Exploring the Sine Rule

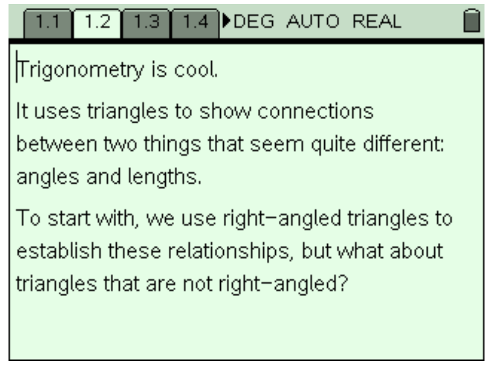
ID: XXXX

Name ______________________

Class ______________________

In this activity, you will investigate the relationships between sides, angles and the ratios of these for right-angled and non-right-angled triangles.

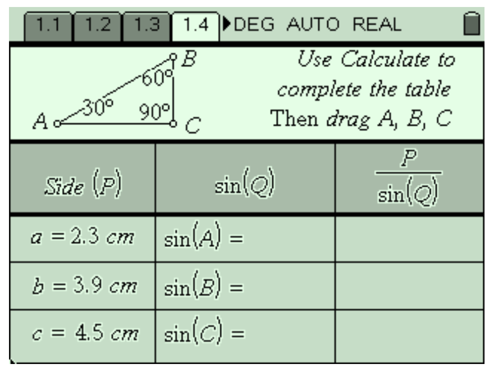
Open the file *Alg1ActXX_Sine_Rule_EN.tns* on your handheld and follow along with your teacher to work through the activity. Use this document as a reference and to record your answers.



The Problem

In this activity, we explore the relationships between sides and angles for both right-angled and non-right-angled triangles.

On page 1.4, you will find a right-angled triangle with sides and angles measured. Use the Calculate Tool to complete the table, then drag points A, B and C and note those features that change, and those that stay the same.



Complete the two tables for a right-angled and a non-right-angled triangle that you create and measure.

Table 1: Right-Angled Triangle

Side	Sin(angle)	Side/Sin(angle)
a =		
b =		
c =		

Table 2: Non-Right-Angled Triangle

Side	Sin(angle)	Side/Sin(angle)
a =		
b =		
c =		

EXERCISES

1. Using page 1.4, set the angle at A equal to 24 degrees. Note the value of sin(A). Now drag points B and C to different places where the angle at A is again 24 degrees. What do you observe about the value of sin(A)?
2. What did you notice about the ratio of each side to the sine of the corresponding angle? Try different angles.
3. Can you explain why the ratio of each side to the sine of the corresponding angle equals the length of side C?
4. On page 1.8, the triangle ABC is no longer constrained to 90 degrees at C. What do you observe about the ratio of side to sine when the triangle is no longer right-angled?
5. Can you explain why, for non-right-angled triangles, the ratio of side to sine is no longer equal to side C? Use the triangle and measurements on page 1.11 to demonstrate the Sine Rule for the three sides and their corresponding angles.
6. Explain how we might use the Sine Rule to find the missing side of the triangle on page 1.13?
7. Use the Calculator to find the value of the missing side "m" from page 1.13, then go back and check your answer by measurement.
8. Explain how we might use the Sine Rule to find the missing angle "p" of the triangle on page 1.16
9. Again, use the Calculator to find the value of the missing angle "p" from page 1.16, then go back and check your answer by measurement.
10. What information do we need to have about a triangle in order to use the sine rule?

EXTENSION

Explore the changes to Pythagoras' Theorem that occur when non-right-angled triangles are used. Try and find a generalized form of Pythagoras’ Theorem for non-right-angled triangles.