

# Fully-worked Solutions

## Practice 10

### Formative Practice

$$\begin{aligned} 1 \text{ Gradient} &= \frac{\text{Vertical distance}}{\text{Horizontal distance}} \\ &= \frac{QT}{KQ} \end{aligned}$$

Answer: A

2  $r, t, s, p, q$

3 Inclined upwards from left to right:  $b, d, e$

Inclined downwards from left to right:  $a, c, f$

4 (a)

Straight line	Vertical distance	Horizontal distance	Gradient
$HK$	3 units	4 units	$\frac{3}{4}$
$PQ$	4 units	3 units	$\frac{4}{3}$

(b) (i) Steepness of straight line  $PQ$    
steepness of straight line  $HK$

(ii) Gradient of straight line  $PQ$    
gradient of straight line  $HK$

5 (a) Vertical distance between  $A$  and  $B$

$$= y_2 - y_1$$

Horizontal distance between  $A$  and  $B$

$$= x_2 - x_1$$

Gradient of straight line

$$= \frac{\text{Distance of } BC}{\text{Distance of } AC}$$

$$= \frac{y_2 - y_1}{x_2 - x_1}$$

(b) Gradient of straight line

$$= \frac{0 - b}{a - 0}$$

$$= -\frac{b}{a}$$

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

6 (a) (i) Gradient of straight line  $AB$

$$= \frac{3}{2}$$

(ii) Gradient of straight line  $CD$

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

$$= -2$$

(b) (i)  $\times$

(ii)  $\checkmark$

(iii)  $\checkmark$

7 (a) Gradient of  $MN$

$$= \frac{20}{56}$$

$$= \frac{5}{14}$$

(b) Gradient of  $MN$

$$= -\frac{120}{930}$$

$$= -\frac{4}{31}$$

8 (a) Gradient of  $AB$

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

(b) Gradient of  $CD = 0$

(c) Gradient of  $EF = \infty$

(d) Gradient of  $GH$

$$= -\frac{3}{3}$$

$$= -1$$

9 (a) Gradient

$$= \frac{1 - 5}{3 - 8}$$

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

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

(b) Gradient

$$= \frac{9 + 3}{-6 - 2}$$

$$= \frac{12}{-8}$$

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

(c) Gradient

