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Trigonometry is the study of relationships between angles, lengths, and heights of triangles. It includes ratios, function, identities, formulas to solve problems based on it, especially for right-angled triangles. Applications of trigonometry are also found in engineering, astronomy, Physics and architectural design. This chapter is very important as it comprises many topics like Linear Algebra, Calculus and Statistics. Trigonometry is introduced in CBSE Class 10. It is a completely new and tricky chapter where one needs to learn all the formula and apply them accordingly. Trigonometry Class 10 formulas are tabulated below. List of Trigonometric Formulas for 10th Applying Pythagoras theorem for the given right-angled triangle, we have: $(\text{Perpendicular})^2 + (\text{Base})^2 = (\text{Hypotenuse})^2$ $(P)^2 + (B)^2 = (H)^2$ The Trigonometric formulas are given below: $\sin A = \frac{\text{Perpendicular}}{\text{Hypotenuse}}$ $\cos A = \frac{\text{Base}}{\text{Hypotenuse}}$ $\tan A = \frac{\text{Perpendicular}}{\text{Base}}$ $\cot A = \frac{\text{Base}}{\text{Perpendicular}}$ $\sec A = \frac{\text{Hypotenuse}}{\text{Perpendicular}}$ $\csc A = \frac{\text{Hypotenuse}}{\text{Perpendicular}}$

Reciprocal Relation Between Trigonometric Ratios
 $\sin A = \frac{1}{\csc A}$ $\cos A = \frac{1}{\sec A}$ $\tan A = \frac{1}{\cot A}$ $\cot A = \frac{1}{\tan A}$ $\sec A = \frac{1}{\cos A}$ $\csc A = \frac{1}{\sin A}$

Sign Functions
 $\sin(-\theta) = -\sin \theta$ $\cos(-\theta) = \cos \theta$ $\tan(-\theta) = -\tan \theta$ $\cot(-\theta) = \cot \theta$ $\sec(-\theta) = \sec \theta$ $\csc(-\theta) = \csc \theta$

Complementary Angles
 $\sin(90^\circ - \theta) = \cos \theta$ $\cos(90^\circ - \theta) = \sin \theta$ $\tan(90^\circ - \theta) = \cot \theta$ $\cot(90^\circ - \theta) = \tan \theta$ $\sec(90^\circ - \theta) = \csc \theta$ $\csc(90^\circ - \theta) = \sec \theta$

Sum and Difference of Two Angles
 $\sin(A \pm B) = \sin A \cos B \pm \cos A \sin B$ $\cos(A \pm B) = \cos A \cos B \mp \sin A \sin B$ $\tan(A \pm B) = \frac{\sin(A \pm B)}{\cos(A \pm B)}$

Double Angle Formulas
 $\sin 2A = 2 \sin A \cos A$ $\cos 2A = \cos^2 A - \sin^2 A$ $\tan 2A = \frac{2 \tan A}{1 - \tan^2 A}$

Triple Angle Formulas
 $\sin 3A = 3 \sin A - 4 \sin^3 A$ $\cos 3A = 4 \cos^3 A - 3 \cos A$ $\tan 3A = \frac{3 \tan A - \tan^3 A}{1 - 3 \tan^2 A}$

Values of Trigonometric Ratios
 $\sin 0^\circ = 0$ $\cos 0^\circ = 1$ $\tan 0^\circ = 0$ $\cot 0^\circ = \infty$ $\sec 0^\circ = 1$ $\csc 0^\circ = \infty$
 $\sin 30^\circ = \frac{1}{2}$ $\cos 30^\circ = \frac{\sqrt{3}}{2}$ $\tan 30^\circ = \frac{1}{\sqrt{3}}$ $\cot 30^\circ = \sqrt{3}$ $\sec 30^\circ = \frac{2}{\sqrt{3}}$ $\csc 30^\circ = 2$
 $\sin 45^\circ = \frac{1}{\sqrt{2}}$ $\cos 45^\circ = \frac{1}{\sqrt{2}}$ $\tan 45^\circ = 1$ $\cot 45^\circ = 1$ $\sec 45^\circ = \sqrt{2}$ $\csc 45^\circ = \sqrt{2}$
 $\sin 60^\circ = \frac{\sqrt{3}}{2}$ $\cos 60^\circ = \frac{1}{2}$ $\tan 60^\circ = \sqrt{3}$ $\cot 60^\circ = \frac{1}{\sqrt{3}}$ $\sec 60^\circ = 2$ $\csc 60^\circ = \frac{2}{\sqrt{3}}$
 $\sin 90^\circ = 1$ $\cos 90^\circ = 0$ $\tan 90^\circ = \infty$ $\cot 90^\circ = 0$ $\sec 90^\circ = \infty$ $\csc 90^\circ = 1$

