國中第二冊

立即練習五

p. 7 (1)

$$1.2x \times 80 + (x + y) \times 40 - 120x$$

$$= 96x + 40x + 40y - 120x = 16x + 40y \quad （元）$$

p. 7(2)

$$2x + y - 4 = 3x - y + 2 \Rightarrow x - 2y = -6$$

$$a = -2，b = -6 \quad \therefore a + b = (-2) + (-6) = -8$$

p. 7(3)

設甲班 x 位學生，乙班 y 位學生

$$則 10x = 15y \Rightarrow x = 1.5y \quad \therefore \frac{15y}{x + y} = \frac{15y}{2.5y} = 6$$

p. 7(4)

設米每公斤 x 元，糖每公斤 y 元

$$則 30x + 21y = 2 \times 1000 - (500 + 6 \times 10)$$

$$\Rightarrow 30x + 21y = 1440 \Rightarrow 10x + 7y = 480$$

$$\therefore 20x + 14y = 2(10x + 7y) = 2 \times 480 = 960$$

故應找回 $1000 - 960 = 40$ 元

立即練習四

p. 14(1)

$$8x + 4 = 20 \quad x = 2$$

$$2 + k \times 4 = -6 \quad 4k = -8 \quad k = -8$$

p. 14(2)

$$\begin{cases} 4x - 3y + 7 = 0 \\ 3x - y - 1 = 0 \end{cases} \Rightarrow \begin{cases} 4x - 3y = -7 \\ 3x - y - 1 = 0 \end{cases} \Rightarrow \begin{cases} x = 2 \\ y = 5 \end{cases}$$

$$\therefore 2 + 3 \times 5 + k = 0 \quad k = -17$$

p. 15(3)

$$\begin{cases} a + b = 2 \\ 4a + b = -1 \end{cases} \Rightarrow \begin{cases} a = -1 \\ b = 3 \end{cases} \quad \therefore y = -x + 3$$

當 x = 5 時，y = −5 + 3 = −2

p. 15(4)

$$\frac{x+y}{3} + \frac{y-x}{2} = 5 \Rightarrow 2x + 2y + 3y - 3x = -30$$
$$\Rightarrow -x + 5y = 30$$
$$\frac{x}{5} - \frac{x+y}{4} + 1 = 0 \Rightarrow 4x - 5x - 5y + 20 = 0$$
$$\Rightarrow -x - 5y = -20$$
$$\begin{cases} -x + 5y = 30 \\ -x - 5y = -20 \end{cases} \Rightarrow \begin{cases} x = -5 \\ y = 5 \end{cases}$$
$$\therefore (2x + y , x - 3y + 2) \Rightarrow (2 \times (-5) + 5 , -5 - 3 \times (5) + 2)$$
$$\Rightarrow (-5 , -18)$$

p. 15(5)

$$\begin{cases} \dfrac{1}{x} + \dfrac{3}{y} = 3 \cdots ① \\ \dfrac{3}{x} - \dfrac{6}{y} = 5 \cdots ② \end{cases}$$
$$① \times 2 + ② \Rightarrow \frac{5}{x} = 11 \Rightarrow \frac{1}{x} = \frac{11}{5}$$
$$① \times 3 - ② \Rightarrow \frac{15}{y} = 4 \Rightarrow \frac{1}{y} = \frac{4}{15}$$
$$\therefore \frac{1}{x} + \frac{1}{y} = \frac{11}{5} + \frac{4}{15} = \frac{33 + 4}{15} = \frac{37}{15}$$

p. 15(6)

$$\begin{cases} \dfrac{1}{2x} - \dfrac{3}{y} = 3 \Rightarrow \dfrac{2}{x} - \dfrac{12}{y} = 12 \cdots ① \\ \dfrac{2}{x} + \dfrac{1}{y} = 5 \cdots ② \end{cases}$$
$$① - ② \Rightarrow \frac{-13}{y} = 7 \Rightarrow y = \frac{-13}{7}$$
$$① + ② \times 12 \Rightarrow \frac{13}{x} = 36 \Rightarrow x = \frac{13}{36}$$
$$(x , y) = \left(\frac{13}{36} , \frac{-13}{7}\right)$$

立即練習三

p. 23(1)

