

FluidMaths

GCSE Mathematics (Grade 9-1)

Problem Solving

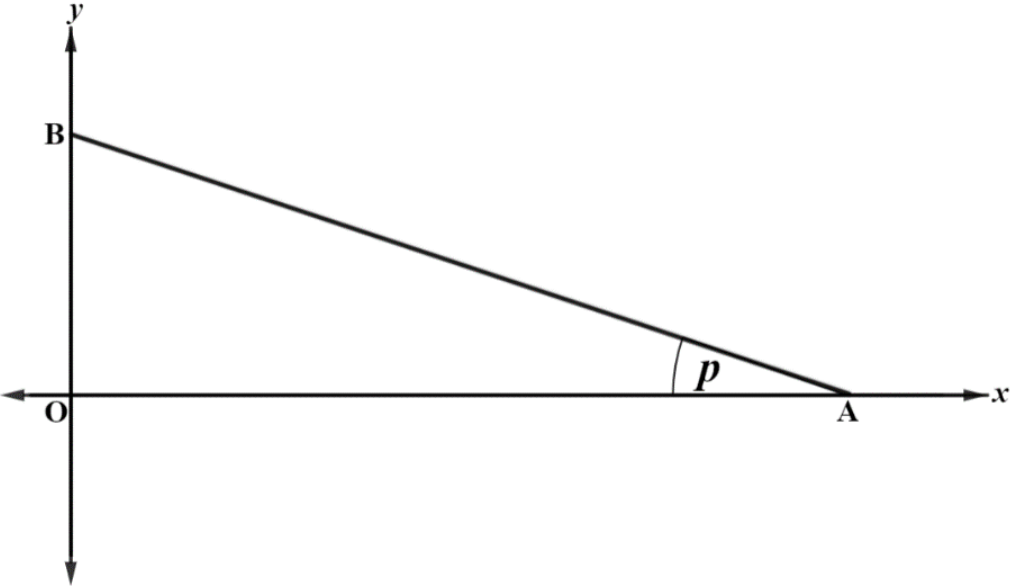
The Equation of a Straight-line
Questions

The marks shown are for guidance purposes only

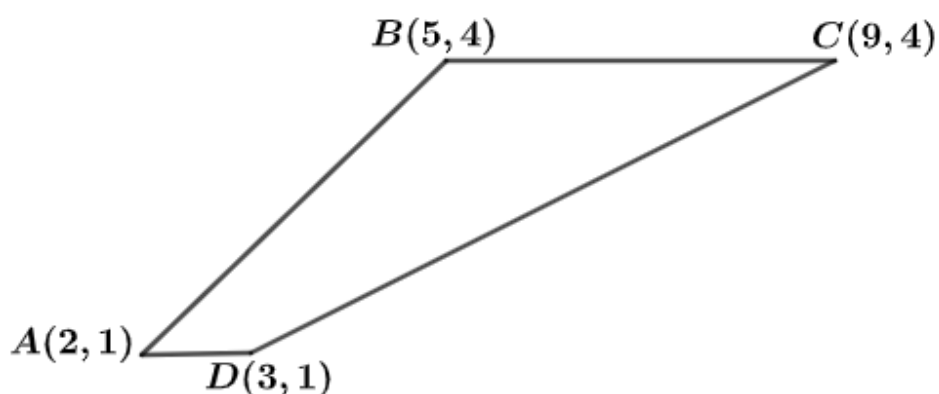
**When not specified, round all non-terminating decimals
during your calculations to 3 significant figures**

Some useful strategies in problem-solving

- Read the question carefully
- Sketch a diagram where applicable
- Take note of key information
- Write down any formulae you may need
- Tackle the problem in bite-size rather than as a whole
- Concentrate on the part of the problem you understand and start from there
- Collaborate with a partner and share ideas
- Use a dictionary to find the meaning of any confusing words
- Check that your answers make sense in the context of the question