Angle of Depression: Angle between horizontal line and line of sight, if the object is below the horizontal level of eyes. Physics Wallah prepared detail NCERT Solutions do solve questions given in NCERT text book with the help of NCERT Solution for class 10 Maths. To download the pdf of maths formulas for class 10 chapter- Introduction to Trigonometry click the Link given below. Trigonometry is the most important chapter for students whether they are studying in CBSE/ICSE boards or preparing for competitions like IIT or SSC. In CBSE/NCERT Trigonometry chapter is introduced in class 10th (Chapter 8), and in ICSE it is introduced in class 9th. Most of the time students find the chapter Trigonometry very difficult to understand and very hard to learn all the Trigonometry formulas. In this article, You'll find all trigonometric formulas for class 10. After reading this article what will you understand? In this article, we will try to help students to make them understand trigonometry easily. We will make some short tricks so that the Trigonometry formulas for class 10 become easy to learn. Also, you don't have to Rote-learn all of them. Instead, you will develop a technique so that some of the formulas can be derived, instead of memorizing them. Trigonometry-formulas-class10-download-pdf What is trigonometry? This word Trigonometry basically came from combining two Greek words "trigōnon" which means "triangle" and "metron" which means "measure". Thus, it is used to measure Triangles. In simple words, Trigonometry is a branch of Mathematics where we study relationships between side lengths and angles of triangles. Now, let me make this simpler! QUESTION (i):- if we are given two sides of a right-angled triangle and we are asked to find the third side, What mathematical concept will we use to find the third side? ANSWER:- Obviously, this is very simple! We will use Pythagoras' theorem. QUESTION (ii):- If we are given one side and one angle (other than 90°) of a right-angle triangle and you were asked to find the remaining sides of this triangle, how will you find it? ANSWER:- For this, you will have to understand a new concept known as "Trigonometry". Real-life applications of trigonometry and formulas! Most of the time we wonder what is the use of Trigonometry in our life? You may not have applied Trigonometry directly in solving your day to day life problems, but indirectly it is used in various things that we see around us. How do you think we came to know that height of the Mount Everest is 8848 meters. Obviously, by using trigonometry. How we came to know that the distance between "Earth" and "Sun"? when we have never been to "Sun", you can measure the distance of nearby objects in space by using Trigonometry a method called Trigonometric parallax or Stellar parallax. The sine and cosine functions (which you will study later) are fundamental to the theory of periodic functions, those that describe the sound and light waves. Trigonometry is also used in construction, Video games, flight engineering, marine engineering, archaeology, criminology, navigation, oceanography, cartography (creation of maps), satellite systems. Well to your surprise almost every scientific discovery that is related to distance is proved only because of