Gradient as rise/run

6 questions | 14 marks

Equivalent correct methods earn the corresponding marks.

1. Find the gradient through $(1, 2)$ and $(4, 8)$. [2 marks]

$m = \frac{8-2}{4-1} = \frac{6}{3} = 2$.

Answer: 2

2. Find the gradient through $(-3, 5)$ and $(1, -3)$. [2 marks]

$m = \frac{-3-5}{1-(-3)} = -\frac{8}{4} = -2$.

Answer: -2

3. Find the gradient through $(2, -1)$ and $(6, 1)$. [2 marks]

$m = \frac{1+1}{6-2} = \frac{2}{4} = \frac{1}{2}$.

Answer: $\frac{1}{2}$

4. Describe the gradient of the line $x = 4$. [2 marks]

Every point has the same x-coordinate.

The run is zero, so division by the run is not defined.

Answer: Undefined

5. A tank contains 80 L at 2 minutes and 50 L at 8 minutes. Find the average gradient and explain it. [3 marks]

$m = \frac{50-80}{8-2} = -\frac{30}{6} = -5$.

The negative sign represents a decrease.

Answer: -5 L/min; the tank loses an average of 5 L per minute over this interval.

6. Two points on a line are $(-2, 3)$ and $(4, k)$. Its gradient is $\frac{2}{3}$. Find k. [3 marks]

$\frac{k-3}{4+2} = \frac{2}{3}$.

Thus $k - 3 = 4$, giving $k = 7$.

Answer: $k = 7$