

The Sine Rule

Student Activity

7 8 9 **10** 11 12



TI-Nspire CAS



Investigation



Student



30min

Aim

The aim of this investigation is to confirm the Sine Rule.

Equipment

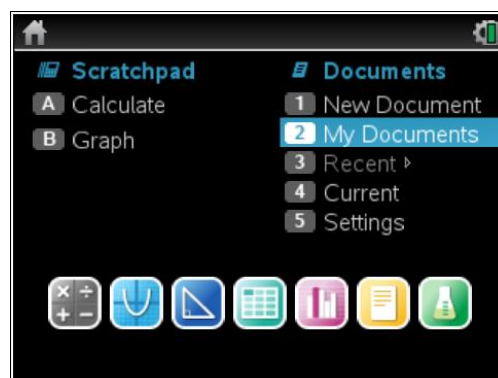
For this activity you will need:

- TI-Nspire (or TI-Nspire)
- TI-Nspire file – Sine Rule

Introduction – Setting up the calculations

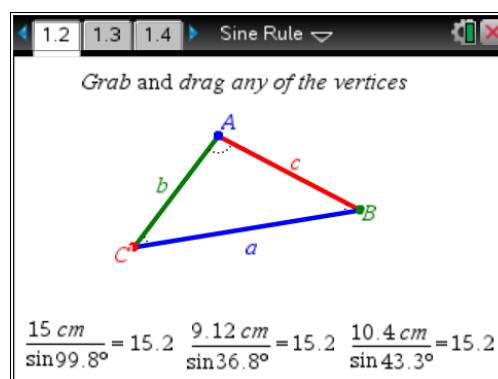
This activity requires access to the “Sine Rule” TI-Nspire file. This file should be loaded on your device before proceeding.

Once the file is on your handheld, press **home** and select **My Documents**. Locate the “Sine Rule” file and press **enter** to open.

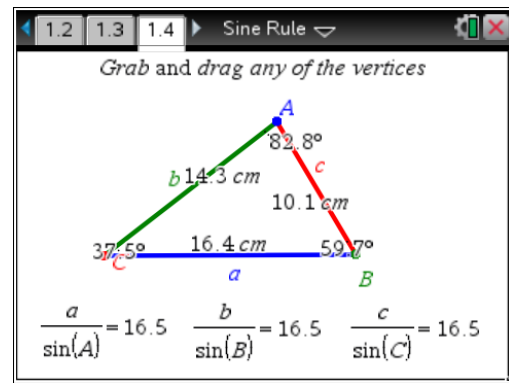


The Sine Rule is: $\frac{a}{\sin(A)} = \frac{b}{\sin(B)} = \frac{c}{\sin(C)}$

Navigate to page 1.2, then grab and drag any of the vertices of the triangle. Observe that even though the measurements change, the Sine Rule ratios remain equal.



Navigate to page 1.4, then grab and drag any of the vertices of the triangle. Again, observe that even though the measurements change, the Sine Rule ratios remain equal.



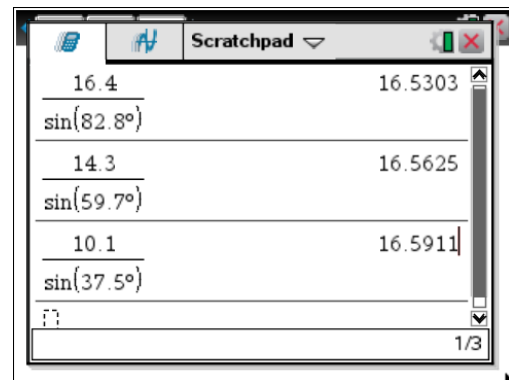
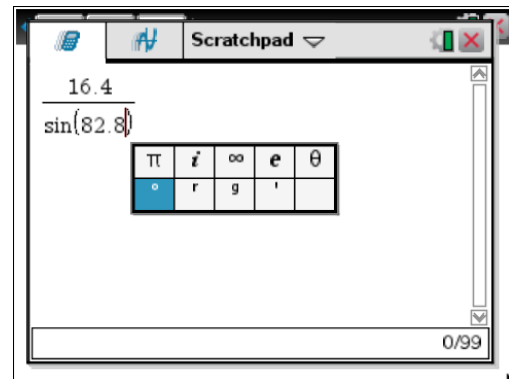
Part of in this investigation requires calculations to be performed. The Scratchpad is a place where calculations can be computed and then discarded. To access the Scratchpad press **home** and select **Scratchpad** (or press **A**). Alternatively, press the key (this key is not available on a Clickpad).

Change the document setting to **Degree** or use the degree symbol ($^{\circ}$). This can be found in the symbol palette or by pressing π or θ to access one of the mini-palettes. On a Clickpad, press $\text{ctrl} + \text{D}$.

Confirm some of the Sine Rule ratios from page 1.4.

Because you are inputting decimal values, you will get decimal answers. If you happen to get an exact answer, press **ctrl + enter** for the decimal answer.

To return to the current document, press **esc**. If you are on the **home** page, select **Current** (or press **4**).



- Alter the triangle on page 1.4 then complete the table below using a new set of values. Compare these to your own calculations using the Scratchpad.

Side/Angle	Value	Sine Ratio	Page 1.4	Scratchpad
a		$\frac{a}{\sin(A^{\circ})}$		
$\angle A$				
b		$\frac{b}{\sin(B^{\circ})}$		
$\angle B$				
c		$\frac{c}{\sin(C^{\circ})}$		
$\angle C$				

- Are the results on page 1.4 and the Scratchpad the same? If not, why do you think they are different?