$$= \frac{-4 + 1}{4 - 5}$$

$$= \frac{-3}{-1}$$

$$= 3$$

10 (a) Gradient =  $-\frac{y\text{-intercept}}{x\text{-intercept}}$

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

(b) Gradient =  $-\frac{8}{-6}$

$$= \frac{4}{3}$$

$$(c) \text{ Gradient} = -\frac{-9}{-15}$$

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

11 (a) Gradient =  $-\frac{y\text{-intercept}}{x\text{-intercept}}$

$$-\frac{b}{-2} = -\frac{3}{2}$$

$$b = 3$$

$$y\text{-intercept} = 3$$

$$(b) -\frac{-10}{a} = \frac{5}{4}$$

$$5a = 40$$

$$a = 8$$

$$x\text{-intercept} = 8$$

$$(c) -\frac{b}{-12} = \frac{1}{3}$$

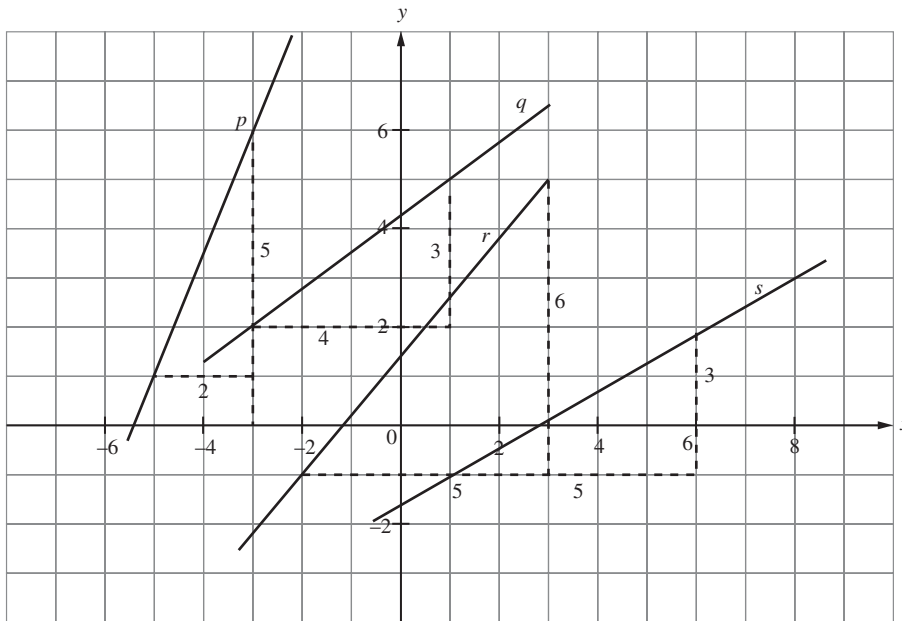
$$3b = 12$$

$$b = 4$$

$$y\text{-intercept} = 4$$

### Summative Practice

1



$$\text{Gradient of } p = \frac{5}{2}$$

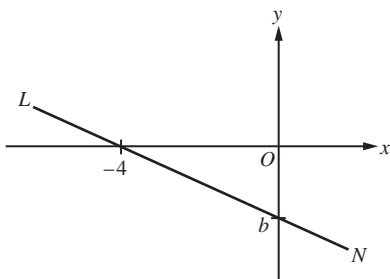
$$\text{Gradient of } q = \frac{3}{4}$$

$$\text{Gradient of } r = \frac{6}{5}$$

$$\text{Gradient of } s = \frac{3}{5}$$

Answer: D

2



$$-\frac{b}{-4} = -\frac{1}{3}$$

$$\frac{b}{4} = -\frac{1}{3}$$

$$b = -\frac{4}{3}$$

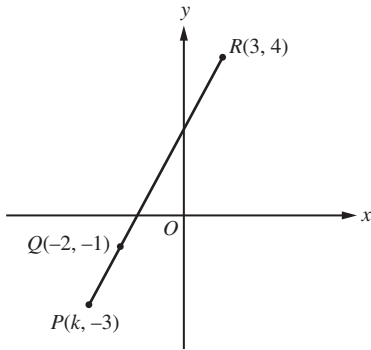
$$y\text{-intercept} = -\frac{4}{3}$$

Answer: C

$$\begin{aligned} 3 \text{ Gradient} &= -\frac{4}{6} \\ &= -\frac{2}{3} \end{aligned}$$

Answer: B

4



Gradient of PQ = Gradient of QR

$$\frac{-1 + 3}{-2 - k} = \frac{4 + 1}{3 + 2}$$

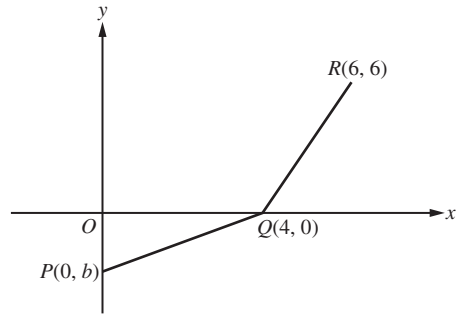
$$\frac{2}{-2 - k} = \frac{5}{5}$$

$$2 = -2 - k$$

$$k = -4$$

Answer: C

5



Gradient of QR = 2 × Gradient of PQ

$$\frac{6 - 0}{6 - 4} = 2 \times \left(-\frac{b}{4}\right)$$

$$\frac{6}{2} = -\frac{b}{2}$$

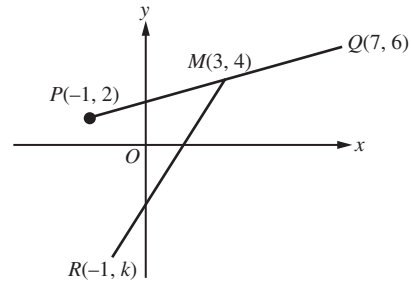
$$3 = -\frac{b}{2}$$

$$b = -6$$

The coordinates of P are (0, -6).

Answer: A

6



Gradient of MR = 4 × Gradient of PQ

$$\frac{4 - k}{3 + 1} = 4 \times \left(\frac{6 - 2}{7 + 1}\right)$$

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

$$4 - k = 8$$

$$k = -4$$