Experiment No.5

<h2 style="text-align:center">Setting Out of Rectangle in the Field</h2>

Objective: To set out a rectangle in the field when the centre is accessible and when the centre is inaccessible

Apparatus: Measuring Tape (10 m, 20 m or 30 m) or Metric Chain and a set of arrows

Theory: Surveying is a science that enables the engineer to determine the relative position of points on the surface of the earth. Before the Construction of any structure, surveying of the land on which construction takes place is carried out. A Plan is prepared of the existing features on the ground and its relative positions are also marked.

CASE 1: Construct a rectangle of 4m x 3m when Centre is Accessible

Procedure
1. Mark AB of 4m length using tape/chain and arrows in the field.
2. From point A and B draw an arc of 5 m and 3 m radius respectively by swinging the tape/chain with the help of arrow to locate point C
3. From point C and A draw an arc of 4 m and 3 m radius respectively by swinging the tape/chain with the help of arrow to locate point D
4. Measure distances BC, CD, AD, AC and BD.
5. Report the error in sides and diagonals by taking difference in measured and calculated values.
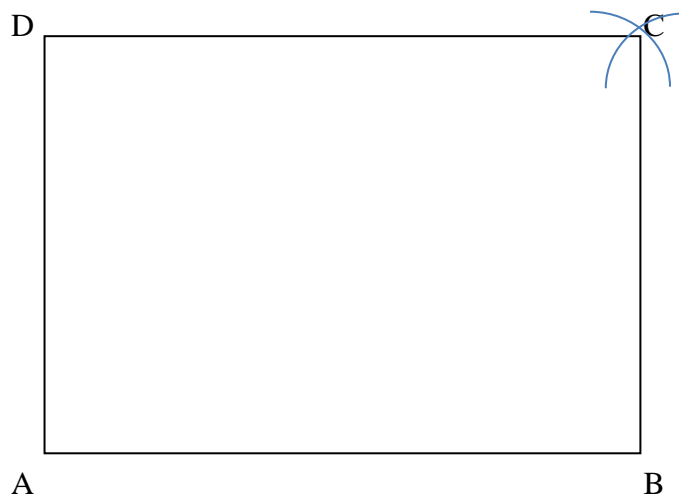
AB=CD

AD=BC

AC=BD

$LA = LB = LC = LD = 90^0$

CASE 2: Construct a rectangle of 8m x 10m when centre is inaccessible

Procedure

1. Mark AB of 8m length using tape and arrows in the field.
2. Extend the line AB to B_1 Such that ABB_1 are in the same line.
3. From point B cut an arc of 4m on ABB_1 and 3m vertically, then from B1 cut an arc of 5m to establish the new perpendicular line BC_1 using 3-4-5 method. Extend the line BC_1
4. On the line BC_1 cut an arc of 10 m to get the line BC
5. Repeat the same procedure on the other side to complete the rectangle
6. Measure distances BC, CD, AD, AC and BD.
7. Report the error in sides and diagonals by taking difference in measured and calculated values