Linear equations and graphs - topic test

Name: _____ Date: _____

15 questions | 37 marks | 45 minutes

A progressive topic paper with calculations, explanations and practical applications.

No calculator needed.

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

2. Solve $5x - 7 = 8$. [2 marks]

3. Solve $2(x + 4) = 22$. [2 marks]

4. Solve $4x + 3 = x + 18$. [2 marks]

5. Solve $6x = 5$ exactly. [2 marks]

6. Check x = -3 in $2x + 7 = 1$. [2 marks]

7. Solve $2x + 1 < 9$. [2 marks]

8. The table gives three points on a straight line. [3 marks]

Values on a line

x	0	1	2
y	-2	1	4

(a) Find the rule for the line. [2 marks]

(b) Find the output at x = 3. [1 mark]

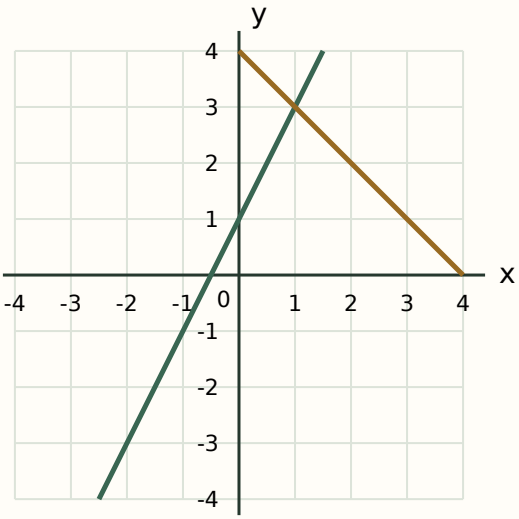
9. Give the equation of the vertical line through $(-2, 5)$. [2 marks]

10. Compare $y = 2x + 1$ and $y = 2x - 4$. [2 marks]

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

y = 2x + 1

y = -x + 4



Each grid square represents 1 unit.

(a) Read their intersection as an ordered pair. [1 mark]

(b) Check that point in both displayed rules. [2 marks]

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

13. Hire costs AUD 12 plus AUD 5/hour. With AUD 42, find the greatest whole number of hours. Include an inequality. [3 marks]

14. A plant is initially 14 cm tall. In a simplified model, it grows 2 cm each week. [3 marks]

(a) Write a rule for height H after w weeks. [1 mark]

(b) Find when the model predicts a height of 30 cm. [2 marks]

15. Two plans have costs in dollars given by $A = 10 + 2n$ and $B = 4 + 5n$. [4 marks]

(a) Find the value of n where both plans have the same cost, and state that cost. [2 marks]

(b) Which plan is cheaper at n = 5? Give both costs. [2 marks]