Linear equations and graphs - practice paper 1

Name: _____ Date: _____

16 questions | 45 marks | 55 minutes

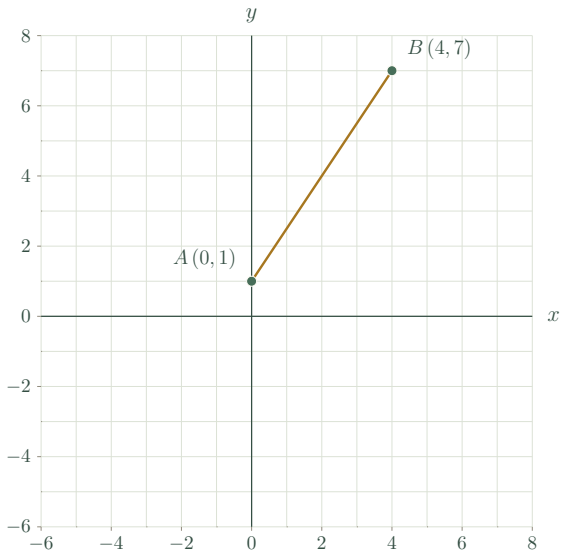
Build from equations and coordinate facts to straight-line rules, geometric reasoning and contextual models.

No calculator needed.

1. Solve $3x + 4 = 19$. [2 marks]

2. Solve $4(x - 2) = 2x + 6$. [3 marks]

3. The line segment joins $A(0, 1)$ and $B(4, 7)$. Find its gradient. [2 marks]



4. Find the midpoint of $(-4, 6)$ and $(8, -2)$. [2 marks]

5. Find the distance between $(2, 1)$ and $(5, 5)$. [2 marks]

6. Consider the straight line $y = -2x + 6$. [4 marks]

(a) State its gradient and its y-intercept. [2 marks]

(b) Find its x-intercept. [2 marks]

7. Find the equation of the line with gradient 4 passing through $(2, 3)$. [3 marks]

8. Find the equation of the line through $(-1, 5)$ and $(3, -3)$. [3 marks]

9. Write an equation of a line parallel to $y = 3x - 1$ through $(0, 4)$. [2 marks]

10. Find the gradient of a line perpendicular to a line of gradient -3. [2 marks]

11. A canoe hire costs $C = 12 + 5h$ dollars for h hours, for $0 \leq h \leq 8$. [4 marks]

(a) Explain the meaning of 12 and 5. [2 marks]

(b) How long was a hire that cost 37 dollars? [2 marks]

12. A container drains according to $V = 96 - 8t$ litres, where t is time in minutes. Find when it becomes empty and state a practical domain for t. [3 marks]

13. Do these values lie on one straight line? Explain using changes. [3 marks]

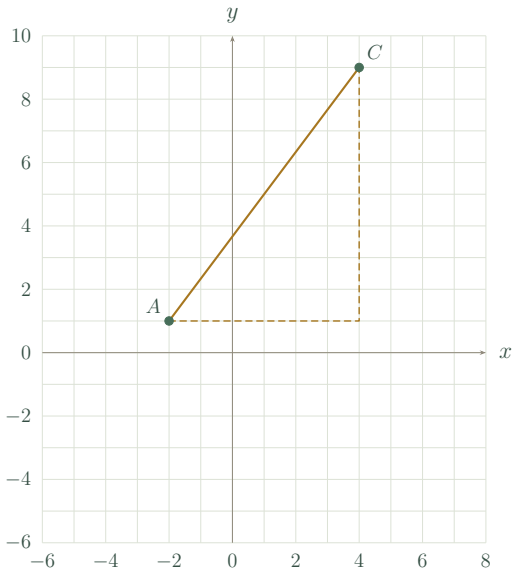
Recorded values

x	0	1	2
y	2	5	9

14. A student says the gradient of $2y = 6x + 10$ is 6. Correct the mistake. [2 marks]

15. The rule $y = -x + 2$ changes to $y = -x - 3$. Describe the change in the graph and justify your answer. [3 marks]

16. A walking route joins $A(-2, 1)$, $B(4, 1)$ and $C(4, 9)$. Each coordinate unit represents 50 m. [5 marks]



(a) Find the length of the two-leg route from A to B to C. [2 marks]

(b) Find the direct distance from A to C and the distance saved. [3 marks]