

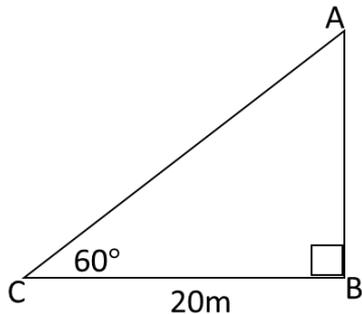
# CISCE VIRTUAL LEARNING SERIES

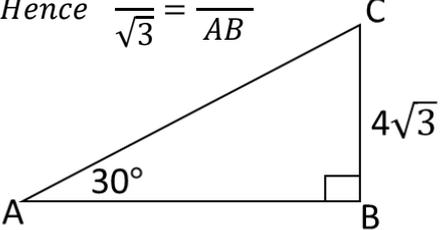
## LESSON: MATHEMATICS

### TRIGONOMETRY (HEIGHTS AND DISTANCES) – SESSION 1

November 19<sup>th</sup>, 2020

#### Response to Questions posed by students during the live Lesson:

S.No.	Questions	Answers
1.	What is Cartography?	Cartography or mapmaking is the study and practice of making maps.
2.	ABC is a triangle with $\angle B = 90^\circ$ , $\angle C = 60^\circ$ and $BC = 20\text{m}$ .  We need to find AB and AC. If we find AB using Trigonometry could we use Pythagoras Theorem to find AC?	<p>Yes, you may use Pythagoras theorem.</p> $\tan 60^\circ = \frac{AB}{20}$ $AB = 20\sqrt{3}$ $AB = 20 \times 1.732$ $AB = 34.64\text{m}.$  <p>Now using Trigonometry</p> $AC = \frac{20}{\cos 60^\circ}.$ <p>Hence <math>AC = 40\text{m}</math> (<math>\cos 60^\circ = \frac{1}{2}</math>)</p> <p>Using Pythagoras Theorem</p> $AC = \sqrt{AB^2 + BC^2} = \sqrt{(20\sqrt{3})^2 + (20)^2} = \sqrt{1200 + 400} = \sqrt{1600} = 40\text{m}$ <p>So, you may judge which method to adopt, but both methods are correct.</p>
3.	For mathematical tables is it necessary to know how to find values of trigonometric ratios with degrees and minutes?	<p>Yes, it is part of the scope of syllabus.</p> <p>For heights and distance problem normally the angles are given in degrees.</p>

S.No.	Questions	Answers
4.	For ratios of standard trigonometric angles may we use values from the mathematical tables?	<p>It is advisable to use the standard values only for standard angles.</p> <p>An example of the same:</p> $\tan 30^\circ = \frac{4\sqrt{3}}{AB}, \text{ Hence } \frac{1}{\sqrt{3}} = \frac{4\sqrt{3}}{AB}$ <p>AB = 12</p>  <p>Using Trigonometric tables for standard angle ratio of <math>\tan 30^\circ</math></p> $0.5774 = \frac{4\sqrt{3}}{AB}, \text{ Hence } AB = \frac{4 \times 1.732}{0.5774} = 11.998.$ <p>This result is obtained with a lot of time consuming long calculations. Further the answer is not exact.</p>
5.	After solving a sum, if the answer is an irrational number may we leave the answer in root form without changing to decimal answer?	No. Answer must be simplified and a rational answer must be given.
6.	In the examination hall, will we be provided with Mathematical Tables?	Yes. You will be provided with Mathematical Tables. If you do not receive it request the invigilator for the same. In the question paper it is mentioned that Mathematical tables are provided.
7.	How are angles measured when trigonometry is used to find the height or distances of tall buildings, trees etc.?	We use an instrument known as Clinometre. In the second session we will learn about it.
8.	If the question says angle of depression but I draw the diagram as angle of elevation, will it be incorrect?	Yes, you will lose marks since your diagram is incorrect. It shows that you are not clear about angle of elevation and depression.