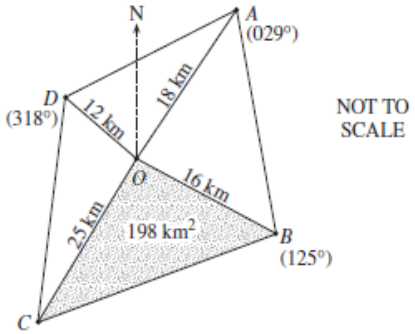
19 MS2 **35** A compass radial survey shows the positions of four towns *A*, *B*, *C* and *D* relative to the point *O*.

The area of the triangle *BOC* is 198 km^2.

Calculate the bearing of town *C* from point *O*, correct to the nearest degree.



3

$A = \frac{1}{2}ab\sin C$

Substitute $A = 198$, $a = 25$, $b = 16$:

$198 = \frac{1}{2}(25)(16)\sin C$ ✔

$198 = 200\sin C$

$\sin C = \frac{198}{200}$

$C = 81.89038554\ldots$

$= 82$ (nearest whole) ✔

Bearing $= 125 + 82$

$= 207$

$\therefore$ the bearing is 207°. ✔

State Mean: **0.79/3**

* These solutions have been provided by *projectmaths* and are not supplied or endorsed by NESA.

Marking Feedback:

Students should:

- be able to identify the correct formula from the reference sheet for an area
- understand a compass radial survey has its directions given as bearings
- use all the information given in the question.

In better responses, students were able to find the:

- find the angle by rearranging the area of a triangle formula and add to 1250
- round the angle correct to the nearest degree.

Areas for students to improve include:

- understanding that 'Not to Scale' means the angles are not exact in the diagram
- solving the area of a non-right angle triangle to find an unknown value
- interpreting the diagram to find a bearing from calculated values.