Name:

Level 2 Further Maths

Gradient

Corbettmaths

Ensure you have: Pencil or pen

Guidance

1. Read each question carefully before you begin answering it.
2. Check your answers seem right.
3. Always show your workings

Revision for this topic

www.corbettmaths.com/more/further-maths/

$x_1 \quad y_1 \quad x_2 \quad y_2$

1. Work out the gradient of the line joining the points (3, −5) and (7, 11)

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

$$m = \frac{11 - (-5)}{7 - 3}$$

$$m = \frac{16}{4}$$

4

.....

(2)

$x_1 \quad y_1 \quad x_2 \quad y_2$

2. Work out the gradient of the line joining the points (−7, −2) and (1, −4)

$$m = \frac{-4 - (-2)}{1 - (-7)}$$

$$= \frac{-2}{8}$$

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

$-\frac{1}{4}$

.....

(2)

$x_1 \quad y_1 \quad x_2 \quad y_2$

3. Work out the gradient of the line passing through the points (−2, 5) and (6, −4)

$$m = \frac{-4 - 5}{6 - (-2)}$$

$$= \frac{-9}{8}$$

$-\frac{9}{8}$

.....

(2)

$x_1 \quad y_1 \quad x_2 \quad y_2$

4. Work out the gradient of the line joining the points (−3, −5) and (9, −1)

$$m = \frac{-1 - (-5)}{9 - (-3)}$$

$$= \frac{4}{12}$$

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

$\frac{1}{3}$

.....

(2)

$x_1 \quad y_1 \quad x_2 \quad y_2$

5. Work out the gradient of the line joining the points (−9, −12) and (−3, −36)

$$m = \frac{-36 - (-12)}{-3 - (-9)}$$

$$= \frac{-24}{6}$$

-4

.....

(2)

$x_1 \quad y_1 \quad x_2 \quad y_2$

6. Work out the gradient of the line joining the points (−4.5, 3) and (6, −7.5)

$$m = \frac{-7.5 - 3}{6 - (-4.5)}$$

$$= \frac{-10.5}{10.5}$$

$$= -1$$

-1

.....

(2)

$x_1 \quad y_1 \quad x_2 \quad y_2$

7. A line passes through the points $(4a, -a)$ and $(6a, 5a)$

Work out the gradient of the line

$$m = \frac{5a - (-a)}{6a - 4a}$$

$$= \frac{6a}{2a}$$

$$= 3$$

3

.....

(2)

$x_1 \; y_1 \quad x_2 \; y_2$

8. The line passing through (5, –2) and (8, c) has a gradient of 3.

Find c.

$$m = \frac{c - -2}{8 - 5}$$

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

$$9 = c + 2$$

$$c = 7$$

7

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(3)

$x_1\ y_1 \quad x_2\ y_2$

9. The line passing through (–8, –9) and (–2, h) has a gradient of 4.

Find h.

$$4 = \frac{h-(-9)}{-2-(-8)}$$

$$4 = \frac{h+9}{6}$$

$$24 = h+9$$

$$h = 15$$

15

.....

(3)

$x_1\ y_1 \quad x_2\ y_2$

10. The line passing through (3, –4) and (m, 10) has a gradient of 2.

Find m.

$$2 = \frac{10-(-4)}{m-3}$$

$$2(m-3) = 14$$

$$m-3 = 7$$

$$m = 10$$

10

.....

(3)

$x_1\ y_1 \quad x_2\ y_2$

11. The line passing through (–2, 5) and (2, n) has a gradient of –½

Find n.

$$-\frac{1}{2} = \frac{n-5}{2-(-2)}$$

$$-\frac{1}{2} = \frac{n-5}{4}$$

$$-2 = n-5$$

$$n = 3$$

.....

(3)

$x_1\ y_1 \quad x_2\ y_2$

12. The line passing through (1, p) and (5, 1) has a gradient of 0.75

Find p.

$$\frac{3}{4} = \frac{1-p}{5-1}$$

$$3 = 1-p$$

$$p = -2$$

.....

(3)

$x_1 \quad y_1 \quad x_2 \quad y_2$

13. The line passing through $(-3, -6)$ and $(g, -5g)$ has a gradient of –3

Find g.

$$-3 = \frac{-5g - (-6)}{g - (-3)}$$

$$-3 = \frac{-5g + 6}{g + 3}$$

$$-3g - 9 = -5g + 6$$

$$2g = 15$$

$$g = 7.5$$

.....

(3)