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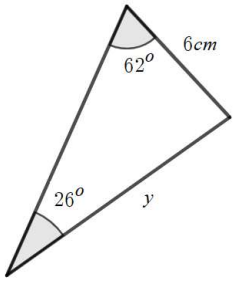
A LEVEL MATHS

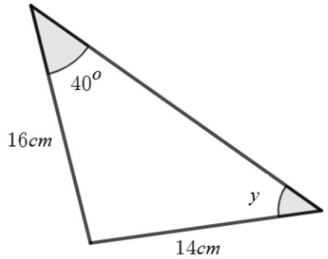
(46) The Sine Rule

WORKING AT D/E

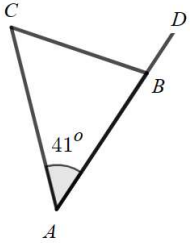
(1) Find the size of y in the diagram below. Give your answer to 3 significant figures.



(2) Find the size of angle y in the diagram below. Give your answer to 3 significant figures.



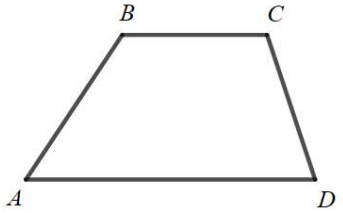
(3) In the diagram below $AB = 13cm$ and $CB = 12cm$. Find the size of $< CBD$ to 1 decimal place.



WORKING AT B/C

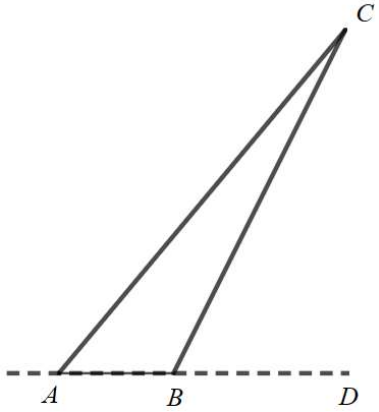
(1) In triangle $PQR, PQ = 12, QR = 11$ and $< QPR = 50^0$. Find the minimum possible length of PR giving your answer to 3SF.

(2) The diagram below shows the trapezium $ABCD$.



$BC = 11cm, CD = 15cm$ and $< BCD = 98^0$. Find the size of $< BDA$ giving your answer to 3SF.

(3) The diagram below shows ΔABC and the horizontal line ABD.



Given that $AB = 4.2, < CAB = 40^o$ and $< CBD = 55^o$, find the perpendicular height of the ΔABC relative to the line ABD.

WORKING AT A*/A

(1) In triangle $PQR, PQ = 2p, QR = q$ and $< QPR = 30^0$. Show that if $< QRP$ is obtuse, then $< QRP = 180 - \arcsin\left(\frac{p}{q}\right)$

(2) Alan walks from home on a bearing of 136^o for 7 miles before stopping for a rest. He then walks x miles on a bearing of 040^o before stopping.
(a) Given that he is now on a bearing of 098^o from his home, find the value of x to 2 decimal places.
Alan now walks home.
(b) Find the shortest possible length from his current position to his home.

(3) In the isosceles triangle PQR, $\sin(PQR) = 0.25$, $PQ = p$ and $PR = r$. Given that $p > r$, without a calculator show that the perimeter of the triangle can be written as

$$\frac{p}{4}\left(8 + \frac{1}{\sin(< QPR)}\right)$$