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EDD –Drawing sheet Assignment-1

All students need to draw the problems in A3 size drawing sheets with the help of drawing instruments and to submit it in pdf form at google class. Submission of assignment is compulsory for internal marks evaluation. Students must write their name, Er.No. and date of submission on top left corner of their drawing sheet

Scales:

Q1. In a map a 36 km distance is shown by a line 45 cms long. Calculate the R.F. and construct a plain scale to read kilometers and hectometers, for max. 12 km. Show a distance of 8.3 km on it.

Q2. Construct a diagonal scale of R.F. = 1/6250 to read up to 1 kilometre and to read metres on it. Show a length of 653 metre on it.

Conical curves:

Q3. Draw a parabola by general method, given distance of focus from directrix 50 mm. Also draw normal and tangent on the curve at a point 50 mm from the focus.

Q4. Draw ellipse by concentric circle method. Take major axis 150 mm and minor axis 100 mm long. Also draw normal and tangent on the curve at a point 25mm above the major axis

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Question :- 1

In a map a 36 km distance is shown by a line 45 cms long. Calculate the R.F. and construct a plain scale to read kilometers and hectometers for max 12km. Show a distance of 8.3 km on it.

→ Construction.

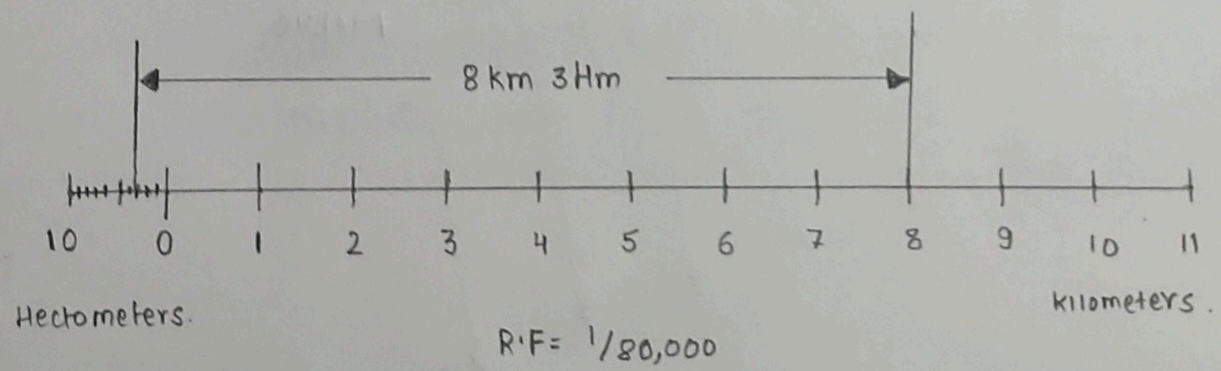
↳ Steps

1) Calculating R.F. → i.e R.F = 45 cm / 36 km = 45 / 36 · 1000 · 100 = 1/80000

length of scale = R.F × max. distance.

= 1/80000 × 12 km = 15 cm.

2) Draw a line 15 cm long and divide it into 12 equal parts. Each part represent larger division unit
3) Sub divide the first part which will represent second unit as fraction of first unit.
4) Place (0) at the end of first unit. Number of units on the right side of zero and subdivisions on the left-hand side of zero. Take height of scale 5 to 10 mm for getting a look of scale.
5) After construction of scale mention it's R.F. and name of scale as shown.
6) Show the distance 8.3 km on it as shown.



Plane scale showing Kilometers and Hectometers.

Question :- 2

Construct a diagonal scale of R.F = 1/6250 to read upto 1 kilometer and to read meters on it. Show a length of 653 meter on it.

