Exam Style Questions

Gradient

Ensure you have: Pencil, pen, ruler, protractor, pair of compasses and eraser
You may use tracing paper if needed

Guidance

1. Read each question carefully before you begin answering it.
2. Don’t spend too long on one question.
3. Attempt every question.
4. Check your answers seem right.
5. Always show your workings

Revision for this topic

Secondary
Video 189
Video 190

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Line L is drawn on the grid.

Work out the gradient of Line L.

\[
\frac{\text{rise}}{\text{run}} = \frac{4}{2} = 2
\]
2.

AB is drawn on the grid.

Work out the gradient of AB.

\[ \frac{\text{rise}}{\text{run}} = \frac{3}{6} = \frac{1}{2} \text{ or } 0.5 \]

\( \frac{1}{2} \)
A is the point with coordinates \((-1, -4)\)
C is the point with coordinates \((2, 5)\)

Find the gradient of the line AC.

\[
\frac{\text{rise}}{\text{run}} = \frac{9}{3} = 3
\]
Line L is drawn on the grid.

Work out the gradient of Line L.

\[
\frac{\text{rise}}{\text{run}} = \frac{-4}{2} = -2
\]
(a) Line A is drawn on the grid.

Work out the gradient of Line A.

\[
\frac{\text{rise}}{\text{run}} = \frac{1}{3}
\]

\[
\frac{1}{3}
\]

(2)

(b) Line B is drawn on the grid.

Work out the gradient of Line B.

\[
\frac{\text{rise}}{\text{run}} = \frac{-5}{-2.5}
\]

\[
-2.5
\]

(2)
Work out the gradient of the line shown.

$$\frac{\text{rise}}{\text{run}} = \frac{4}{1} = 4$$

(2)
7.

Work out the gradient of the line shown.

\[
\frac{\text{rise}}{\text{run}} = \frac{-4}{1}
\]

\(\text{Gradient} = -4\)

(2)
8. A is the point $(-4, 1)$
B is the point $(6, 6)$

Find the gradient of $AB$.

\[
\frac{\text{rise}}{\text{run}} = \frac{5}{10}
\]

9. A is the point with coordinates $(1, 4)$.
B is the point with coordinates $(7, 22)$.

Find the gradient of $AB$.

\[
\frac{\text{rise}}{\text{run}} = \frac{18}{6}
\]

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Line L is drawn on the grid.

Work out the gradient of Line L.

\[
\frac{\text{rise}}{\text{run}} = \frac{100}{50} = 2
\]
(a) Draw the graph \( y = 4x + 2 \) on the grid above.

<table>
<thead>
<tr>
<th>( x )</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>( y )</td>
<td>2</td>
<td>6</td>
<td>10</td>
<td>14</td>
</tr>
</tbody>
</table>

(b) Work out the gradient of the line \( y = 4x + 2 \)

\[
\frac{\text{rise}}{\text{run}} = \frac{4}{1} = 4
\]

\[
\frac{4}{4}
\]
12.

(a) Draw the graph $2y + x = 20$ on the grid above.

(b) Work out the gradient of the line $2y + x = 20$

\[
\frac{\text{rise}}{\text{run}} = \frac{-6}{12} = -\frac{1}{2}
\]
A is the point \((3, 1)\).
B is the point \((a, 11)\).

The gradient of AB is \(\frac{5}{2}\).

Work out the value of \(a\).

\[
m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{10}{a - 3} = 2.5
\]

\[
10 = 2.5 (a - 3)
\]

\[
10 = 2.5 a - 7.5
\]

\[
17.5 = 2.5 a
\]

\[
a = 7
\]

\(\frac{7}{3}\)

14. Work out the gradient of the line passing through the points \((3, 2)\) and \((7, 20)\).

\[
m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{20 - 2}{7 - 3} = \frac{18}{4} = 4.5
\]

\(4.5\)

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15. The line passing through $(4, a)$ and $(8, 1)$ has gradient $\frac{3}{4}$.

Work out the value of $a$.

\[ m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{1 - a}{8 - 4} = \frac{3}{4} \]

\[ \frac{1 - a}{4} = \frac{3}{4} \]

\[ 1 - a = 3 \]

\[ a = -2 \]