Linear equations and graphs - practice paper 2

Name: _____ Date: _____

16 questions | 47 marks | 55 minutes

Build from equations and coordinate facts to straight-line rules, geometric reasoning and contextual models.

No calculator needed.

1. Solve $5x - 9 = 16$. [2 marks]

2. Solve $7 - 3(x + 1) = 19$. [3 marks]

3. What is the gradient of the horizontal line through $(1, -3)$ and $(7, -3)$? [2 marks]

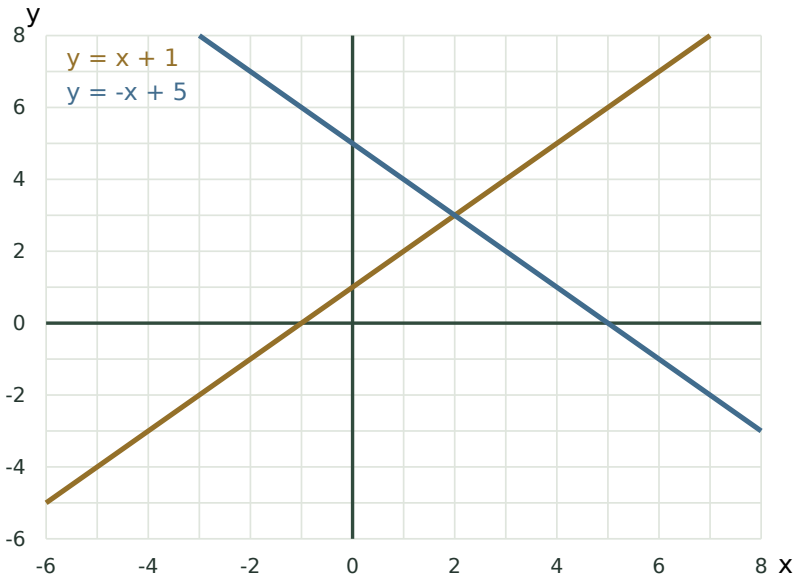
4. The segment from $(1, 2)$ to $(5, k)$ has gradient $3/2$. Find k. [3 marks]

5. One endpoint is $(-2, 7)$ and the midpoint is $(3, 1)$. Find the other endpoint. [3 marks]

6. Find the exact distance between $(-1, -2)$ and $(4, 3)$. [2 marks]

7. Rearrange $2x + 3y = 12$ into $y = mx + c$ form. [2 marks]

8. The graph shows two straight lines. [3 marks]



(a) Use the graph to state their intersection. [1 mark]

(b) Check this point in both labelled equations. [2 marks]

9. Find the equation through (2, 5) and (6, 7). [3 marks]

10. A line through $(4, -2)$ is perpendicular to $x = 1$. Write its equation. [2 marks]

11. Find the line perpendicular to $y = 2x + 1$ through $(2, 4)$. [3 marks]

12. A print shop charges a fixed setup cost and a constant price per poster. [5 marks]

Print costs

Posters n	5	10
Cost C (dollars)	23	38

(a) Use the table to find the cost per poster and setup cost. [3 marks]

(b) Write the rule and find the cost of 12 posters. [2 marks]

13. A line has equation $y = mx + 4$ and passes through $(-2, -2)$. Find m. [3 marks]

14. Mila claims increasing a line's gradient always increases its output. Give a counterexample using $y = x$ and $y = 3x$. [3 marks]

15. A temperature model $T = 28 - 2h$ was fitted using observations from $h = 0$ to $h = 3$. It predicts $T = -12$ at $h = 20$. Explain why this prediction is unreliable. [3 marks]

16. A rectangular court has adjacent corners $A(-3, -1)$, $B(5, -1)$ and $C(5, 5)$. [5 marks]

(a) Find the fourth corner D and the centre of the court. [3 marks]

(b) Find the diagonal length AC. [2 marks]