<p>1</p>	<p>Point A has coordinates $(-3, -3)$ Point B has coordinates $(-\sqrt{3}, \sqrt{3})$ Show that the gradient of line segment AB is equal to the expression $2 + \sqrt{3}$</p> <p style="text-align: right;">[4marks]</p>
<p>2</p>	<p>The diagram shows line AB The equation of line AB is $y = 4 - \frac{1}{3}x$</p>  <p>Angle $OAB = p$ Show that $\tan p = \frac{1}{3}$</p> <p style="text-align: right;">[4marks]</p>
<p>3</p>	<p>The equation of a line is $y = 2x + 8$ The line intersects the x and y axes at points A and B Calculate the area of triangle AOB. Where O is the origin</p> <p style="text-align: right;">[3marks]</p>
<p>4</p>	<p>The graphs of $y = ax + b$ and $y = -\frac{1}{3}x - 5$ intersect at the point $(-3, -4)$, where a and b are real numbers Given that $b = \frac{5}{2}a$, find the values of a and b</p> <p style="text-align: right;">[4marks]</p>

5 ABCD is quadrilateral



A has coordinates (2, 1)

B has coordinates (5, 4)

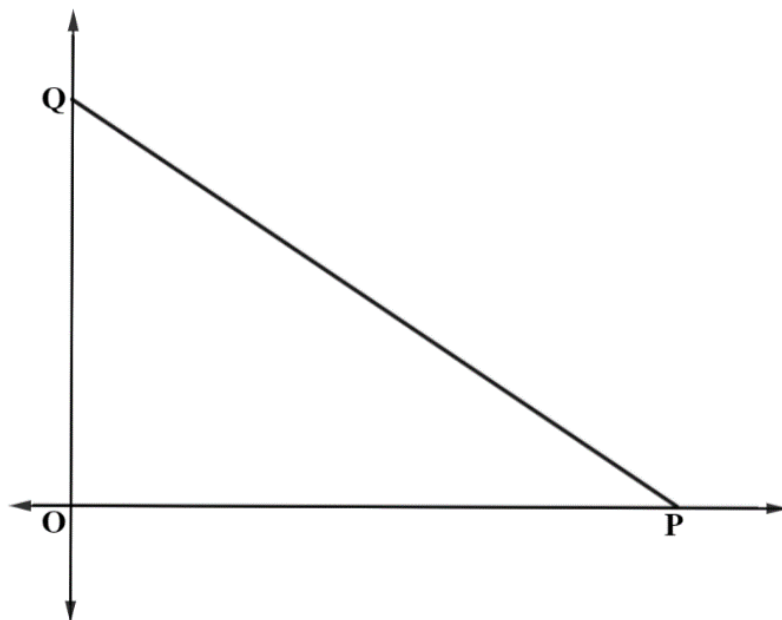
C has coordinates (9, 4)

D has coordinates (3, 1)

Show that AB intersects CD at (1, 0)

[6marks]

6 The graph of $3y + 2x - 20 = 0$ is shown below

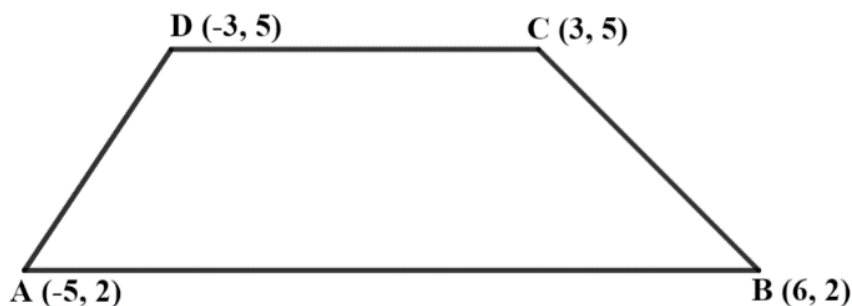


The graph intersects the axes at P and Q

Calculate the area of triangle OPQ

[4marks]

7 ABCD is a trapezium



A has coordinates $(-5, 2)$

B has coordinates $(6, 2)$

C has coordinates $(3, 5)$

D has coordinates $(-3, 5)$

AB intersects CD at the point $\left(a, \frac{43}{5}\right)$.

Find the value of a

[5marks]

8 Point A has coordinates $(5, p)$

Point B has coordinates $(-3, -6)$

Given that the gradient of line segment AB is -3

Show that $p = -30$

[3marks]