

Topic 12 Simultaneous Equations (Pre-TT) [28] MARKSCHEME

1.

$$\begin{array}{ll} 4x + 3y = 14 & 4x + 3y = 14 \\ 4x + 2y = 10 & 6x + 3y = 15 \end{array} \quad \text{M1}$$

allow error in one term

$$\begin{array}{ll} y = 4 & 2x = 1 \\ & \text{correct elimination from their equations} \end{array} \quad \text{M1}$$

$$x = \frac{1}{2} \text{ and } y = 4 \quad \text{A1}$$

oe
SC correct answers with no working or using T & I

[3]

2.

Draws $3x + 2y = 6$	B2	B1 Works out or plots at least two points satisfying $3x + 2y = 6$ eg (2, 0) and (0, 3)
$x = 2.5$ and $y = -0.7$	B1ft	ft their graph $\pm \frac{1}{2}$ square

3.

$$\begin{array}{ll} 6x + 9y = 27 & 4x + 6y = 18 \\ 6x + 4y = 2 & 9x + 6y = 3 \end{array} \quad \text{M1}$$

$$5y = 25 \text{ or } 5x = -15 \quad \text{M1 dep}$$

Allow total of 1 error on 1st or 2nd method marks

$$y = 5 \text{ or } x = -3 \quad \text{A1}$$

$$x = -3 \text{ and } y = 5 \quad \text{A1}$$

Correct answer with no working or using T & I scores SC1

[4]

4.

$$\begin{array}{l} x + y = 15 \text{ and } x - y = 3 \\ \text{or at least 2 valid trials} \end{array} \quad \text{M1}$$

eg $8 - 7 \neq 3$, $8 + 7 = 15$ one valid trial
 $10 + 5 = 15$ 2nd valid trial

$$(x =) 9 \text{ and } (y =) 6 \quad \text{A1}$$

Note: x and y may not be seen

$$54 \quad \text{A1}$$

54 on its own scores SC2

[3]

5.

$$15x + 9y = 39$$

$$15x + 25y = 15$$

$$25x + 15y = 65$$

$$9x + 15y = 9$$

M1

Allow a total of one error in either 1st or 2nd M mark

$$16y = -24$$

$$y = -1.5$$

$$16x = 56$$

$$x = 3.5$$

M1 dep
A1

Accept $y = -\frac{24}{16}$ or $x = \frac{56}{16}$

$$x = 3.5$$

$$y = -1.5$$

A1

SCI for correct answers with no working or from trial and improvement

[4]

6.

£1.10	5 2 A01.3b 2 A03.1c 1 A03.3	M2 for both equations correct Or M1 for $3c + 2t = 5$ or $4c + 3t = 6.95$ AND M1 for scaling both equations M1 for correct method to eliminate 1 variable, allow 1 arithmetic error	For method marks, condone use of 500 and 695, use of any consistent variables Answers 110 and 85 imply M4
£0.85			

7.

(a) $4a + 3 = 2b + 5$

M1

(b) $4a - 2b = 2$ (-2)

A1

Must indicate division by 2

$$4a + 3 + 2b + 5 + 2a + b = 32$$

M1

$$6a + 3b = 24$$

$$2a + b = 8$$

Bl for any version

$$(1) \times 3: 6a - 3b = 3$$

M1

$$12a = 27$$

M1

For attempt to eliminate

AB or $4a + 3 = 12$ and BC or $2b + 5 = 12$

$$a = 2.25$$

A1

[6]