Trigonometry. NOTE:- We have discussed these Real-life applications of Trigonometry thoroughly in this article, please go through it. Trigonometric Ratios:- First of all, we will discuss what are Trigonometric ratios. Trigonometric Ratios are basically a relationship between the measurement of the angles and the lengths of the sides of the right triangle. Now let's discuss how many types of Trigonometric ratios can be possible. In a right-angled triangle, we have three sides named as (H) Hypotenuse (longest side), (P) Perpendicular (opposite side to the angle) and (B) Base. If we are asked to take any two sides out of these three sides and form a ratio we will find that six ratios are possible (P/H, B/H, P/B, H/P, H/B, B/P). We have assigned a particular name to each of the ratios. The trigonometric ratios are:- $\sin \theta = \frac{\text{Perpendicular(P)}}{\text{Hypotenuse(H)}}$, $\cos \theta = \frac{\text{Base(B)}}{\text{Hypotenuse(H)}}$, $\tan \theta = \frac{\text{Perpendicular(P)}}{\text{Base(B)}}$, $\cot \theta = \frac{\text{Base(B)}}{\text{Perpendicular(P)}}$, $\sec \theta = \frac{\text{Hypotenuse(H)}}{\text{Perpendicular(P)}}$, $\csc \theta = \frac{\text{Hypotenuse(H)}}{\text{Base(B)}}$. Reciprocal Trigonometric Ratios :- $\sin \theta = \frac{1}{\csc \theta}$ $\cos \theta = \frac{1}{\sec \theta}$ $\tan \theta = \frac{1}{\cot \theta}$ $\cot \theta = \frac{1}{\tan \theta}$ $\sec \theta = \frac{1}{\cos \theta}$ $\csc \theta = \frac{1}{\sin \theta}$ Important Relations between Trigonometric Ratios:- $\tan \theta = \frac{\sin \theta}{\cos \theta}$ $\cot \theta = \frac{\cos \theta}{\sin \theta}$ Trigonometric Table:- This Trigonometric ratios table helps us to find the values of trigonometric standard angles such as 0°, 30°, 45°, 60°, and 90°. $\sin 0^\circ = 0$ $\cos 0^\circ = 1$ $\tan 0^\circ = 0$ $\cot 0^\circ = \infty$ $\sec 0^\circ = 1$ $\csc 0^\circ = \infty$ $\sin 30^\circ = \frac{1}{2}$ $\cos 30^\circ = \frac{\sqrt{3}}{2}$ $\tan 30^\circ = \frac{1}{\sqrt{3}}$ $\cot 30^\circ = \sqrt{3}$ $\sec 30^\circ = \frac{2}{\sqrt{3}}$ $\csc 30^\circ = 2$ $\sin 45^\circ = \frac{1}{\sqrt{2}}$ $\cos 45^\circ = \frac{1}{\sqrt{2}}$ $\tan 45^\circ = 1$ $\cot 45^\circ = 1$ $\sec 45^\circ = \sqrt{2}$ $\csc 45^\circ = \sqrt{2}$ $\sin 60^\circ = \frac{\sqrt{3}}{2}$ $\cos 60^\circ = \frac{1}{2}$ $\tan 60^\circ = \sqrt{3}$ $\cot 60^\circ = \frac{1}{\sqrt{3}}$ $\sec 60^\circ = 2$ $\csc 60^\circ = \frac{2}{\sqrt{3}}$ $\sin 90^\circ = 1$ $\cos 90^\circ = 0$ $\tan 90^\circ = \infty$ $\cot 90^\circ = 0$ $\sec 90^\circ = \infty$ $\csc 90^\circ = 1$ 10th are based on Trigonometric ratios. There are three main Trigonometric formulas for class 10th and using these three you can make other identities. 1) $\cos^2 A + \sin^2 A = 1$. a) $\cos^2 A = 1 - \sin^2 A$. b) $\sin^2 A = 1 - \cos^2 A$. 2) $1 + \tan^2 A = \sec^2 A$. a) $\sec^2 A - \tan^2 A = 1$. b) $\tan^2 A = \sec^2 A - 1$. 3) $\cot^2 A + 1 = \csc^2 A$. a) $\csc^2 A - \cot^2 A = 1$. b) $\cot^2 A = \csc^2 A - 1$. Two more Trigonometric formulas for class 10 are there:- (i) $\sec A - \tan A = \frac{1}{\sec A + \tan A}$ (ii) $\csc A - \cot A = \frac{1}{\csc A + \cot A}$ Get all trigonometry formulas for class 10 pdf :- Trigonometry-formulas-class10-download-pdf

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