

Diagonal Scales:-

A Diagonal Scale represents either three units or only one unit and its fractions up to second place of decimal point.

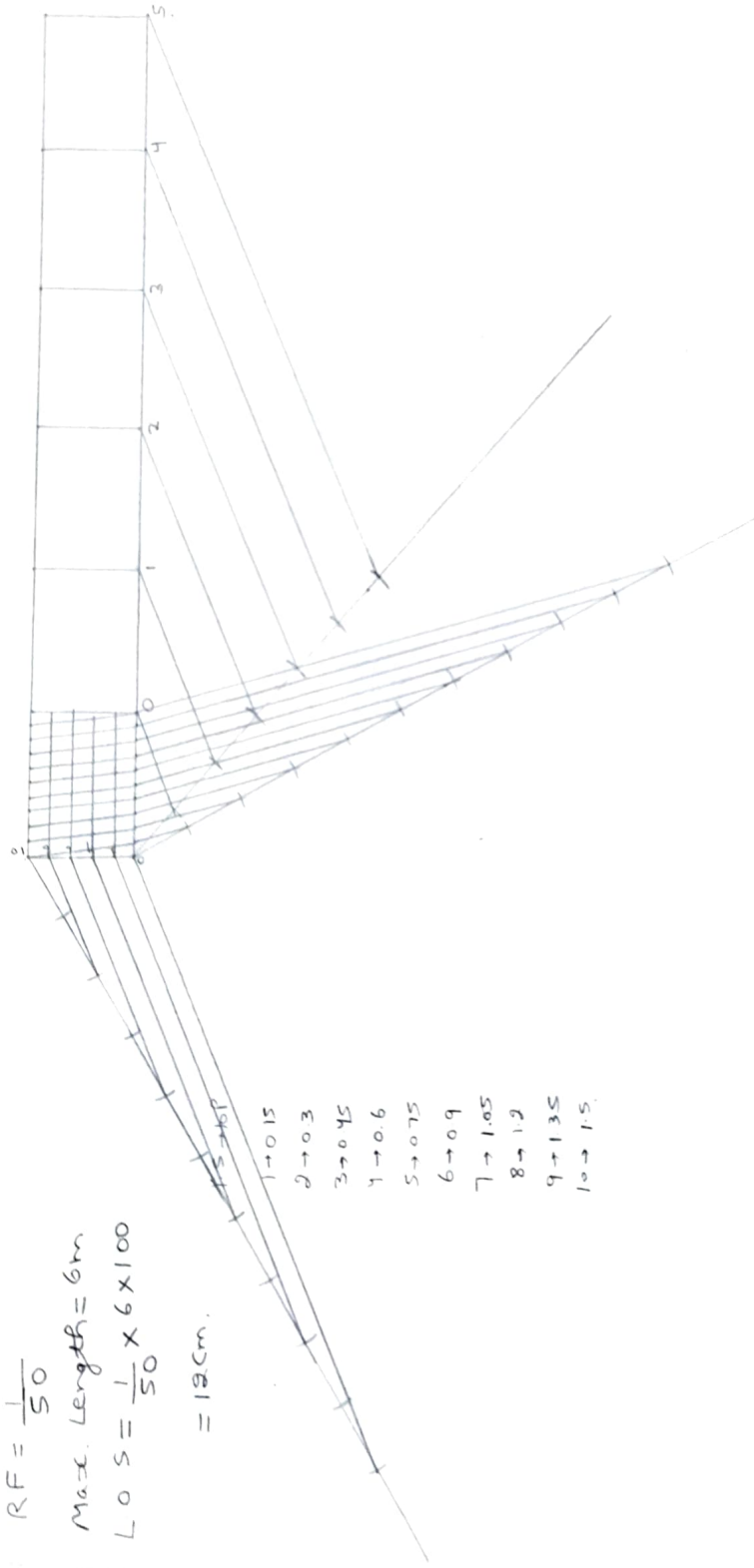
Q.13. Construct a diagonal scale of 1:50, to show metres, decimetres & centimetres and long enough to measure up to 6 metres. Also indicate on this scale a distance of 4m, 5dm and 4cm.

$$RF = \frac{1}{50}$$

Max. Length = 6m

$$LOS = \frac{1}{50} \times 6 \times 100$$

$$= 12 \text{ cm.}$$



Q-1. Construct a Scale of 1 cm = 1 m to read metres and decimetres and Long enough to measure up to 14 metres. Show on this scale a distance equal to 12.4 metres.

