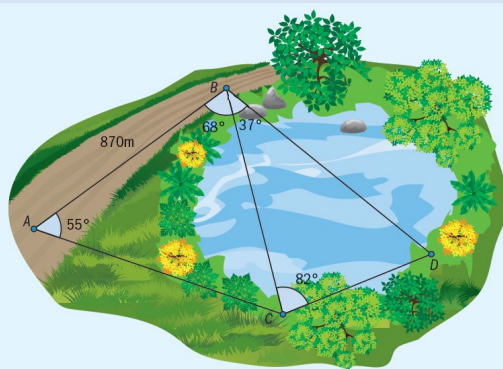


Chapter 1 / **Example 11**

Using the sine rule to find a length

The diagram shows a lake with three docks at points B, C and D. The distance AB along a highway is known to be 870 m. Surveyors measure the angles as given in the diagram.

- Use triangulation to find the distances BC and BD.
- Nils, who rows at a speed of 1.5 m/s, starts from dock B. Calculate how much longer will it take him to cross the lake if he rows to the further of the two docks.



Open a new document and add a Calculator page.

Use the touchpad to click on the wheel icon in the page header.

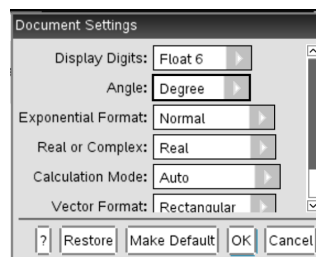


Select 2:Document Settings...

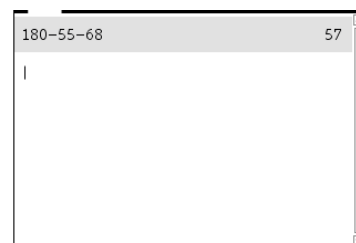
Select 'Degree' as the unit for Angle.

Use the touchpad to select OK or click **enter**.

The page header should now show 'DEG'.



Calculate $\hat{C} = 180^\circ - 55^\circ - 68^\circ = 57^\circ$



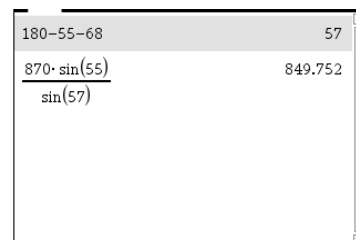
$$BC = \frac{870 \times \sin 55}{\sin 57}$$

Enter the expression $\frac{870 \times \sin(55)}{\sin(57)}$ directly.

Press **ctrl** **[]** to enter a fraction template.

To enter sin press **trig** and select sin from the menu with the touchpad.

$$BC = 850 \text{ m}$$



Chapter 1 / **Example 11**

Using the sine rule to find a length

$$BD = \frac{BC \times \sin 82}{\sin 61}$$

Press **ctrl** **÷** **[]** to enter a fraction template.

Navigate up to the result of BC and press **enter**. This will paste the value found to the maximum accuracy that the GDC stores it into the numerator.

Type **×** $\sin 82$.

To enter \sin press **trig** and select \sin from the menu with the touchpad.

Press **▼**, enter $\sin(61)$ in the denominator and press **enter**.

$$BD = 962 \text{ m}$$

$180 - 55 - 68$	57
$\frac{870 \cdot \sin(55)}{\sin(57)}$	849.752
$\frac{849.7523411097 \cdot \sin(82)}{\sin(61)}$	962.113

$$\text{time} = \frac{\text{distance}}{\text{speed}}$$

Press **ctrl** **÷** **[]** to enter a fraction template.

Navigate up to the result of BD and press **enter**. This will paste the value found to the maximum accuracy that the GDC stores it into the numerator.

Press **=**, navigate up to the result of BC and press **enter**.

Press **▼**, type 1.5 in the denominator and press **enter**.

The time is 74.9 s.

$\frac{870 \cdot \sin(55)}{\sin(57)}$	849.752
$\frac{849.7523411097 \cdot \sin(82)}{\sin(61)}$	962.113
$\frac{962.11256489012 - 849.7523411097}{1.5}$	74.9068