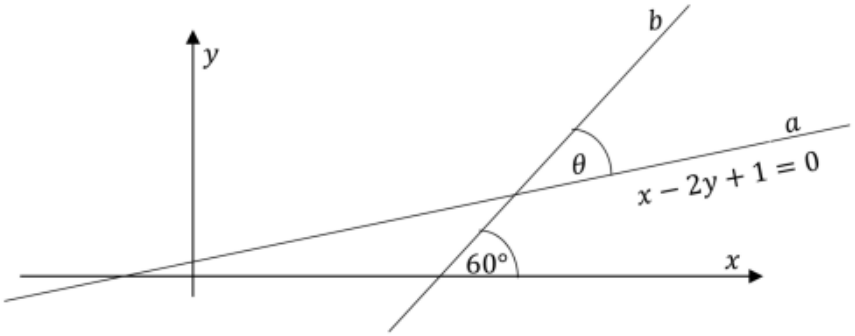
**Trinity Guest Wifi:** **Username: abjsb** **Password: 573115**

Question 1 (2020 Paper 2 Q1)

**(a)** The coordinates of three points are $A(2,-6), B(6,-12)$, and $C(-4,3)$.
Find the perpendicular distance from $A$ to $BC$.

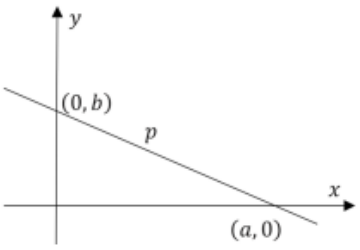
Based on your answer, what can you conclude about the relationship between the points $A, B$, and $C$?

**(b)** The diagram below shows two lines $a$ and $b$. The equation of $a$ is $x - 2y + 1 = 0$.
The acute angle between $a$ and $b$ is $\theta$. Line $b$ makes an angle of $60°$ with the positive sense of the $x$-axis, as shown in the diagram.
Find the value of $\theta$, in degrees, correct to 3 decimal places.




Question 2 (2019 Paper 2 Q2)

**(a)** The line $p$ makes an intercept on the $x$-axis at $(a, 0)$ and on the $y$-axis at $(0, b)$, where $a, b \neq 0$.
Show that the equation of $p$ can be written as $\frac{x}{a} + \frac{y}{b} = 1$.




**(b)** The line $l$ has a slope $m$, and contains the point $A(6, 0)$.

**(i)** Write the equation of the line $l$ in terms of $m$.

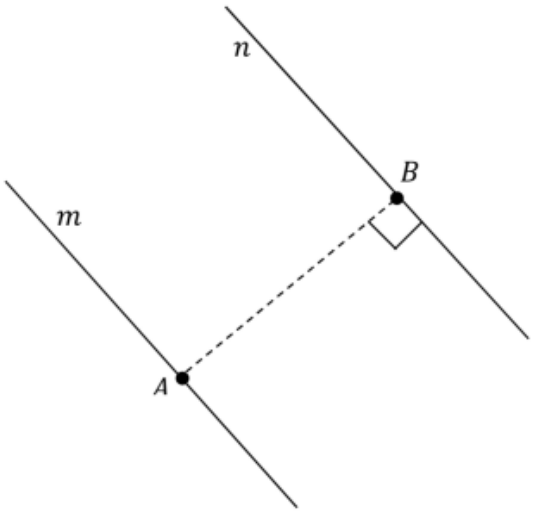
**(ii)** The line $l$ cuts the line $k$: $4x + 3y = 25$ at $P$.
Find the co-ordinates of $P$ in terms of $m$.
Give each co-ordinate as a fraction in its simplest form.

Question 3 (2018 Paper 2 Q5)

The line $m: 2x + 3y + 1 = 0$ is parallel to the line $n: 2x + 3y - 51 = 0$.

**(a)** Verify that $A(-2, 1)$ is on $m$.

**(b)** Find the coordinates of $B$, the point on the line $n$ closest to $A$, as shown below.




**(c)** Two touching circles, $s$ and $t$, are shown in the diagram. $m$ is a tangent to $s$ at $A$ and $n$ is a tangent to $t$ at $B$. The ratio of the radius of $s$ to the radius of $t$ is $1 : 3$.
Find the equation of $s$.