Coordinate geometry: 10 practice questions

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Name: _____ Date: _____

Attempt all questions and show your working. Suggested time: 15 to 20 minutes.

Section A: Consolidating (Questions 1-4)

Question 1

Write the gradient of each line.

(a) y = 3x + 2

(b) y = -x + 5

(c) y = ½x - 4

Question 2

Which of these lines are parallel to y = 2x + 1?

(a) y = 2x - 7

(b) y = -2x + 1

(c) y = 2x

(d) y = x + 2

Question 3

Write the gradient of a line that is perpendicular to a line with gradient:

(a) 2

(b) -3

(c) ¾

(d) -½

Question 4

Show that the lines y = 4x + 1 and y = -¼x + 3 are perpendicular.

Section B: Standard (Questions 5-10)

Question 5

Rearrange each equation into the form y = mx + c and write its gradient.

(a) $2y = 6x - 4$

(b) $x + y = 7$

(c) $3x - 2y = 8$

Question 6

For each pair of lines, state whether they are parallel, perpendicular or neither. Give a reason.

(a) $y = 3x - 1$ and $y = 3x + 4$

(b) $y = 2x + 5$ and $x + 2y = 6$

(c) $y = x + 1$ and $y = -2x + 1$

(d) $4x - 2y = 3$ and $y = 2x$

Question 7

Find the equation of the line that is parallel to $y = 3x - 2$ and passes through the point $(2, 9)$.

Question 8

Find the equation of the line that is perpendicular to $y = 2x + 1$ and passes through the point $(4, 3)$.

Question 9

Line P passes through $(1, 2)$ and $(3, 8)$. Line Q passes through $(-1, 0)$ and $(2, 9)$.

(a) Find the gradient of each line.

(b) Are the lines parallel? Explain.

Question 10

A line passes through the points $(0, 1)$ and $(4, 3)$.

(a) Find its gradient.

(b) Write the gradient of any line perpendicular to it.

(c) Find the equation of the line that is perpendicular to it and passes through $(2, 5)$.

Coordinate geometry: answers

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Question 1

Answer: (a) 3 (b) -1 (c) ½

Question 2

Answer: (a) and (c)

Question 3

Answer: (a) -½ (b) ⅓ (c) -4/3 (d) 2

Question 4

Answer: The gradients are 4 and -¼, and 4 × (-¼) = -1, so the lines are perpendicular

Question 5

Answer: (a) y = 3x - 2, gradient 3 (b) y = -x + 7, gradient -1 (c) y = 3/2x - 4, gradient 3/2 (or 1.5)

Question 6

Answer: (a) parallel (both gradient 3) (b) perpendicular (gradients 2 and -½, product -1) (c) neither (gradients 1 and -2) (d) parallel (both gradient 2)

Question 7

Answer: y = 3x + 3

Question 8

Answer: y = -½x + 5 (also accept x + 2y = 10)

Question 9

Answer: (a) both have gradient 3 (b) Yes, because their gradients are equal and their y-intercepts are different, so they are not the same line

Question 10

Answer: (a) ½ (b) -2 (c) y = -2x + 9