Step-1

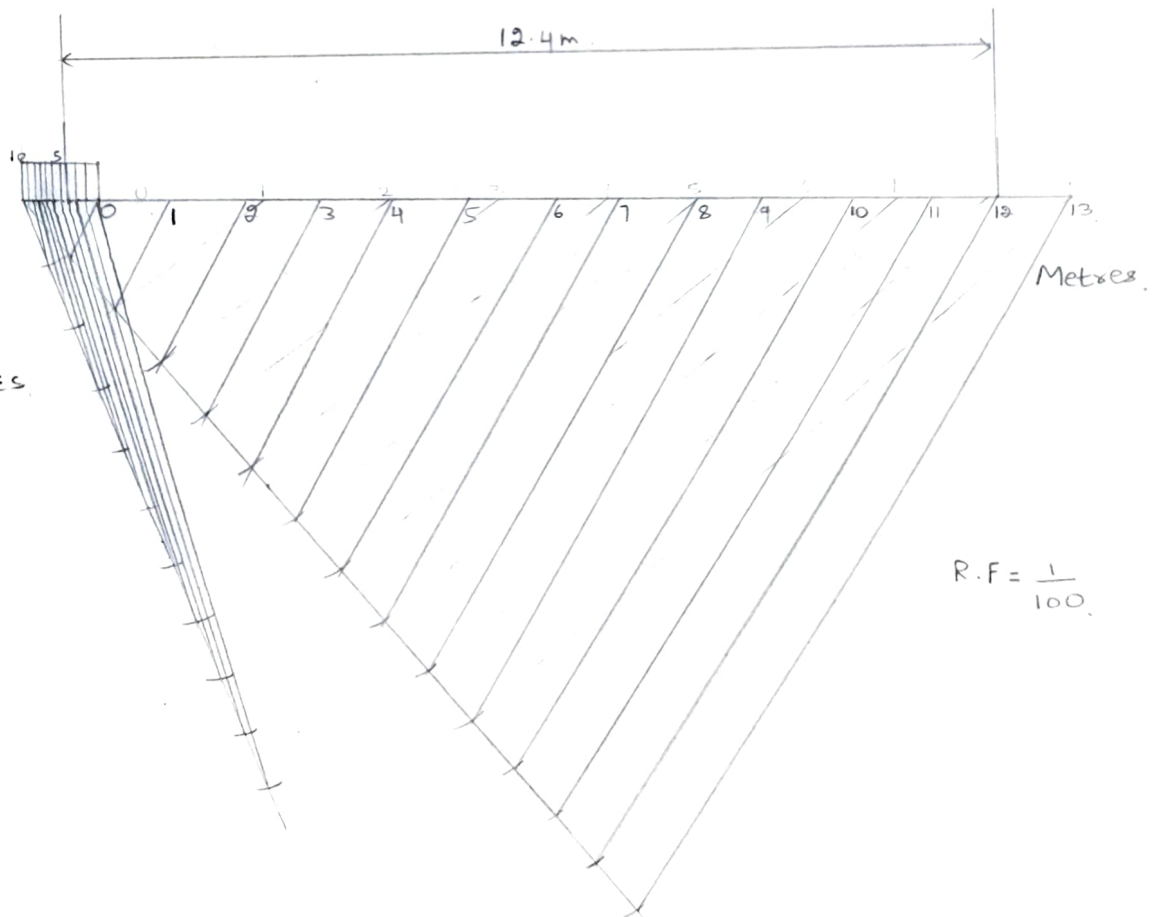
$$1 \text{ cm} = 1 \text{ m}$$

$$1 \text{ cm} = 100 \text{ cm.}$$

$$R.F = \frac{1}{100}.$$

$$\begin{aligned} \text{Length of Scale, L.O.S} &= R.F \times \text{Max. Length Measured} \\ &= \frac{1}{100} \times 14 \times 100 = 14 \text{ cm.} \end{aligned}$$

height = 1 cm



# Diagonal Scales:-

A Diagonal Scale represents either three units or only one unit and its fractions up to 100. Second place of decimal point.

Q.13. Construct a diagonal scale of 1:50, to show metres, decimetres & centimetres and long enough to measure up to 6 metres. Also indicate on this scale a distance of 4m, 5dm and 4cm.

