

3.2 Answers

A-Level Pure Mathematics, Year 1
Additional Mathematics
GCSE
Coordinate Geometry

Answer 1

$$\begin{aligned}|AB| &= \sqrt{(3 - 2)^2 + (12 - 9)^2} \\&= \sqrt{1^2 + 3^2} \\&= \sqrt{10}\end{aligned}$$

[2 marks]

Answer 2

$$m_{AB} = \frac{11 - 3}{8 - 4} = \frac{8}{4} = 2$$

[2 marks]

Answer 3

$$y = \frac{5}{7}x + \frac{9}{7}$$

[2 marks]

Answer 4

$$3y + 4x + 6 = 0 \Rightarrow y = -\frac{4}{3}x - 2$$

(i) gradient is $-\frac{4}{3}$

(ii) y-axis intercept is -2 That is, $(0, -2)$

[2 marks]

Answer 5

$$y = mx + c$$

$$2 = \frac{1}{2} \times 3 + c$$

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

$$\therefore \text{ The equation of the line is } y = \frac{1}{2}x + \frac{1}{2}$$

[3 marks]

Answer 6

$$m = \frac{7 - (-1)}{3 - 2} = 8$$

$$y = mx + c$$

$$7 = 8 \times 3 + c \Rightarrow c = -17$$

$$\therefore \text{ The equation of the line is } y = 8x - 17$$

[3 marks]

Answer 7

(i) $(0, -7)$ Direct from the equation

(ii) Cuts x-axis when y is zero, $0 = -2x - 7 \Rightarrow x = -\frac{7}{2} \therefore \left(-\frac{7}{2}, 0\right)$

[2 marks]

Answer 8

(i) Yes, on the line as $8 = 2 \times 4$

(ii) Yes, on the line as $8 = 4 + 4$

(iii) Yes, on the line as $8 = 5 \times 4 - 12$

(iv) No, not on the line as $8 \neq -2 \times 4 - 8$

[4 marks]

Answer 9

$$y = mx + c$$

$$-0.5 = 3 \times 1 + c \Rightarrow c = -3.5$$

The line has equation $y = 3x - 3.5$

[3 marks]

Answer 10

$$m = \frac{3 - 4}{2 - (-1)} = -\frac{1}{3}$$

$$y = mx + c \Rightarrow 3 = -\frac{1}{3} \times 2 + c \Rightarrow c = \frac{11}{3}$$

$$\therefore \text{The equation of the line is } y = -\frac{1}{3}x + \frac{11}{3}$$

[3 marks]

Answer 11

$$5x + 6y = 45$$

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$$-x + 3y = 5 \Rightarrow -2x + 6y = 10$$

$$7x = 35$$

$$x = 5 \Rightarrow y = \frac{10}{3}$$

$$y = mx + c \Rightarrow \frac{10}{3} = 2 \times 5 + c \Rightarrow c = -\frac{20}{3}$$

$$y = 2x - \frac{20}{3}$$

[4 marks]

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