設李子每個 x 元，蘋果每個 y 元

依題意得 $\begin{cases} 7x + 10y = 205 \cdots ① \\ 5x + 3y = 105 \cdots ② \end{cases}$

② $\times 10 - ① \times 3$ 得 $29x = 435 \Rightarrow x = 15$

p. 23(2)

解 $\begin{cases} a + c = 2b \cdots ① \\ \dfrac{1}{2}c = a + \dfrac{1}{3}b \Rightarrow 3c = 6a + 2b \cdots ② \end{cases}$

$① - ②$ 得 $7a - 2c = 0 \qquad \therefore c = \dfrac{7}{2}a$

p. 23(3)

設原寬為 x m，長為 y m

$\because \begin{cases} (x + 1)y = xy + 26 \\ x(y + 2) = xy + 36 \end{cases} \Rightarrow x = 18，y = 26$

$\therefore$ 周長 $= 2 \times (18 + 26) = 88\ m$

p. 23(4)

設原子筆每枝 x 元，鉛筆每枝 y 元

依題意得 $\begin{cases} 3x + 2y = 50 \cdots ① \\ 2x + 3y = 45 \cdots ② \end{cases}$

由$② + ①$得 $5x + 5y = 95 \Rightarrow x + y = 19 \cdots ③$

$① - ③ \times 2$ 得 $x = 12$，代入③得 $y = 7$

(A)$3 \times 12 + 7 \times 7 = 85$ (B)$2 \times 12 + 10 \times 7 = 94$
(C)$5 \times 12 + 5 \times 7 = 95$ (D)$7 \times 12 + 3 \times 7 = 105$

立即練習四

p.42(1)

　①$2 \times 4 = 8$

　②$\triangle ABC = 正方形 AEFG - \triangle ABG - \triangle ACE - \triangle BCF$

$$= 2 \times 2 - \frac{1}{2} \times 2 \times 1 - \frac{1}{2} \times 2 \times 1 - \frac{1}{2} \times 1 \times 1$$

$$= \frac{3}{2}(平方單位)$$

p.42(2)

　設 P 點坐標為$(x，y)$　　$x < 0，y > 0$

$$\begin{cases} x + 2y = 4 \\ -x + y = 6 \end{cases} \Rightarrow \begin{cases} x = -\dfrac{8}{3} \\ y = \dfrac{10}{3} \end{cases} \quad \therefore P\left(-\dfrac{8}{3}，\dfrac{10}{3}\right)$$

p.42(3)

　甲跑 $20 \times 3 \div 35 = \dfrac{12}{7} = 1\dfrac{5}{7}$ 圈，又 $\dfrac{5}{7}$ 介於 $\dfrac{2}{4}$ 圈與 $\dfrac{3}{4}$ 圈之間

　　$\therefore$ 甲車位於第三象限

p.42(4)

　　$3a - 2 = -10$　　$a = -\dfrac{8}{3}$　　　$\therefore a + \dfrac{1}{3} = -\dfrac{7}{3}$
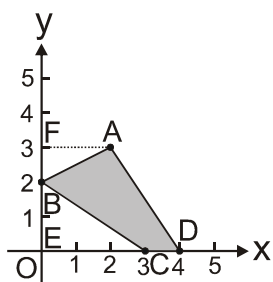
　故 A 點到 y 軸的距離為 $\left|-\dfrac{7}{3}\right| = \dfrac{7}{3}$

p.42(5)

$$\begin{cases} 4x + 3y - 5 = 0 \\ 5x - y - 11 = 0 \end{cases} \Rightarrow \begin{cases} x = 2 \\ y = -1 \end{cases}$$
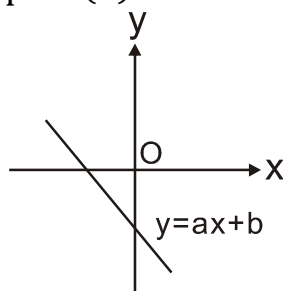
　　$\therefore (x，y) = (2，-1)$ 在第四象限

p.42(6)

