

Using Your Calculator 101

Lesson objectives

- I know to check that my calculator is in degree mode
- I know how to identify the opposite, adjacent, and hypotenuse of a right triangle
- I know how to calculate the sine, cosine, and tangent of an angle
- I know how to calculate an angle from a trigonometric ratio

1.1

Lesson objectives

Teachers' notes

Lesson notes

MHR Page 362 #s 3 & 4 and Page 372 #s 3aceg, 4aceg, 6acegik & 7acegik

Labelling Right Triangles

In order to properly label a right triangle it is first necessary to identify the **angle of reference**. This angle will either be a **given value** or a **value that you are asked to solve for**. Once the angle has been identified, the three sides can be labelled based on the position of this angle.

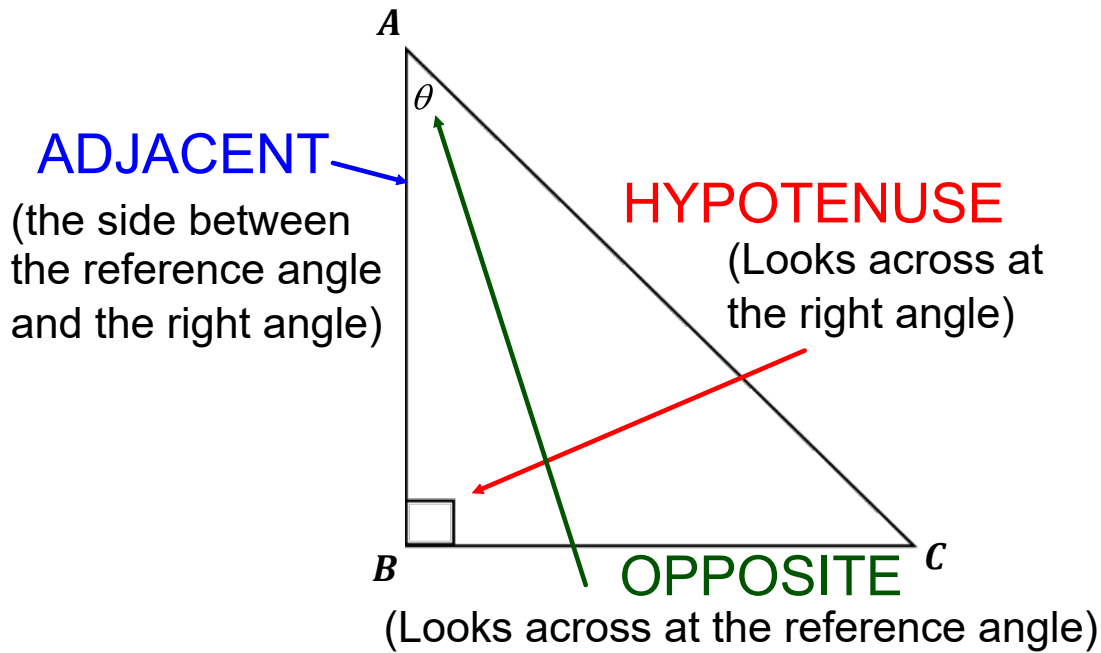
The sides are labelled as follows:

Hypotenuse - the longest side; directly across from the right angle.

Opposite Side - the side directly across from the reference angle.

Adjacent Side - the side to the right or left of the reference angle that is not the hypotenuse.

Given $\triangle ABC$, and using $\angle A$ as the reference angle, label the sides.



Using a Scientific Calculator 101

* MAKE SURE YOUR CALCULATOR IS IN **DEGREE MODE** *

Depending on your model of calculator, you will input your data differently in order to solve trigonometric problems.

To solve for unknown side lengths, once you have simplified the expression as much as possible:

$$h = \frac{20}{\sin 30}$$

Option 1 **Check it** Option 2

Press: 20 ÷ 30 **h = 40** Press: 20 ÷ 30

To solve for unknown angles, once you have simplified the expression as much as possible:

$$\angle J = \cos^{-1}(0.4200)$$

Option 1 **Check it** Option 2

Press: 0.42 **J = 65°** Press: 0.42

Calculator Practice 101

Determine the value of each ratio to four decimal places.

a) $\sin 42^\circ = 0.6691$ b) $\cos 45^\circ = 0.7071$ c) $\tan 62^\circ = 1.8807$

Determine the measure of each angle to the nearest degree.

a) $\sin A = 0.2079$ b) $\cos B = 0.3256$ c) $\tan C = 7.1154$
 $A = \sin^{-1}(0.2079)$ $B = \cos^{-1}(0.3256)$ $C = \tan^{-1}(7.1154)$
 $A = 12^\circ$ $B = 71^\circ$ $C = 82^\circ$

Solve for the unknown. Round answers to the nearest tenth.

a) $\sin 42^\circ = \frac{x}{12}$ b) $\tan 26^\circ = \frac{45}{x}$ c) $\cos B = \frac{6}{7}$
 $12\sin(42) = x$ $x\tan(26) = 45$ $B = \cos^{-1}(6 \div 7)$
 $8.0 = x$ $x = 45 \div \tan(26)$ $B = 31.0^\circ$
 $x = 92.3$