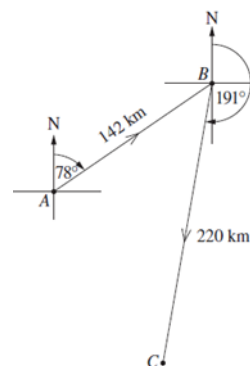




- TG 3** Chris leaves island A in a boat and sails 142 km on a bearing of 078° to island B . Chris then sails on a bearing of 191° for 220 km to island C , as shown in the diagram.
- (a) Show that the distance from island C to island A is approximately 210 km.
- (b) Chris wants to sail from island C directly to island A . On what bearing should Chris sail? Give your answer correct to the nearest degree.

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(a) As $90 - 12 - 11 = 67$, $\angle ABC = 67^\circ$:

$$\begin{aligned}x^2 &= 142^2 + 220^2 - 2(142)(220)\cos 67^\circ \\ &= 44\,151.11909\dots \\ x &= 210.1216769\dots \\ &= 210 \text{ (nearest whole)}\end{aligned}$$

(b) $\frac{\sin \theta}{142} = \frac{\sin 67^\circ}{210}$

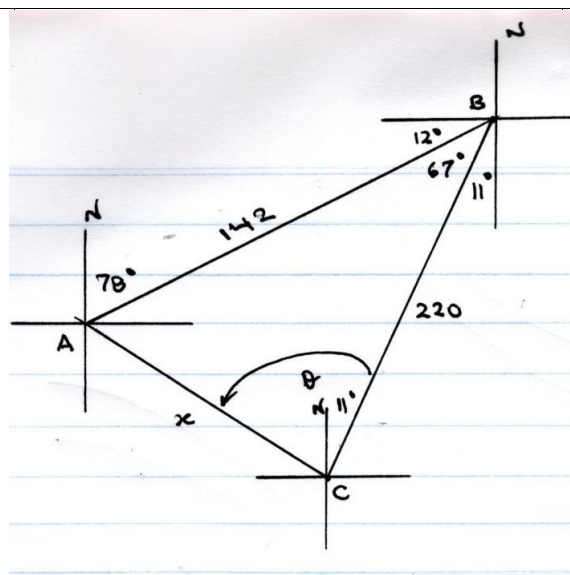
$$\sin \theta = \frac{142 \sin 67^\circ}{210}$$

$$= 0.622076175\dots$$

$$\theta = 38.46790685\dots$$

$$= 38 \text{ (nearest whole)}$$

As $38 - 11 = 27$ and $360 - 27 = 333$, the bearing is 333° .



* These solutions have been provided by [projectmaths](http://projectmaths.com.au) and are not supplied or endorsed by NESA.

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