O Level Maths

Topic: Gradient and Intercept

Instructions

Answer all questions. Show working where necessary. Use your knowledge of gradient and intercept to solve the given problems and sketch graphs.

Practice Problems

Find the Gradient and Intercept:

1. Find the gradient and y-intercept of the line $y = 3x + 5$.
2. Find the gradient and y-intercept of the line $y = -2x + 4$.
3. For the equation $2x - 3y = 6$, write it in the form $y = mx + c$, then find the gradient and intercept.
4. A line passes through the points $(2, 4)$ and $(6, 8)$. Find the gradient and the equation of the line.
5. Find the gradient and y-intercept of the line passing through the points $(1, 2)$ and $(3, 6)$.
6. The equation of a line is $4x + y = 12$. Find the gradient and y-intercept.
7. Find the equation of a line with gradient 5 passing through the point $(1, 2)$.
8. A line passes through the points $(0, 3)$ and $(4, -1)$. Find the gradient and y-intercept of the line.

Word Problems

1. The cost function for a service is given by $C(x) = 3x + 50$, where x is the number of services provided. Find the gradient and the intercept of the cost function. Interpret the gradient.

2. A car rental company charges a fixed fee of \$20 plus \$5 per day. Write the equation of the total cost in terms of x, where x is the number of days. Find the gradient and y-intercept.

3. A garden has a length of $2x + 3$ meters and a width of $x - 1$ meters. If the total area is given by $A = l \times w$, write an equation for the area and find the gradient with respect to x.

Multiple-Choice Questions

1. What is the gradient of the line $y = 7x - 3$?

   A. 7
   B. -7
   C. 3
   D. -3

2. Find the equation of the line with gradient 2 that passes through the point $(1, 3)$.

   A. $y = 2x + 1$
   B. $y = 2x + 5$
   C. $y = -2x + 5$
   D. $y = 2x + 3$

3. Which of the following represents the equation of a line with gradient 4 and y-intercept -2?

   A. $y = 4x + 2$
   B. $y = -4x - 2$
   C. $y = 4x - 2$
   D. $y = -4x + 2$

4. The line with equation $y = 5x + 3$ passes through which point?

   A. (0, 3)
   B. (0, 5)
   C. (3, 0)
   D. (5, 0)