

Fully-Worked Solutions

PRACTICE 9

Section A

1 $5y + 2x = 20$
 $x = 0, \quad 5y + 2(0) = 20$
 $5y = 20$
 $y = 4$

Answer: **B**

2 $4x - 7y = 19$
 $x = 3, \quad y = -1$
 $4(3) - 7(-1) = 12 + 7$
 $= 19$

Answer: **C**

3 $m = 4, (3, 5)$
 $y - 5 = 4(x - 3)$
 $y - 5 = 4x - 12$
 $y = 4x - 7$

Answer: **D**

4 $3x + 8y = 24$ $6x = -16y + 11$
 $8y = -3x + 24$ $16y = -6x + 11$
 $y = -\frac{3}{8}x + 3$ $y = -\frac{6}{16}x + \frac{11}{16}$
 $y = -\frac{3}{8}x + \frac{11}{16}$

Parallel

Answer: **B**

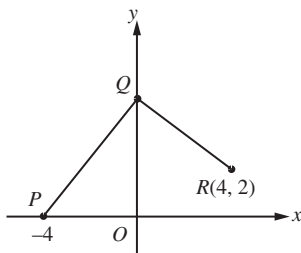
5 $6y = 5x - 10$
 $y = 0, \quad 0 = 5x - 10$
 $5x = 10$
 $x = 2$

Answer: **D**

6 $8x - 3y = 24$
 $-3y = -8x + 24$
 $y = \frac{8}{3}x - 8$
 $m = \frac{8}{3}$

Answer: **D**

7



$m = -\frac{y\text{-intercept}}{x\text{-intercept}}$

$Q(0, y)$

$2.5 = -\frac{y}{-4}$

$2.5 = \frac{y}{4}$

$y = 10$

$m_{QR} = \frac{10 - 2}{0 - 4}$
 $= -2$

Answer: **A**

8 $\frac{x}{3} + \frac{y}{-6} = 1$

$x\text{-intercept} = 3,$

$y\text{-intercept} = -6$

Answer: **B**

9 $m = -\frac{y\text{-intercept}}{x\text{-intercept}}$

$m = -\frac{-6}{14} = \frac{3}{7}$

Answer: **C**

10 $J(4, -9) \quad D(20, 3)$

$m = \frac{-9 - 3}{4 - 20}$

$= \frac{-12}{-16}$

$= \frac{3}{4}$

Answer: **D**

11 $m = -\frac{y\text{-intercept}}{x\text{-intercept}}$

$-\frac{2}{5} = -\frac{y}{-3}$

$-\frac{2}{5} = \frac{y}{3}$

$y = -\frac{6}{5}$

$= -1\frac{1}{5}$

Answer: **B**

12 $4x + my + 10 = 0$

$my = -4x - 10$

$y = -\frac{4}{m}x - \frac{10}{m}$

$-\frac{4}{m} = 2$

$2m = -4$

$m = -2$

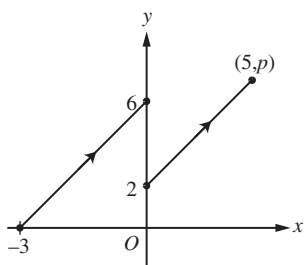
Answer: **A**

13 $m = -3$ $c = 1$ for $(0, 1)$

$y = -3x + 1$

Answer: C

14



$$\frac{p-2}{5-0} = -\frac{6}{-3}$$

$$\frac{p-2}{5-0} = 2$$

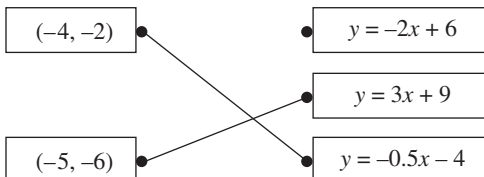
$$p-2 = 10$$

$$p = 12$$

Answer: C

Section B

1 (a)



