Equation of a Straight Line questions and answers

10 questions · 5 Core, 5 Extended · 9 non-calculator · worked answers

Name _____ Date _____ Score _____

- Original questions in the style of the Cambridge 0580 papers, each labelled Core or Extended and calculator or non-calculator. Try every question before you look at the answers.
- Worked answers start after the questions. Questions with marks come from our 0580 practice bank (M method, A accuracy, B independent marks).
- Online, with more practice: igcsemathrevision.com/igcse-frontend/0580/equation-of-a-straight-line-questions

Core: for everyone (Papers 1 and 3, and Extended Papers 2 and 4)

1. **Core · non-calculator · easy**

The equation of a line is $y = 9 - 5x$.
Write down (a) its gradient (b) the coordinates of the point where it crosses the y-axis.

2. **Core · non-calculator · easy**

A line has gradient -2 and crosses the y-axis at $(0, 5)$.
Write down its equation.

3. **Core · non-calculator · easy**

Write down the equation of the vertical line through $(-4, 6)$.

4. **Core · non-calculator · easy · 1 mark**

A straight line cuts the y-axis at $(0, 7)$ and goes down 3 units for every 1 unit it goes across to the right. Write down the equation of the line.

5. **Core · non-calculator · medium · 3 marks**

The points $(2, 1)$ and $(5, 13)$ lie on a straight line. Work out the equation of the line, giving it in the form $y = mx + c$.

Extended: for Papers 2 and 4

6. **Extended · non-calculator · medium**

Find the gradient and the y-intercept of the line $2y = 6x + 10$.

7. **Extended · non-calculator · medium**

Find the gradient of the line $3x + 4y = 12$.

8. **Extended · non-calculator · medium**

Find the equation of the line through $(1, 4)$ and $(3, 10)$.

9. **Extended · non-calculator · hard**

Find the equation of the line through $(-2, 7)$ and $(4, -5)$.

10. **Extended · calculator · hard · 4 marks**

A straight line passes through $(1, -2)$ and $(4, 7)$.

(a) Find the equation of the line in the form $y = mx + c$.

(b) Does the point $(10, 25)$ lie on the line? Show how you decide.

Answers and worked solutions

Question 1

Answer: (a) -5 (b) $(0, 9)$

1. Rewrite as $y = -5x + 9$. In $y = mx + c$, m is the gradient and c is the $y-$intercept.

Question 2

Answer: $y = -2x + 5$

1. $m = -2$ and $c = 5$.

Question 3

Answer: $x = -4$

1. Every point on a vertical line has the same $x-$coordinate.

Question 4 — 1 mark

Answer: $y = -3x + 7$

B1 $y = -3x + 7$ oe

Question 5 — 3 marks

Answer: $y = 4x - 7$

M1 gradient $\frac{13-1}{5-2} = 4$

M1 $1 = 4 \times 2 + c$

A1 $y = 4x - 7$

Question 6

Answer: Gradient 3, $y-$intercept 5

1. Divide by 2: $y = 3x + 5$.

Question 7

Answer: $-\frac{3}{4}$

1. $4y = -3x + 12$, so $y = -\frac{3}{4}x + 3$.

Question 8

Answer: $y = 3x + 1$

1. Gradient $= \frac{10-4}{3-1} = 3$.
2. $4 = 3 \times 1 + c$, so $c = 1$.

Question 9

Answer: $y = -2x + 3$

1. Gradient $= \frac{-5-7}{4-(-2)} = \frac{-12}{6} = -2$.
2. $7 = -2 \times (-2) + c$, so $c = 3$.

Question 10 — 4 marks

Answer: (a) $y = 3x - 5$ (b) yes, $3 \times 10 - 5 = 25$

M1 (a) gradient $\frac{9}{3} = 3$

A1 (a) $y = 3x - 5$

M1 (b) $3 \times 10 - 5 = 25$

A1 (b) yes

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