

Figure 1 shows a field with an irregular shape of which the surface area must be determined.

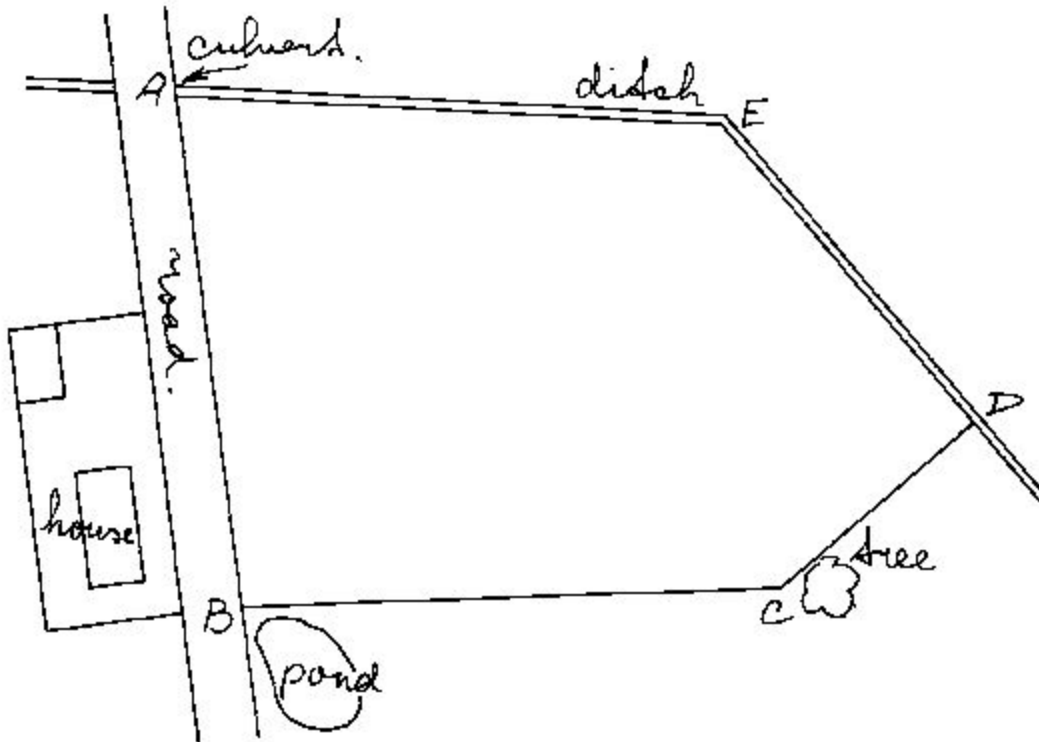
Fig. 1A field of irregular shape

The procedure to follow is:

Step 1

A rough sketch of the field is drawn (see Fig. 1A) indicating the corners of the field (A, B, C, D and E) and the field borders (straight lines). In addition some major landmark are indicated (roads, ditches, houses, trees, etc.) that may help to locate the field.

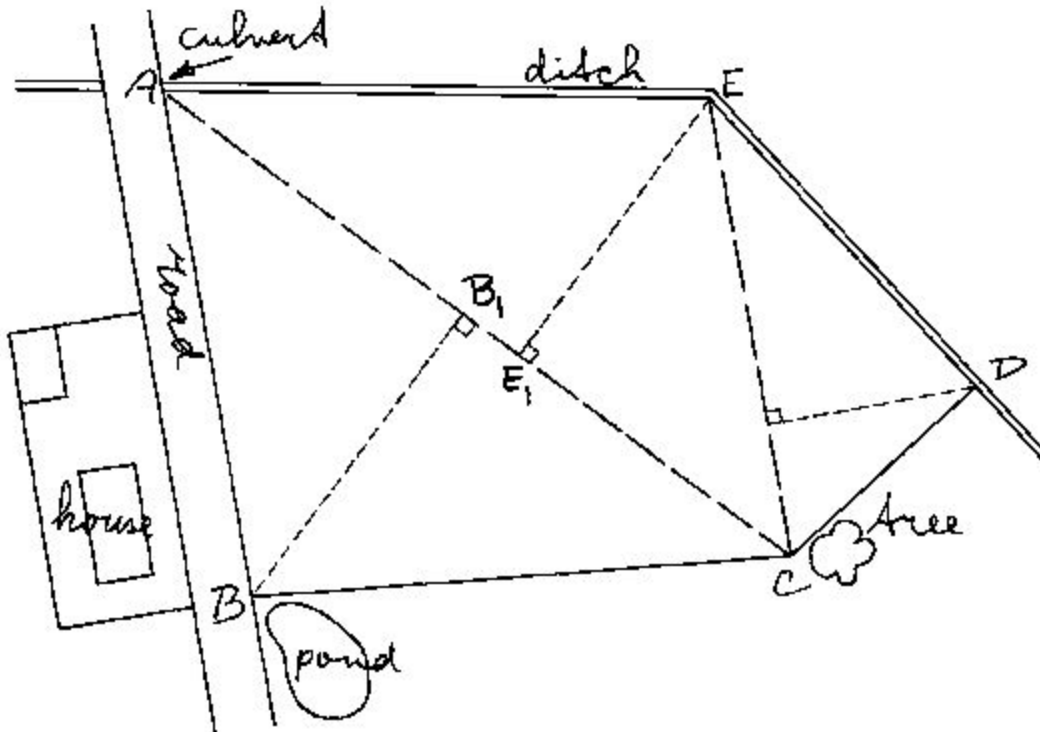
Fig. 1A rough sketch of the field



Step 2

Divide the field, as indicated on the sketch, into areas with regular shapes. In this example, the field can be divided into 3 triangles ABC (base AC and height BB_1), AEC (base AC and height EE_1) and CDE (base EC and height DD_1) (see Fig. 29b).

Fig. 29b Division of the field into areas with regular shapes



Step 3

Mark, on the field, the corners A, B, C, D and E with pegs.

Step 4

Set out ranging poles on lines AC (base of triangles ABC and AEC) and EC (base of triangle EDC) (see Fig. 29c) and measure the distances of AC and EC.

Step 5

Set out line BB₁ (height of triangle ABC) perpendicular to the base line AC using one of the methods described in Chapter 4. Measure the distance BB₁,

Step 6

In the same way, the height EE₁, of triangle AEC and the height DD₁, of triangle CDE are set out and measured

Step 7

The base and the height of the three triangles have been measured. The final calculation can be done as follows:

Measured

Triangle ABC: base = AC = 130 m

height = BB₁ = 55 m

Triangle ACE: base = AC = 130 m

height = EE₁ = 37 m

Triangle CDE: base = EC = 56 m

height = DD₁ = 55 m

Answer

Area = 0,5 x base x height

$$= 0.5 \times 130 \text{ m} \times 55 \text{ m} = 3\,575 \text{ m}^2$$

$$\text{Area} = 0.5 \times 130 \text{ m} \times 37 \text{ m} = 2\,405 \text{ m}^2$$

$$\text{Area} = 0.5 \text{ m} \times 56 \text{ m} \times 55 \text{ m} = 1\,540 \text{ m}^2$$

Field ABCDE:

$$\text{Area of triangle ABC} = 3\,575 \text{ m}^2$$

$$\text{Area of triangle ACE} = 2\,405 \text{ m}^2$$

$$\text{Area of triangle CDE} = 1\,540 \text{ m}^2$$

$$\text{Total Area} = 3\,575 \text{ m}^2 + 2\,405 \text{ m}^2 + 1\,540 \text{ m}^2$$

$$= 7\,520 \text{ m}^2 = 0.752 \text{ ha}$$