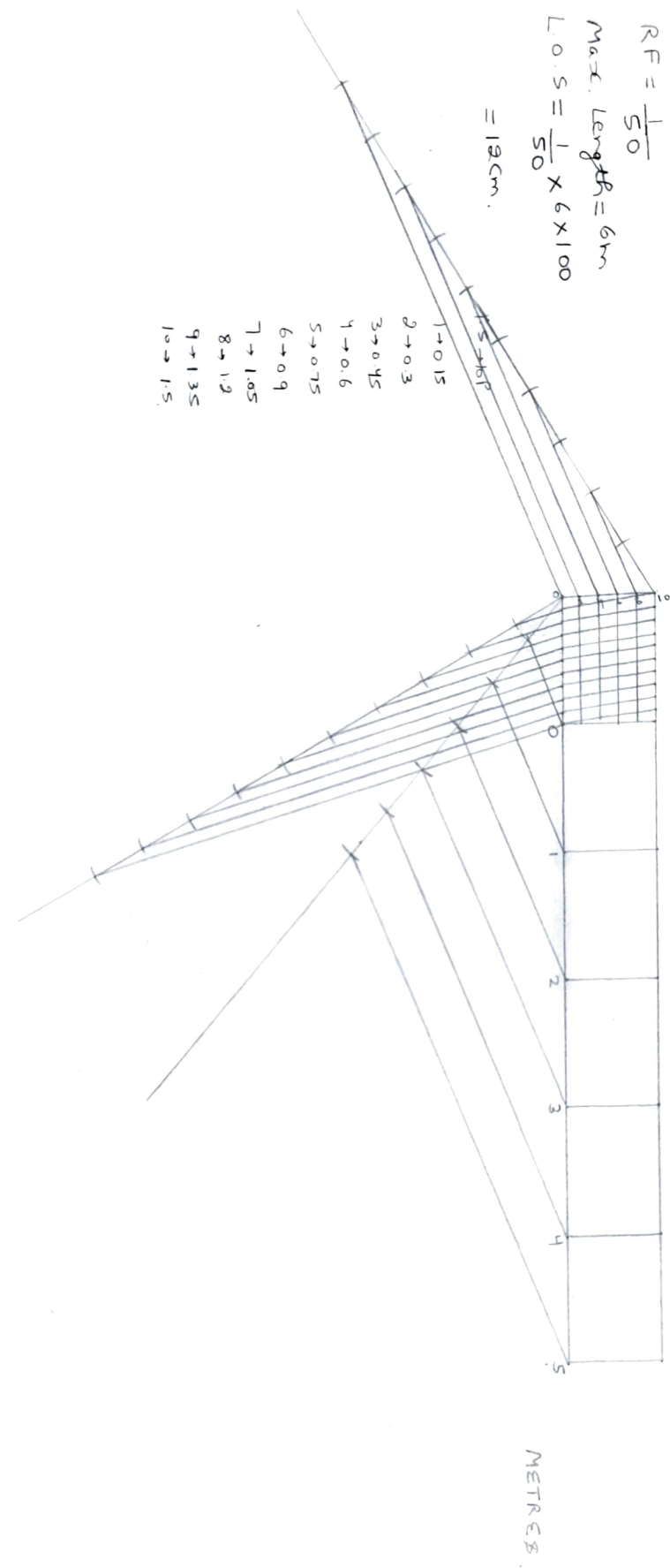
$$RF = \frac{1}{50}$$

Max. Length = 6m

$$L.O.S = \frac{1}{50} \times 6 \times 100$$

$$= 12cm.$$

- 1 → 0.15
- 2 → 0.3
- 3 → 0.45
- 4 → 0.6
- 5 → 0.75
- 6 → 0.9
- 7 → 1.05
- 8 → 1.2
- 9 → 1.35
- 10 → 1.5



Q-14 The Distance b/w Ludhiana and Chandigarh is 100 Km and it is represented on a certain map by a line 2.5 cm Long. Find the R.F. of the scale of the Map. Draw a diagonal scale showing single kilometre as long enough to measure up to 600 Km. Indicate a distance of 573 km on this scale.

