FOUNDATION & HIGHER

HIGHER EXTENDS

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

A19: Simultaneous equations

Solve problems by forming and solving simultaneous equations

20 marks · 25 minutes · Non-calculator

1) 3 coffees and 2 teas cost £11.10. 2 coffees and 3 teas cost £10.40. Find the cost of a coffee and of a tea.

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[Question 1: 4 marks]

2) A rectangle's length is 3 cm more than twice its width. Its perimeter is 42 cm. Find its area.

..... cm^2

[Question 2: 3 marks]

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3) The line $y = x + k$ is a tangent to the circle $x^2 + y^2 = 8$. Find the possible values of k.

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[Question 3: 4 marks]

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4) Two numbers add up to 23 and differ by 7. Find them.

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[Question 4: 2 marks]

5) 4 adult and 3 child tickets cost £55. 2 adult and 5 child tickets cost £45. Find the price of each ticket.

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[Question 5: 3 marks]

6) The curve $y = x^2 - 3$ and the line $y = 2x$ meet at A and B. Find the exact length of AB.

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[Question 6: 4 marks]

End of paper – 20 marks in total

Answers and brief mark scheme

Q	Answer	Method / notes
1	Coffee £2.30, tea £2.10	Two equations (P1); eliminate (P1); one value (A1); other (A1).
2	90	$l = 2w + 3$, $2l + 2w = 42$ (P1); $w = 6$, $l = 15$ (P1); A1.
3	± 4	$2x^2 + 2kx + k^2 - 8 = 0$ (P1); discriminant = 0 (P1); $64 - 4k^2 = 0$ (P1); A1.
4	15 and 8	Equations (P1); A1.
5	Adult £10, child £5	Equations (P1); eliminate (P1); A1.
6	$4\sqrt{5}$	$x^2 - 2x - 3 = 0$ (P1); $(3, 6)$, $(-1, -2)$ (P1); $\sqrt{16 + 64}$ (P1); A1.