(b) (i) FALSE

(ii) TRUE

2 (a) (i) Gradient = 6

(ii) y-intercept = -11

(b) (i) 1

(ii) 0

3 (a) (i) $y = 8$

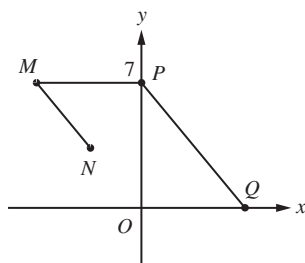
(ii) $x = -5$

(b) (i) x-intercept = 8

(ii) y-intercept = 6

Section C

1 (a) (i)



$$M(x, 7)$$

$$y + 3x + 2 = 0$$

$$7 + 3x + 2 = 0$$

$$3x = -9$$

$$x = -3$$

$$\therefore M(-3, 7)$$

(ii) $MP = 0 - (-3) = 3$ unit

(iii) $y + 3x + 2 = 0$

$$y = -3x - 2$$

$$m_{MN} = -3$$

$$MN \parallel PQ$$

$$\therefore m_{PQ} = -3 \quad c = 7$$

$$y = -3x + 7$$

$$y = 0, \quad 0 = -3x + 7$$

$$3x = 7$$

$$x = \frac{7}{3}$$

$$x\text{-intercept} = \frac{7}{3}$$

(b) (i) $RS: y = 4x - 5$

$$m_{PQ} = m_{RS} = 4 \quad Q(3, 14)$$

$$y - 14 = 4(x - 3)$$

$$y = 4x + 2$$

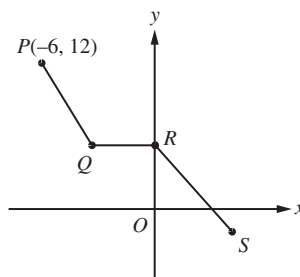
(ii) $y = 0, \quad 0 = 4x + 2$

$$-4x = 2$$

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

$$x\text{-intercept} = -\frac{1}{2}$$

2 (a)



$$(i) \frac{x}{2} + \frac{y}{5} = 1$$

$$x\text{-intercept} = 2,$$

$$y\text{-intercept} = 5$$

$$\therefore R(0, 5)$$

Equation of straight line QR is $y = 5$

$$(ii) m_{PQ} = m_{RS} = -\frac{5}{2} \quad P(-6, 12)$$

$$y - 12 = -\frac{5}{2}(x - (-6))$$

$$y - 12 = -\frac{5}{2}(x + 6)$$

$$y - 12 = -\frac{5}{2}x - 15$$

$$y = -\frac{5}{2}x - 15 + 12$$

$$y = -\frac{5}{2}x - 3$$

$$y = 0, \quad 0 = -\frac{5}{2}x - 3$$

$$\frac{5}{2}x = -3$$

$$x = -3\left(\frac{2}{5}\right)$$

$$= -\frac{6}{5}$$

$$x\text{-intercept} = -\frac{6}{5}$$

$$(b) \ 2x - \frac{1}{2}y = 4 \quad \dots(1)$$

$$5x - y = 12 \quad \dots(2)$$

From (1) :

$$(1) \times 2 \quad 4x - y = 8 \quad \dots(3)$$

$$(2) - (3) \quad x = 4$$

$$\text{From (2): } 5(4) - y = 12$$

$$20 - y = 12$$

$$-y = 12 - 20$$

$$y = 8$$

The point of intersection is (4, 8).

$$3 \ (a) \ 2y = 6 - kx$$

$$y = 3 - \frac{k}{2}x$$

$$y = -\frac{k}{2}x + 3$$

$$m_1 = -\frac{k}{2}$$

$$2x + 5y = 10$$

$$5y = -2x + 10$$

$$y = -\frac{2}{5}x + 2$$

$$m_2 = -\frac{2}{5}$$

$$m_1 = m_2$$

$$-\frac{k}{2} = -\frac{2}{5}$$

$$k = \frac{4}{5}$$

$$(b) \ m = \frac{6-0}{4-2} = 3 \quad Q(2, 0)$$

$$y - 0 = 3(x - 2)$$

$$y = 3x - 6$$

$$(c) \ m_{QR} = m_{OP}$$

$$= \frac{5-0}{4-0}$$

$$= \frac{5}{4}$$

$$y - (-1) = \frac{5}{4}(x - (-6))$$

$$y + 1 = \frac{5}{4}(x + 6)$$

$$y + 1 = \frac{5}{4}x + \frac{15}{2}$$

$$y = \frac{5}{4}x + \frac{15}{2} - 1$$

$$y = \frac{5}{4}x + \frac{13}{2}$$

$$y\text{-intercept is } \frac{13}{2}.$$