$$100 \text{ Km} = 2.5 \text{ cm}$$

$$100 \times 1000 \times 100 = 2.5 \text{ cm}$$

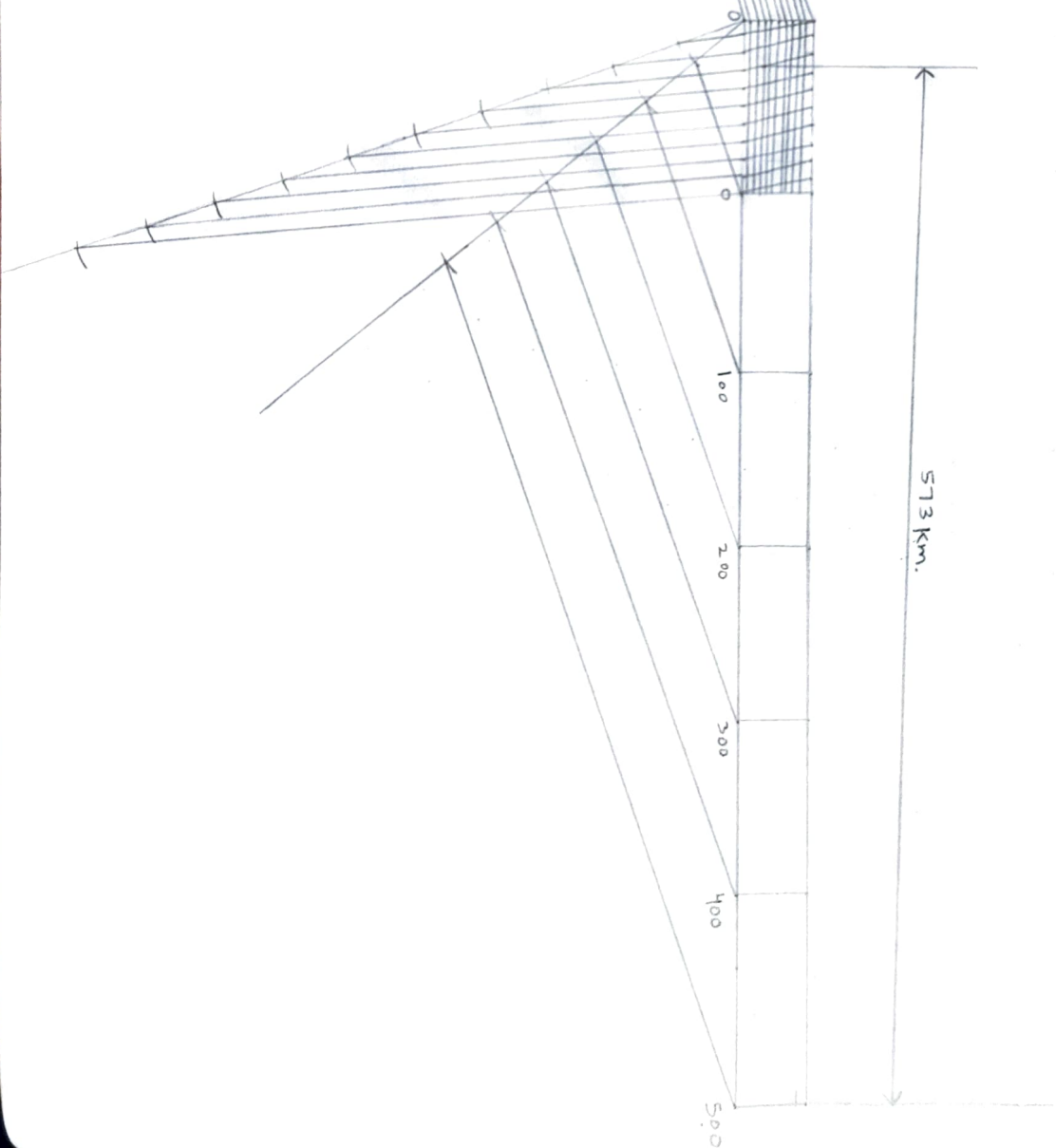
$$R.F. = \frac{1}{4000000}$$

$$L.O.S = R.F. \times \text{Max. length Measured}$$

$$= \frac{1}{4000000} \times 600 \times 1000 \times 100$$

$$= 15 \text{ cm}$$

1 part  $\rightarrow$  0.25 cm  
 2 part  $\rightarrow$  0.50 cm  
 3 part  $\rightarrow$  0.75 cm  
 4 part  $\rightarrow$  1 cm



