Problem solving with sin/cos rule

Example

The diagram shows the locations of four mobile phone masts in a field, $BC = 75\ m.\ CD = 80m$, angle $BCD = 55°$ and angle $ADC = 140°$.

In order that the masts do not interfere with each other, they must be at least 70m apart.

Given that A is the minimum distance from D, find:

a) The distance A is from B

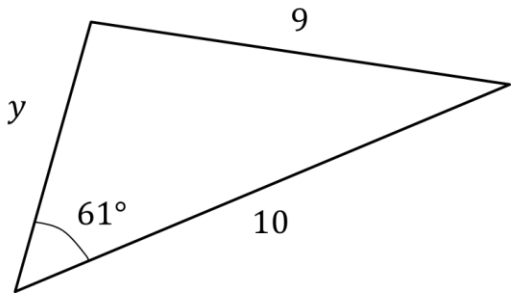
b) The angle BAD

c) The area enclosed by the four masts.

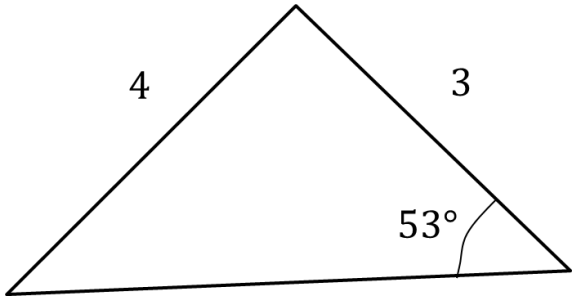
Using the sine rule twice:

Test your understanding

1.



2.



Extension

1. [AEA 2009 Q5a] The sides of the triangle ABC have lengths $BC = a,\ AC = b$ and $AB = c$, where $a < b < c$. The sizes of the angles $A,\ B$ and C form an arithmetic sequence.

   (i) Show that the area of triangle ABC is $ac\frac{\sqrt{3}}{4}$.

Given that $a = 2$ and $\sin A = \frac{\sqrt{15}}{5}$, find

(ii) the value of b,

(iii) the value of c.