

AVM 5 Area of a Triangle using Co-ordinate Geometry

Perpendicular distance from a point to a line
Pg 19 in the Maths Tables:

Take the line $ax + by + c = 0$ and the point (x_1, y_1)
The distance between the point and the line is:

$$\frac{|ax_1 + by_1 + c|}{\sqrt{a^2 + b^2}}$$

* This lesson is a duplicate
of the line 5

* **Prerequisite Knowledge:**
The Line 1-4

Tips for students:
Don't forget that to use this
formulas we must have
everything on the same side
in the equation of our line.

Questions for class:

Example 1:

The line l has equation $5x - 3y + 10 = 0$.

Show that the perpendicular distance from the point $k(6, 2)$ to
the line l is $\sqrt{34}$.

Example 2:

1. Calculate the perpendicular distance from the point $(-1, -5)$
to the line $3x - 4y - 2 = 0$.
2. The point $(-1, -5)$ is equidistant from the lines $3x - 4y - 2 = 0$
and $3x - 4y + k = 0$, where $k \neq -2$. Find the value of k .

Question 1:

Find the distance between the point $(-2, -4)$ and the line
 $y = -\frac{1}{3}x + 2$

Question 2:

$A(-2, p)$

$l : y = 2x + 4$

$k : y = 2x - 1$.

The point A is halfway between the lines l and k . Find the value
of p .

Question 3:

Find the equation of the two lines that are parallel to the line
 $x + 3y = 6$ and are $(\frac{3\sqrt{10}}{2})$ units away from it.

Questions from GKTuition tutorial:

Example 1:

Find the perpendicular distance between the line $3x + 5y = 12$ and the point $(6, 2)$.

Example 2:

The perpendicular distance from the line $2x - y + k = 0$ to the point $(-2, -3)$ is $\sqrt{5}$. Find two possible values for k .

Question 1:

Find the perpendicular distance from the point $(2, 1)$ to the line $5y = 12x + 6$.

Question 2:

$A(2, p)$

$l : 2x + 3y + 1 = 0$

$k : 2x + 3y - 51 = 0$.

The point A is halfway between the lines l and k . Find the value of p .

Question 3:

Find the equation of two lines that are parallel to the line $3x - 4y = 1$ and are two units away from it.