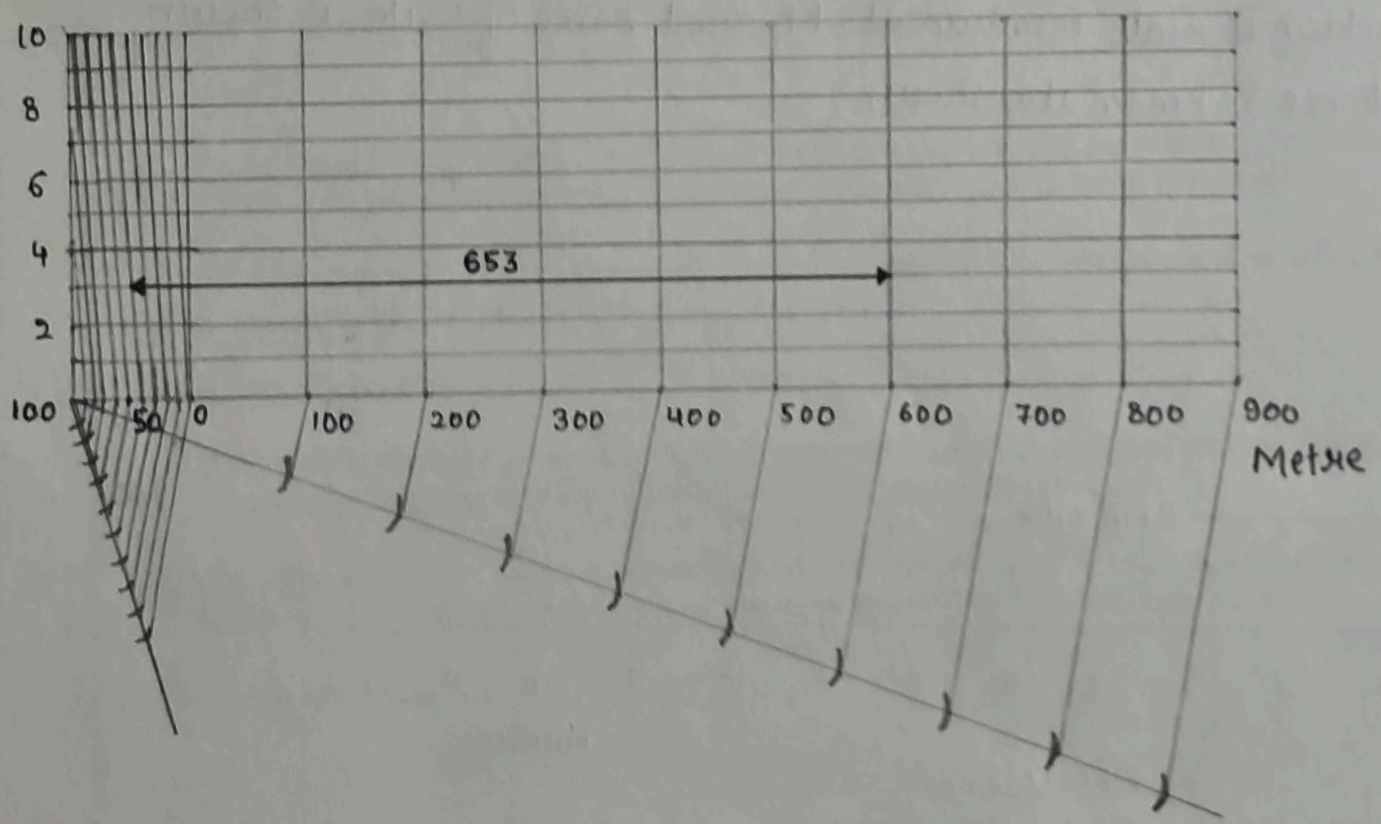
Solution :

Calculating RF :- In this case it is given i.e 1/6250

max length is 1 km

length of scale = RF x max length (in cm) = $\frac{1}{6250} \times 1 \times 10^5$ cm = 16 cm.

As the length is 1km, the line should be divided into 10 equal parts, so as to represent a division of 100 m.



