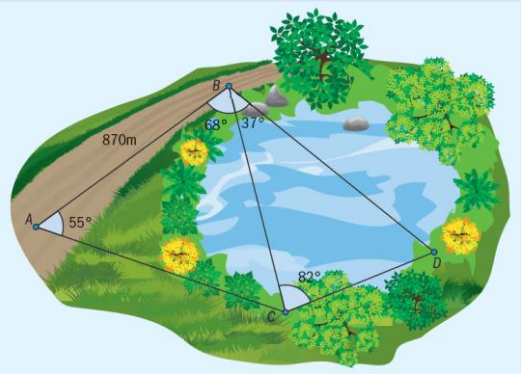
Chapter 1 / **Example 11**

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.

a Use triangulation to find the distances BC and BD.

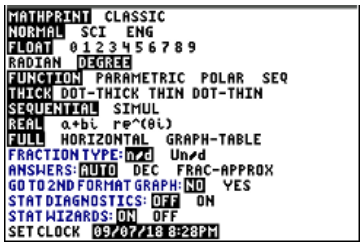
b Nils, who rows at a speed of 1.5 m/s, starts from dock B. Calculate how much longer will it take him to cross the lake if he rows to the further of the two docks.



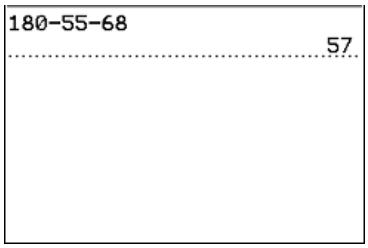
Press [MODE].

Use the [◄] [▲] [►] [▼] keys to place the cursor on DEGREE in the Mode menu, and then press [ENTER] to highlight it.

Press [2nd] [QUIT] to return to the home screen.



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

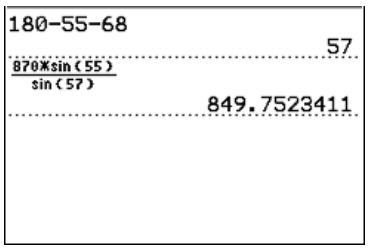


$$BC = \frac{870 \times \sin 55}{\sin 57}$$

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

Press [ALPHA] [F1] 1:n/d to add a fraction template.

$BC = 850$ m



Chapter 1 / **Example 11**

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

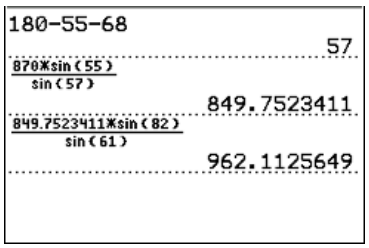
Press [ALPHA] [F1] 1:n/d to add a fraction template.

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 and close the parentheses.

Press [▼], enter sin 61 in the denominator and press [ENTER].

$BD = 962$ m



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

Press [ALPHA] [F1] 1:n/d to add 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.