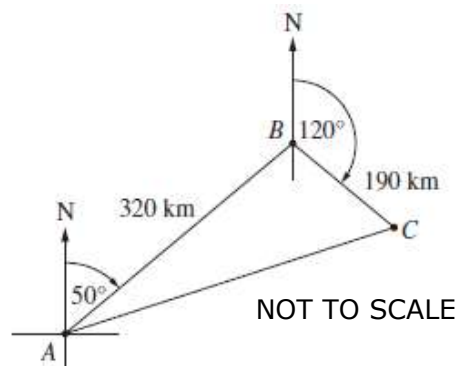




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- 2018 12** A ship travels from Port A on a bearing of 050°
a for 320 km to Port B. It then travels on a bearing of 120° from 190 km to Port C.
 (i) What is the size of $\angle ABC$?
 (ii) What is the distance from Port A to Port C?
 Answer to the nearest kilometre.



1
2

$$\begin{aligned} \text{(i) } \angle ABC &= 50^\circ + (180^\circ - 120^\circ) \\ &= 50^\circ + 60^\circ \\ &= 110^\circ \end{aligned}$$

(ii) Using the cosine rule:

$$\begin{aligned} AC^2 &= 320^2 + 190^2 - 2(320)(190)\cos 110^\circ \\ &= 180\,089.6494\dots \\ AC &= 424.3697084\dots \\ &= 420 \text{ (nearest 10)} \end{aligned}$$

\therefore the distance is 420 km.

State Mean:
0.84
1.53

* These solutions have been provided by [projectmaths](#) and are not supplied or endorsed by NESA.

NESA: Marking Feedback

Skills addressed:

- having a clear understanding and practical use of bearings and related notation
- presenting a correct equation noting the sum of two angles
- having a sound understanding of the use of both the sine and cosine rules
- quoting the correct formula with correct substitution
- ensuring final answer is provided as directed by the question

Areas for students to improve include:

- being able to find the supplements and complements of given angles
- ensuring that they answer the given question as some students found the area of a triangle
- copying the correct formula from the Reference Sheet and then substituting the given values
- correctly following the order of operations in calculations
- completing all steps required as some students left their answer as AC^2