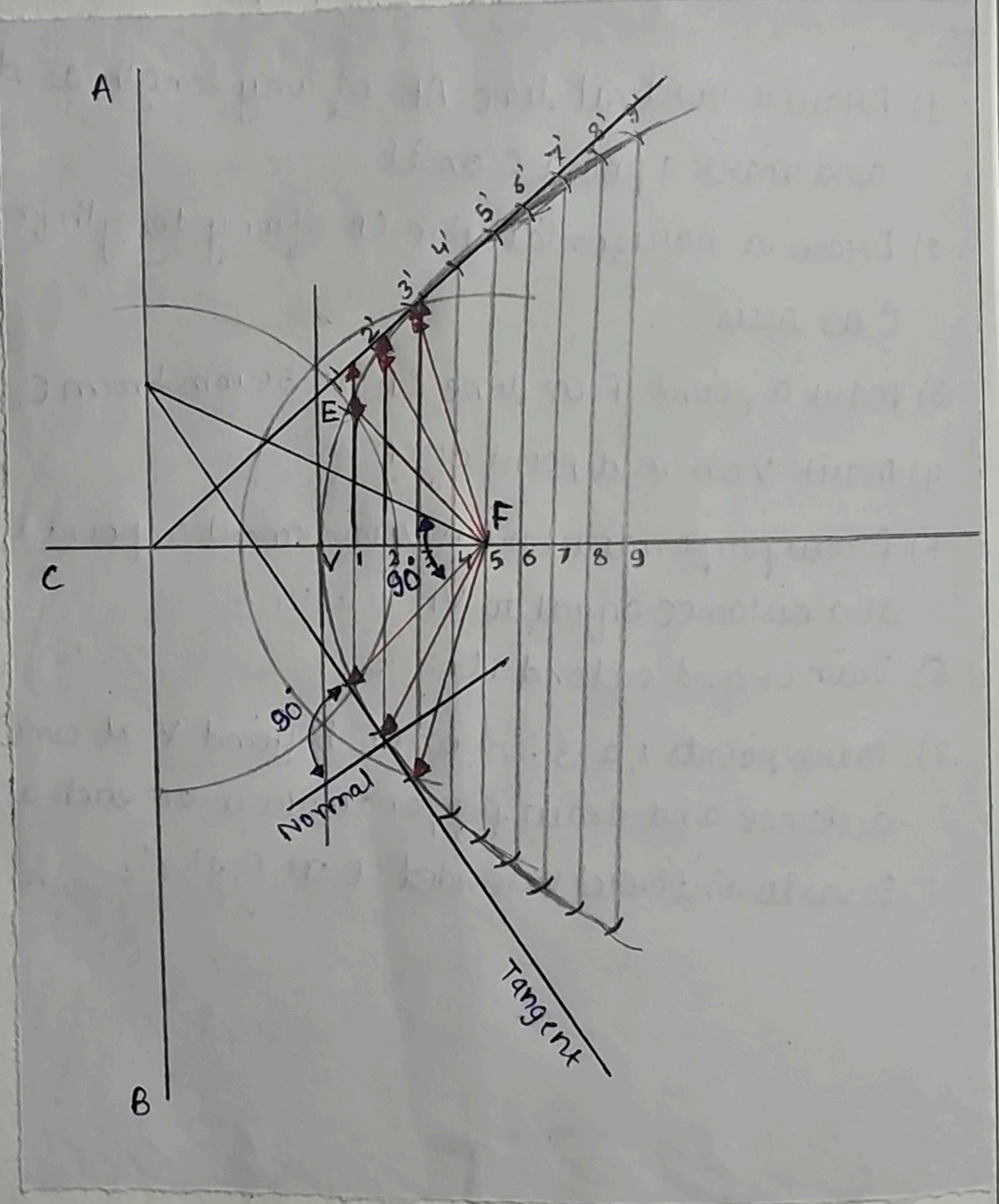
Question - 3

Draw a parabola by general method, given distance of focus from directrix 50mm. Also draw normal and tangent on the curve at a point 50mm from the focus.

Solution:

↳ steps

1) Draw a vertical line AB of any length as directrix and mark a point C on it.
2) Draw a horizontal line CD of any length from point C as axis.
3) Mark a point F on line CD at 50mm from C.
4) Mark V on mid point of CF
5) Draw a perpendicular on V and mark a point E on it at a distance equal to VF
6) Join CE and extend it.
7) Mark points 1, 2, 3... on CF beyond V at uniform distance, and draw perpendiculars on each of them so as to intersect extendend CE at 1', 2', 3'....



Question :- 4

Draw ellipse by concentric circle method. Take major axis 150 mm and minor axis 100 mm long. Also draw normal and tangent on the curve at a point 25 mm and above the major axis.

Solution:

4 steps

1) Draw both axis as perpendicular bisectors of each other and name their ends as shown
2) Taking their intersecting point as a center, draw two concentric circles considering both as respective diameters.
3) Divide both circles in 12 equal parts and name as shown.
4) From all points of outer circle draw vertical lines downwards and upwards respectively.
5) From all points of inner circle draw horizontal lines to intersect those vertical lines.
6) Mark all intersecting points property as these are the points on ellipse
7) Join all these points along with the ends of both axes in smooth possible curve. It is required ellipse.