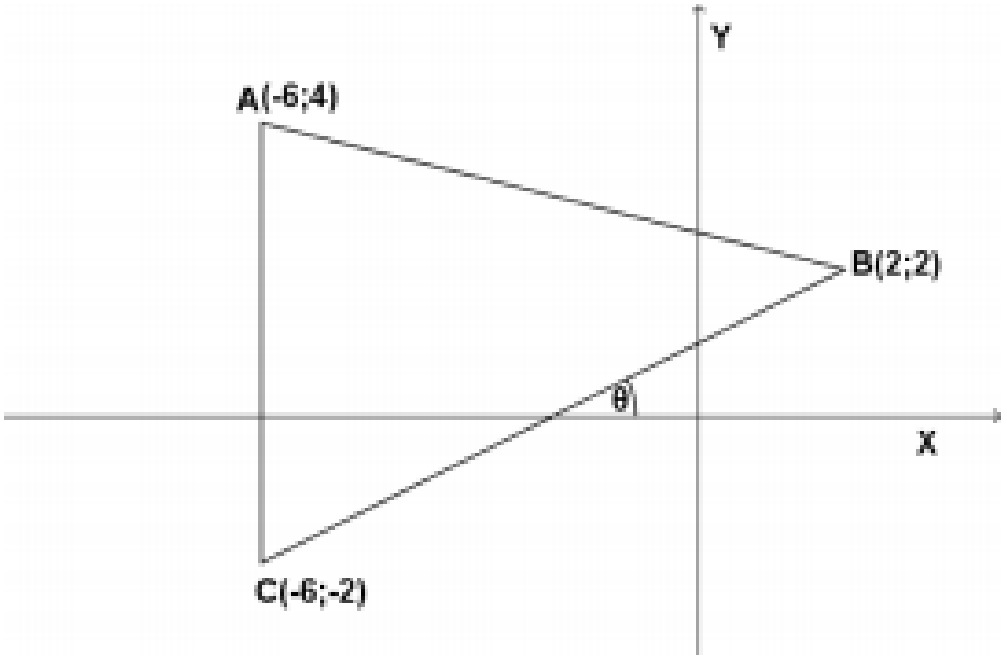
QUESTION 1

In the diagram below ΔABC has vertices A(-6 ; 4), B(2 ; 2) and C(-6 ; -2) in the Cartesian plane. The angle of inclination of BC is θ.



1.1 Determine the gradient of AB. (3)

1.2 Determine the co-ordinates of D the midpoint of AC. (3)

1.3 Determine the equation of straight line BD in the form $y = mx+c$. (4)

1.4 Determine the distance between points B and C. (3)

1.5 Determine the size of θ. (3)

1.6 Hence calculate the size of $\hat{C}$. (4)

1.7 Determine the equation of the straight line which passes through point D and is parallel to AB. (4)

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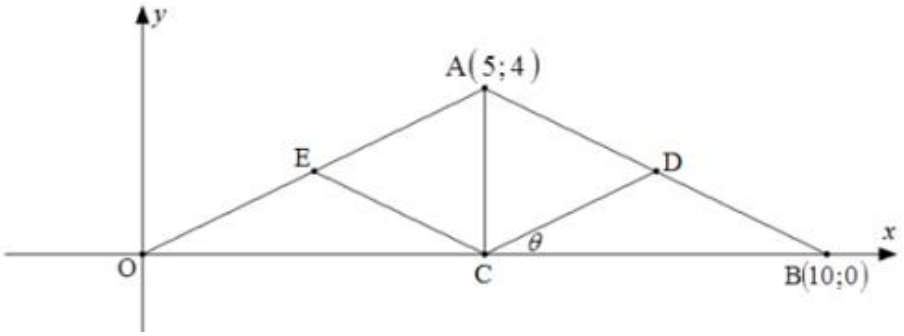
QUESTION 1

The picture alongside shows a roof truss design.

The diagram below, NOT drawn to scale, models the above roof truss design in a Cartesian plane. $A(5;4)$, $B(10;0)$ and $O(0;0)$ are the vertices of ΔABO. Points E and D are midpoints of OA and AB respectively. $AC \perp OB$ with C on OB. The angle of inclination formed by the positive x-axis and CD is θ.



Determine

1.1	The length of AB (Round off to ONE decimal place)	(3)
1.2	The coordinates of D	(2)
1.3	The gradient of CD	(2)
1.4	The size of θ	(2)
1.5	The equation of the line OA	(3)
1.6	The equation of the line parallel to CD passing through A	(4)
1.7	Determine the equation of the line through B, perpendicular to the x-axis	(2)
1.8	Ddetermine the equation of the line parallel to the x-axis passing through A	(2)

[20]