

Simultaneous Equations Solutions

A) $2B + 5P = 5.2$ (x-3) $-6B - 5B = -15.6$
 $3B + 2P = 5.6$ (x2) $+ 6B + 4B = 11.2$

$$-11B = -4.4$$

$$B = 0.4 \text{ cm length of bead}$$

$$2(0.4) + 5P = 5.2$$

$$0.8 + 5P = 5.2$$

$$-0.8 \quad -0.8$$

$$5P = 4.4$$

$$P = 0.88 \text{ cm length of pearl}$$

B) $4x + 2y = 13$ (x3) $12x + 6y = 39$
 $5x + 3y = 17$ (x-2) $-10x - 6y = -34$

$$2x = 5$$

$$x = 2.5$$

$$4(2.5) + 2y = 13$$

$$10 + 2y = 13$$

$$2y = 3$$

$$y = 1.5$$

C) $x + 2y = -5$ (x2) $2x + 4y = -10$
 $3x - y = 8$ (x2) $6x - 2y = 16$

$$7x = 21$$

$$x = 3$$

$$3 + 2y = -5$$

$$2y = -8$$

$$y = -4$$

Point of Intersection: (3, -4)

D) (a) $280x + 70y = 52.50$

(b) $210x + 40y = 38.00$

(c) $280x + 70y = 52.50$ (x-4)
 $210x + 40y = 38.00$ (x7)

$$-120x - 280y = -210$$

$$1470x + 280y = 266$$

$$350x = 56$$

$$x = 0.16$$

$$280(0.16) + 70y = 52.50$$

$$44.8 + 70y = 52.5$$

$$70y = 7.7$$

$$y = 0.11$$

call = 16p per minute

text = 11p per text

E) $2x + y = 5$ (x3) $x - 3y = 6$
 $(0, 5)$ $(0, -2)$
 $(2.5, 0)$ $(6, 0)$
 $(2, 1)$

Or algebraically

$$2x + y = 5$$
 (x3) $6x + 3y = 15$
 $x - 3y = 6$ $x - 3y = 6$

$$7x = 21$$

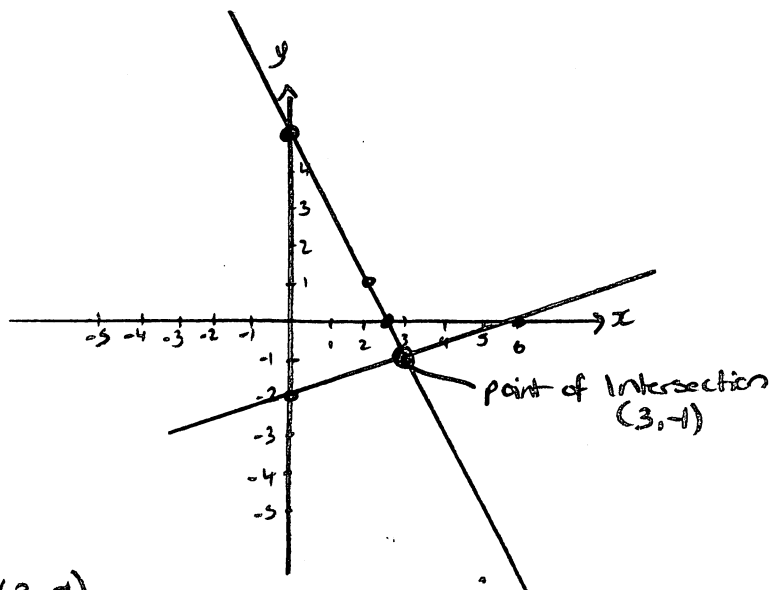
$$x = 3$$

$$6(3) + 3y = 15$$
 (3, -1)

$$18 + 3y = 15$$

$$3y = -3$$

$$y = -1$$



F)

$$\begin{aligned} 3x - 2y &= 11 & (\times 5) \\ 2x + 5y &= 1 & (\times 2) \end{aligned}$$

$$\begin{aligned} 15x - 10y &= 55 \\ 4x + 10y &= 2 \\ \hline 19x &= 57 \\ x &= 3 \end{aligned}$$

$$\begin{aligned} 3(3) - 2y &= 11 \\ 9 - 2y &= 11 \\ -2y &= 2 \\ y &= -1 \end{aligned}$$

(3, -1)

G)

(a) $x + y = 130$
 (b) $30x + 50y = 6000$

(c) $x + y = 130$
 $30x + 50y = 6000$

$$\begin{aligned} x(-50) & \quad -50x - 50y = -6500 \\ 30x + 50y &= 6000 \\ \hline -20x &= -500 \\ x &= 25 \end{aligned}$$

$$\begin{aligned} 25 + y &= 130 \\ y &= 105 \end{aligned}$$

H)

(a) $14x + 4y = 55.00$
 (b) $13x + 6y = 54.50$

(c) $14x + 4y = 55.00$ ($\times -6$)
 $13x + 6y = 54.50$ ($\times 4$)

$$\begin{aligned} -84x - 24y &= -330 \\ 52x + 24y &= 218 \\ \hline -32x &= -112 \\ x &= 3.5 \end{aligned}$$

$$\begin{aligned} 14(3.5) + 4y &= 55 \\ 49 + 4y &= 55 \\ 4y &= 6 \\ y &= 1.5 \end{aligned}$$

Adult price = £3.50 Child price = £1.50