設 $E(0，0)$　$F(0，3)$

四邊形 $ABCD =$ 梯形 $FADE - \Delta FAB - \Delta BFC$

$$= (2+4) \times 3 \times \frac{1}{2} - 2 \times 1 \times \frac{1}{2} - 3 \times 2 \times \frac{1}{2} = 5(平方單位)$$
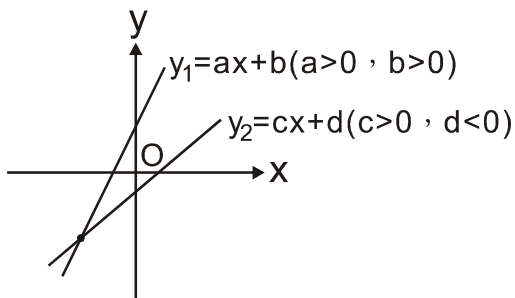
立即練習六

p. 56(1)

函數圖形只通過二、三、四象限　　$\therefore a < 0，b < 0$

p. 56(2)

取 $\overline{CD}$ 中點坐標 $M(5，2)$，求 $\overline{AM}$ 方程式與 x 軸交點 E 為所求

，$A(2，4)$、$M(5，2)$代入 $y = ax + b \Rightarrow 2x + 3y = 16$

p. 56(3)

如上圖所示，兩直線會交於第三象限

p.56(4)

將$(b，-1)$代入 $2x - y + 4 = 0$ 中，可得 $b = -\dfrac{5}{2}$

，將$\left(-\dfrac{5}{2}，-1\right)$代入 $x + ay + 1 = 0$ 中 得 $a = -\dfrac{3}{2}$

$\therefore 2a - b = 2\left(-\dfrac{3}{2}\right) - \left(-\dfrac{5}{2}\right) = -\dfrac{1}{2}$

立即練習三

p.74(1)

$(a + 1.1b) - (1.1a + b) = -0.1a + a.1b = 0.1(b - a)$

$\because a < b$ $\therefore 0.1 \times (b - a) > 0$ $\therefore$ 甲的英、數總分比較高

p.74(2)

$\dfrac{5}{6} \times 36\% + \dfrac{1}{6} \times 24\% = 30\% + 4\% = 34\%$

p.74(3)

乙：$\dfrac{3}{7 + 3} \times \dfrac{1}{2} = \dfrac{3}{20}$ 丙：$\dfrac{5}{5 + 9} \times \dfrac{1}{2} = \dfrac{5}{28}$

$\therefore$ 乙：丙 $= \dfrac{3}{20} : \dfrac{5}{28} = 21 : 25$

立即練習三

p.81(1)

設三人剩下 $3x$、$5x$、$2x$ 元，$x \neq 0$ 則 $3x = 60$ $\therefore x = 20$

三人共有 $3x + 5x + 2x + 350 \times 3 = 1250$ 元

p.81(2)

$\dfrac{x \times 5\% + y \times 12\%}{x + y} = \dfrac{8}{100}$ $\therefore 8(x + y) = 5x + 12y$

$3x = 4y$ 故 $x : y = 4 : 3$

p.81(3)

$400 \times \dfrac{3}{5} \times \dfrac{300}{100} + 400 \times \dfrac{2}{5} \times \dfrac{200}{100} = 720 + 320 = 1040$

p.81(4)

$$速率 = \frac{距離}{時間} \Rightarrow 距離 = 速率 \times 時間 \quad \therefore 距離和速率成正比$$

甲：乙：丙 $= 3000 - 800：3000 - 400：3000 = 11：13：15$

立即練習三

p.88(1)

$\because \dfrac{1}{x}$ 和 y 成正比　　$\therefore$ x、y 成反比

$\because \dfrac{1}{y}$ 和 z 成反比　　$\therefore$ y、z 成正比

$\therefore$ x 和 z 成反比

p.88(2)

①成反比　③成反比　④成正比

p.88(3)

(D)(G)無相關性　(E)每增一歲，比例會變不同

立即練習三

p.106(1)

$f(x) = (a - 1)x^2 + (3a + 4)x + 5$

為一次函數，則 $a - 1 = 0$　　$\therefore a = 1$

$\therefore f(x) = -x + 5$　　故 $f(-1) = 1 + 5 = 6$

p.106(2)

$x_1 = f(x_0) = f(2) = 1 - 1 = 0$
$x_2 = f(x_1) = f(0) = 1 - 0 = 1$
$x_3 = f(x_2) = f(1) = 1 - 0.5 = 0.5$
$x_4 = f(x_3) = f(0.5) = 1 - (0.5)^2 = 0.75$
$x_5 = f(x_4) = f(0.75) = 1 - 0.75 \times 0.5 = 0.75$

p.106(3)

