x^2 + x^2 = 3x^2$ (P1); $\times 25$ (P1); A1.
6	2	$12e = 6e^2$ (P1); $e = 2$ (P1, A1).
7	13, 15, 17	$6n + 9 = 45$ or similar (P1); A1.