

FIELD BOOK

**DETERMINATION OF ANGLE OF ELEVATION BY TRANSIT THEODOLITE
(BASE ACCESSIBLE)**

PLACE : COLLEGE CAMPUS

DATE:

INSTRUMENT NO. : TT/1

TIME:

Instrument at	Object sighted	Face	Vertical circle reading		Mean angle	Grand mean angle	Remarks
			VC	VD			
A	Building	Left	6° 20' 20"	6° 20' 20"	6° 20' 20"	6° 30' 20"	Hight of the instrument A = 1.40 metre
		Right	6° 40' 20"	6° 40' 20"	6° 40' 20"		Distance between A and object sighted = 47.1 metre

Calculation for Hight of the object

We know that grand mean angle = 6° 30' 20"

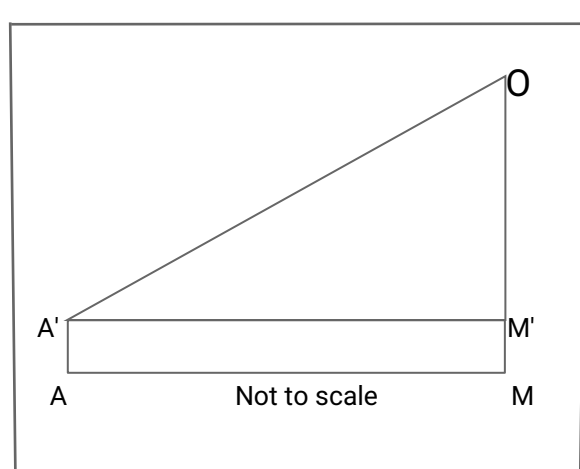
$\tan(\theta) = \text{Hight of the object} / \text{Distance between station A to the base of the object sighted}$

Or, $\tan(\theta) = OM' / A'M'$

Or, $OM' = A'M' \tan(\theta)$

Or, $OM' = 47.1 \text{ metre} \times \tan 6^\circ 30' 20''$

Or, $OM' = 5.37 \text{ metre}$



As we know,

$$OM = OM' + M'M$$

Or, $OM = 5.37 \text{ metre} + 1.40 \text{ metre}$ (Whereas $AA' = MM' = 1.40 \text{ metre}$)

Or, $OM = 6.77 \text{ metre}$.

So, Hight of the object = 6.77 metre.

Calculation for drawing

Distance from station A to the base of the object sighted = 47.1 metre

Hight of the instrument at station A = 1.40 metre.

Hight of the object = 6.77 metre.

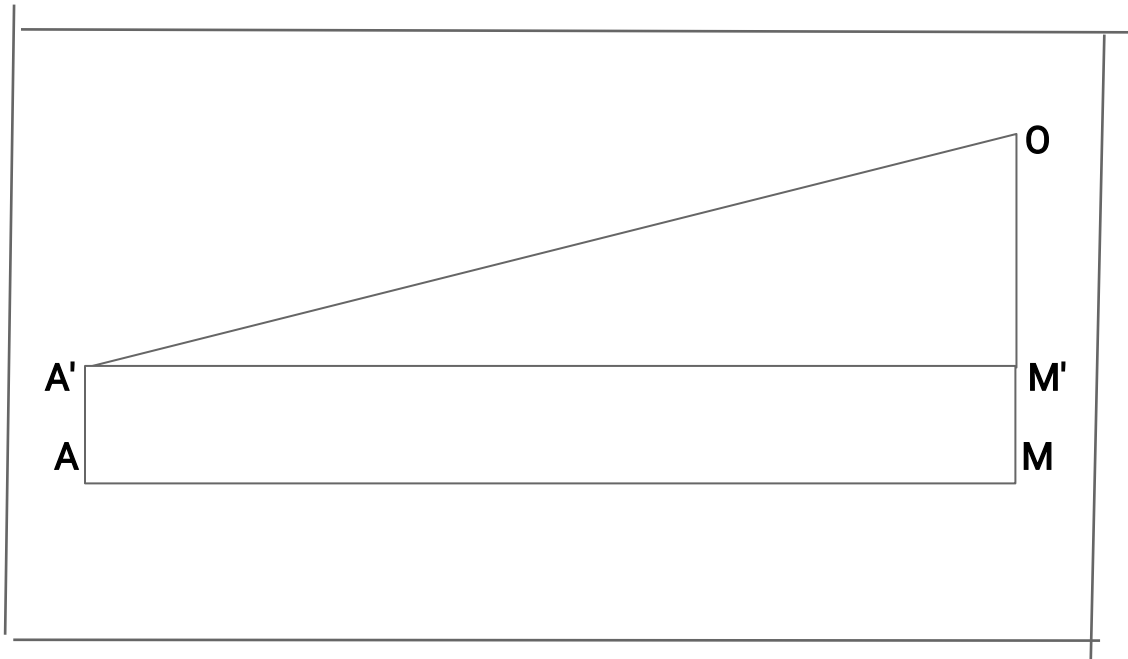
Let, selected scale = 1 cm to 3 metre.

So, the length of the distance from A to base of the object sighted according to the selected scale = $47.1/3 = 15.7 \text{ cm}$.

Hight of the instrument according to the selected scale $1.40/3 = 0.47 \text{ cm}$.

Hight of the object according to the selected scale = $6.77/3 = 2.26 \text{ cm}$.

**DETERMINATION OF HIGHT AND DISTANCE BY TRANSIT THEODOLITE
(PLOTTING ACCORDING TO THE SCALE)
(BASE ACCESSIBLE)**



INDEX

AA'= HIGHT OF THE INSTRUMENT
OM= HIGHT OF THE OBJECT
AM= DISTANCE FROM STATION A TO
THE BASE OF THE OBJECT SIGHTED
 $\angle OA'M' = 6^{\circ} 30' 20''$

SCALE

HORIZONTAL AND VERTICAL
SCALE : 1 CM TO 3 METRE