$f(-x + 1) = 1 - 2(-x + 1) = 1 + 2x - 2 = 2x - 1$

p.106(4)

$f(-2) + f(0) + f(5) = -5 + (-1) + (10 + 3) = 7$

p.106(5)

$$g(4) = f(4 + 1) + 4f(0) = (50 - 7) + 4 \times (-7) = 15$$

p.106(6)

$$f(6) = f(3) - 3 = 9 - 3 = 6$$

$$f(9) = f(6) - 3 = 6 - 3 = 3$$

$$f(12) = f(9) - 3 = 3 - 3 = 0$$

立即練習二

p.114(1)

設此線型函數為 $y = f(x) = ax + b$

將$(10，500)$、$(12，700)$代入 $y = f(x) = ax + b$

$$\begin{cases} 500 = 10a + b \cdots ① \\ 700 = 12a + b \cdots ② \end{cases} \quad ② - ①得 200 = 2a \quad a = 100$$

代入①得 $b = -500$ $\quad \therefore y = f(x) = 100x - 500$

將 $y = 1000$ 代入 得 $x = 15$ $(人)$

p.114(2)

由函數圖形可知

當自變數 $x > 4$ 時，$f(x) > g(x)$

當自變數 $x < 4$ 時，$f(x) < g(x)$

當自變數 $x = 4$ 時，$f(x) = g(x)$

p.114(3)

$\because a^2 - 4 = 0 \Rightarrow a = \pm 2$ 且 $a + 2 = 0 \Rightarrow a = -2$

故 $f(x) = -2 - 3 = -5 \Rightarrow f(2008) = -5$

p.114(4)

$x = 0$ 代入 $g(x)$得 $g(x) = -6 + 0 = -6$

$\therefore$ 交點為$(0，-6)$代入 $f(x)$得 $-6 = 3k + 0 \quad k = -2$

p. 114(5)

$$f(x) = \frac{1}{3}x + a \text{ 通過}(0，0) \Rightarrow a = 0$$

$$g(x) = bx + c \text{ 通過}(1，9) \Rightarrow b + c = 9 \quad \therefore a + b + c = 9$$

立即練習三

p. 129(1)

①$(1.4x - 2000) - x \geq 0.05x$　②是

立即練習五

p. 140(1)

$$ax - b > bx - a \Rightarrow (a - b)x > -a + b \quad \text{又 } a - b < 0$$

$$\therefore x < \frac{-a + b}{a - b} = -1 \quad x < -1$$

p. 140(2)

$-7x < 14 \quad x > -2 \quad \therefore a = -1$
$-3x > 6 \quad x < -2 \quad \therefore b = -3$
$\therefore a + b = (-1) + (-3) = -4$

p. 140(3)

$$-7 \leq 2x - 1 \leq 7 \quad -3 \leq x \leq 4$$

$$\Rightarrow -3、-2、-1、0、1、2、3、4 \Rightarrow 8 \text{ 個}$$

p. 140(4)

$$-2 > -ax \quad x < \frac{-2}{-a} = -1 \quad \therefore a = -2$$

p. 140(5)

①設 $\overline{BC}$ 長 x 公分　$\overline{AB}$ 長$(100 - x)$

$$\frac{x}{3} \geq \frac{100 - x}{4} \quad 4x \geq 3(100 - x) \quad \therefore x \geq \frac{300}{7}$$

又$\overline{BC} < 100 \quad \therefore \frac{300}{7}$公分 $\leq \overline{BC} < 100$ 公分

②承①，則 $0 < \overline{AB} \leq 100 - \dfrac{300}{7}$　　$\therefore 0 < \overline{AB} \leq 57\dfrac{1}{7}$

故 $\overline{AB}$ 的最大整數值為 57 公分

p.140(6)

$-b \leq 2x - a \leq b \Rightarrow \dfrac{a-b}{2} \leq x \leq \dfrac{a+b}{2}$

$\begin{cases} a+b = 14 \\ a-b = -2 \end{cases} \Rightarrow \begin{cases} a = 6 \\ b = 8 \end{cases}$　$\therefore 3a - 2b = 2$

p.140(7)

$-3m - 9 \geq -5$　　$-3m \geq 4$　　$\therefore m \leq -\dfrac{4}{3}$