# Trignometry
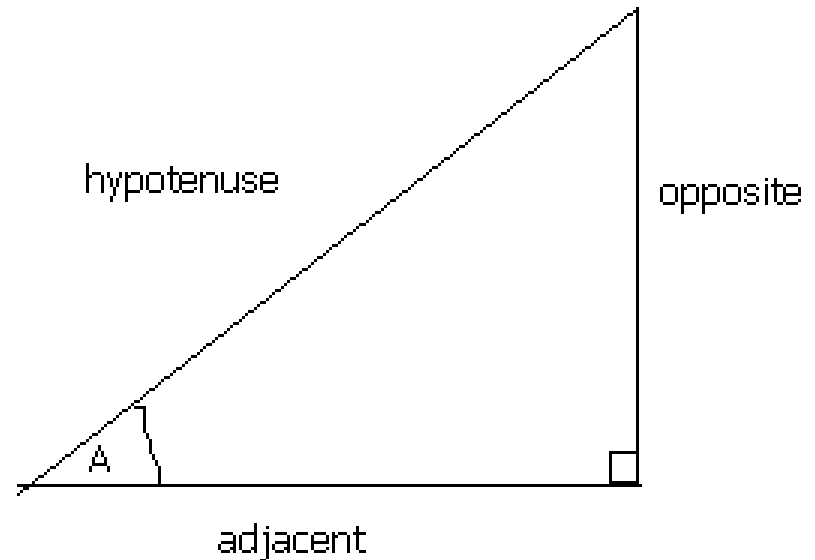
# Formulas

$$\sin \theta = \frac{\text{Opposite}}{\text{Hypotenuse}}$$

$$\cos \theta = \frac{Adjacent}{\text{Hypotenuse}}$$

$$\tan \theta = \frac{\text{Opposite}}{Adjacent}$$

hypotenuse

opposite

A

adjacent

| $\theta$ | 0° | 30° | 45° | 60° | 90° |
|---|---|---|---|---|---|
| sin $\theta$ | 0 | $\dfrac{1}{2}$ | $\dfrac{1}{\sqrt{2}}$ | $\dfrac{\sqrt{3}}{2}$ | 1 |
| cos $\theta$ | 1 | $\dfrac{\sqrt{3}}{2}$ | $\dfrac{1}{\sqrt{2}}$ | $\dfrac{1}{2}$ | 0 |
| tan $\theta$ | 0 | $\dfrac{1}{\sqrt{3}}$ | 1 | $\sqrt{3}$ | Not defined |
| cot $\theta$ | Not defined | $\sqrt{3}$ | 1 | $\dfrac{1}{\sqrt{3}}$ | 0 |
| sec $\theta$ | 1 | $\dfrac{2}{\sqrt{3}}$ | $\sqrt{2}$ | 2 | Not defined |
| cosec $\theta$ | Not defined | 2 | $\sqrt{2}$ | $\dfrac{2}{\sqrt{3}}$ | 1 |

# Basics

2. The angle of elevation of the sun (sun's attitudes) when the length of a shadow of a vertical pole is equal to its height is .

A.     30º              B.     45º
C.     60º              D.     None of these

The angle of elevation of the sun, when the length of the shadow of a tree √3 times the height of the tree, is:

A.    30°   B.    45°
C.    60°   D.    90°

1. A tower is 100√3 m high. Find the angle of elevation of its top from a point 100 m away from its foot.

A.   40º        B.   50º
C.   60º        D.   70º

4. Person standing on the river bank. Finds angle of elevation of the top of the tower on opposite bank is 45º. Which of the following statements is correct.
a) Breadth of river is twice the height of tower
b) Breadth of river is half the height of tower
c) Breadth of river is same the height of tower
d) None of these

The angle of elevation of a ladder leaning against a wall is 60º and the foot of the ladder is 4.6 m away from the wall. The length of the ladder is:

A.    2.3 m        B.    4.6 m
C.    7.8 m        D.    9.2 m

# Medium

3. An observer 1.6 m tall is 20√3 away from a tower. The angle of elevation from his eye to the top of the tower is 30º. The heights of the tower is:

A.    21.6 m    B.    23.2 m
C.    24.72 m   D.    None of these

9. The horizontal distance between two trees of different heights is 60m. The angle of depression of the top of the first tree when seen from the top of the second tree is 45 deg. If the height of the second tree is 80m, find the height of the first tree:

A.    20 m        B.    21 m
C.    18 m        D.    16 m

# High

5. A man standing at a point P is watching the top of a tower, which makes an angle of elevation of 30º with the man's eye. The man walks 40m distance towards the tower to watch its top and the angle of the elevation becomes 60º. Find height of the tower.

a) 35
b) 30
c) 25
d) 20

Two ships are sailing in the sea on the two sides of a lighthouse. The angle of elevation of the top of the lighthouse is observed from the ships are 30º and 45º respectively. If the lighthouse is 100 m high, the distance between the two ships is:

A.    73 m          B.    200 m
C.    273 m         D.    300 m