

Simultaneous Equations (Linear) Mark Scheme

1(a)	$6x + 3y = 12$ $6x + 18y = 42$	[1] Multiply 2 nd equation by 3 to get the same 'quantities' of x
	$15y = 30$ Hence $y = 2$	[1] (2 nd - 1 st equation)
	$6x + 3(2) = 12$ $6x = 6$ $x = 1$	[1] Sub $y = 2$ back into equation 1 Correct answer for x and y
1(b)	$6x - 15y = 48$ $6x + 4y = 10$	[1] Attempt to manipulate equations to get x or y the same
	$19y = -38$ $y = -2$	[1] (2 nd - 1 st equation)
	$3x + 2(-2) = 5$ $x = 3$	[1] Correct answer for x and y
2(a)	$2x + 4y = 14$ $4x - 4y = 4$	[1] Add the two equations together
	$6x = 18$ $x = 3$	[1] Finding value of x
	$6 + 4y = 14$ $y = 2$	[1] Finding value of y
2(b)	$9x - 3y = 69$ $2x + 3y = 8$	[1] Add the two equations together
	$11x = 77$ $x = 7$	[1] Finding value of x
	$14 + 3y = 8$ $y = -2$	[1] Finding value of y
3	$2a + 3c = 20$ $a + 4c = 15$	[1] Setting up simultaneous equations
	$2a + 3c = 20$ $2a + 8c = 30$	[1] Multiply lower equation by 2, subtract to eliminate a
	$5c = 10$ $\therefore c = 2$	[1] Finding value of c
	$a + 4(2) = 15$ $\therefore a = 7$	[1] Substitute in to find a

Turn over ►

4	$50x + 80y = 340$ $25x + 50y = 200$	[1] Writing correct equations (using any letters)
	$50x + 80y = 340$ $50x + 100y = 400$	[1] Attempt to manipulate equations
	$x = 2$ $y = 3$	[1] Correct x or y value
	Student ticket is £2 Parents ticket is £3	[1] Final answer
5(a)	$x + 2y = -1$ $2y - 5x = 23$	[1] Attempt to manipulate equations to get x or y the same
	$x = -4$	[1] Correct answer for x
	$y = 1.5$	[1] Correct answer for y
5(b)	$(-4, 1.5)$	[1] Final answer
6	$5a + 4b = 5.70$ $4a + 2b = 3.60$	[1] Writing correct equations (using any letters)
	$5a + 4b = 5.70$ $8a + 4b = 7.20$	[1] Attempt to manipulate equations
	$a = \text{£}0.50$ or 50p $b = \text{£}0.80$ or 80p	[1] Final answer
7	$3(1) - p(2) = 4$ $4(1) - 3(2) + q = 0$	[1] Substitute in solution
	$3 - 2p = 4$ $-2 + q = 0$	[1] Solve to find p and q
	$\therefore q = 2$	[1] Correct value
	$2p = -1$ $\therefore p = -\frac{1}{2}$	[1] Rearranging for p
8(a)	$8a = 88$ $88 \div 8 = 11$ $a = 11 \text{ cm}$	[1] Final answer
8(b)	$2x + y = 11$ $-4x + 3y = 8$	[1] Writing correct equations from diagram
	$6x + 3y = 33$ $-4x + 3y = 8$	[1] Attempt to manipulate equations
	$x = 2.5$ $y = 6$	[1] Final answer

END