Q-32 Construct a Forward Vernier scale of RF = 1/2500 and long enough to measure 300 metres and to show metres. Show on this scale a distance of 157m.



$$RF = \frac{1}{2500}$$

$$\text{max. length} = 300\text{m}$$

$$0.5 = RF \times \text{max. length}$$

$$= \frac{1}{2500} \times 300 \times 100$$

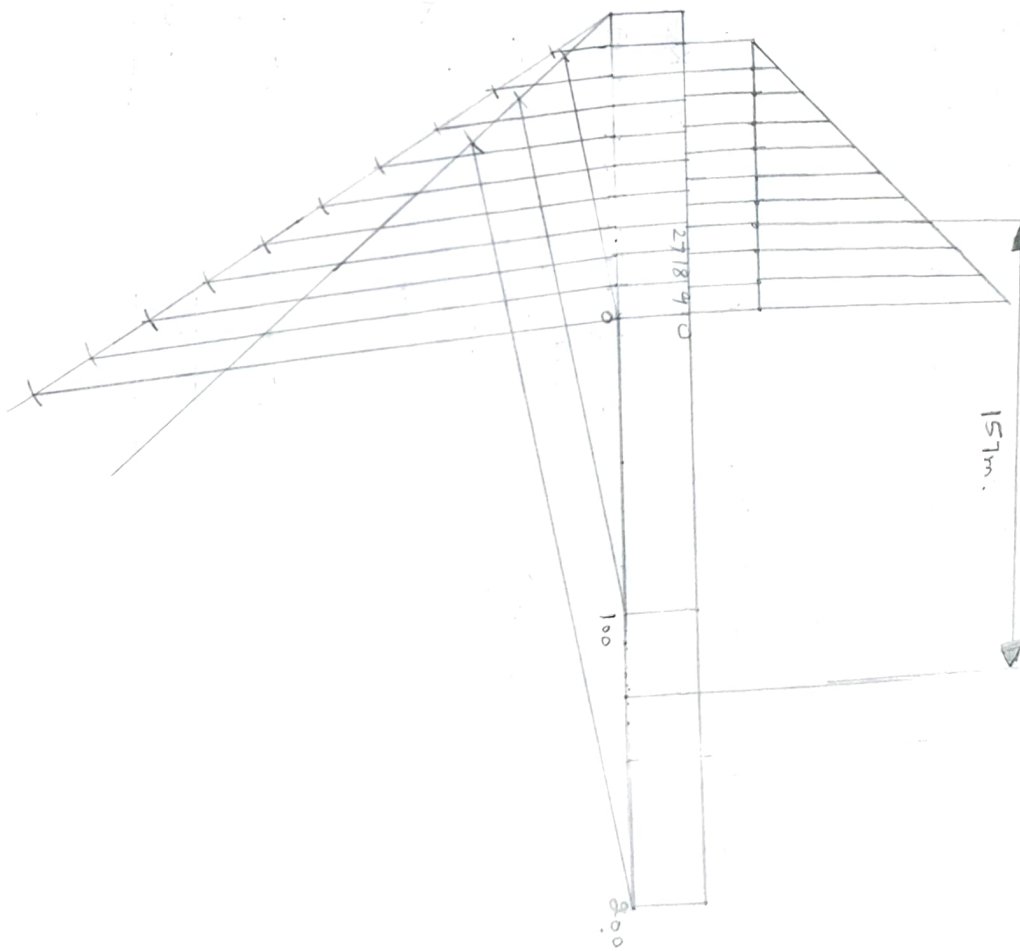
$$= 12\text{cm.}$$

P-1 Draw 12cm.

P-2 Divide it into 3 parts.

$$10\text{ parts} \rightarrow 4\text{m.}$$

$$1\text{ part} \rightarrow 4\text{d.}$$



$$\text{max} = 1\text{cm.}$$

$$\frac{157}{1000} = 0.157$$

$$1\text{ part} = 10\text{ parts}$$

$$1\text{ part} = 10\text{ parts}$$

$$1\text{ part} = 10\text{ parts}$$

Q.11.38 Construct a backward reading Vernier scale when 1.5 cm on scale represents 1.37 actual length, to read up to 16 metres. Also show on the scale the distances of 12.65 m.

