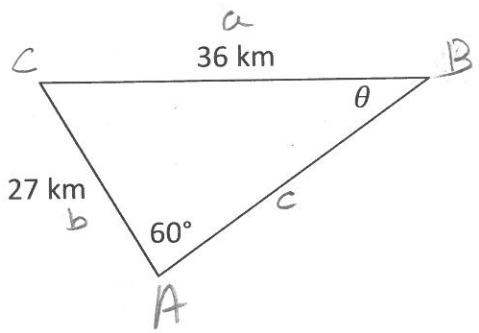
Using the Law of Sines to find an Unknown Angle Measure

The Law of Sines can also be used to find the size of an angle. The set-up is the same but the use of the calculator is a bit different. Your teacher will explain this while doing these examples.

Example 4:

Determine the size of angle θ in the following triangle.



Given
$\angle A = 60$
$a = 36$km
$b = 27$km

Find
$\angle B$

using law of sine: $\frac{a}{\sin \angle A} = \frac{b}{\sin \angle B}$

$\frac{36}{\sin 60} = \frac{27}{\sin B}$ "cross multiply"

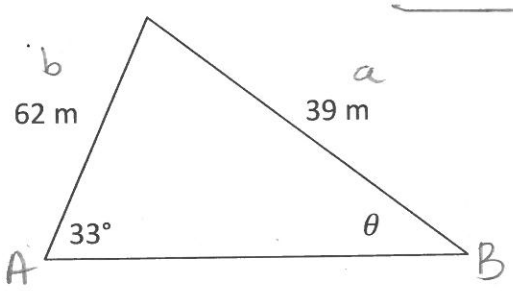
$\sin B = \frac{27 \sin 60}{36}$

2nd | sin | 27 | × | sin 60 |) | ÷ | 36 | ENTER

$\theta = 40.5^\circ$

Example 5

Solve for θ.



$\frac{a}{\sin A} = \frac{b}{\sin B}$

$\frac{39}{\sin 33} = \frac{62}{\sin \theta} \Rightarrow 39 \sin\theta = 62 \sin 33$

Given
$\angle A = 33$
$a = 39$m
$b = 62$
Find: $\angle B$

$\sin\theta = \frac{62 \sin 33}{39}$

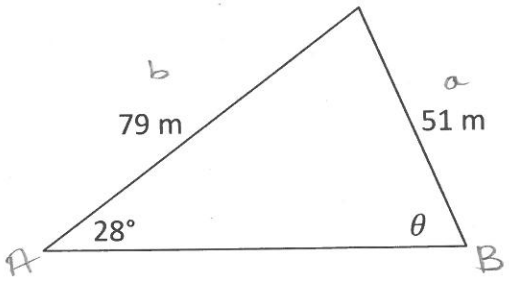
2nd | sin | 62 | sin 33 |) | ÷ | 39 | ENTER

$\theta = 59.99^\circ$

GIVEN: $\angle A = 28$ Find: $\angle B$
$a = 51$
$b = 79$

Example 6

Solve for θ.



$\frac{a}{\sin A} = \frac{b}{\sin B} \Rightarrow \frac{51}{\sin 28} = \frac{79}{\sin \theta}$

$51 \sin\theta = 79 \sin 28$

$\sin\theta = \frac{79 \sin 28}{51}$

2nd | sin | 79 | sin 28 |) | ÷ | 51 | ENTER

$\theta = 46.65^\circ$