8.37 metres.

$$1.5 \text{ cm} = 1.37 \text{ m}$$

$$15 \text{ cm} = 1.37 \times 100 \text{ cm}$$

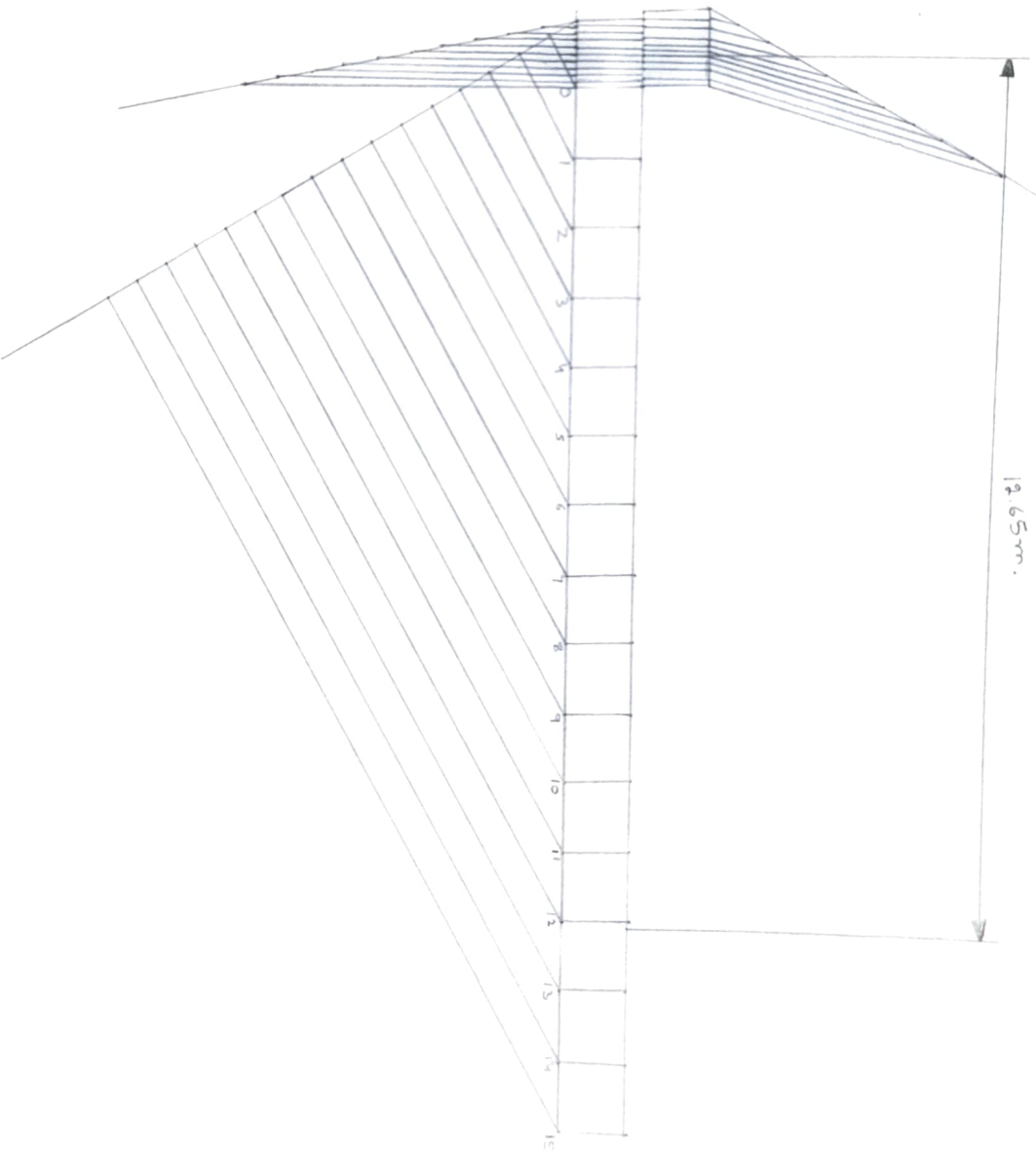
$$RF = \frac{15 \times 10}{10 \times 137} = \frac{150}{1370}$$

$$= \frac{1}{9.13}$$

$$LOS = \frac{1}{9.13} \times 16 \times 100$$

$$= 20 \text{ cm.}$$

backward  
→  
||



$$\begin{array}{r} 19.65 \\ - .55 \\ \hline 19.10 \end{array} \quad \begin{array}{r} 8.37 \\ - .77 \\ \hline 7.60 \end{array}$$