

Calculating the area of a region on a map using a scale.

In the previous lesson, you measured the distance between two places on a map. In this session you will learn how to calculate the area of a region on a Map using a scale.

The following methods can be used to estimate and calculate area of a region on a map:

- a) Regular shape - apply mathematical formulas in calculating area i.e Length x Width, πR^2
- b) Irregular shape - Count full squares and multiply by 1KiloMetre (Measure of grid square)

Steps for estimating and calculating the area of a regular shape on a map.

To calculate the area of a regular map, you typically need to follow these steps:

1. Identify the Shape: Determine the shape of the area you want to calculate. Regular maps often represent areas that can be approximated by regular shapes (like squares, rectangles, triangles, circles, etc.).
2. Use the Appropriate Formula: Depending on the shape, use the corresponding area formula:
 - Rectangle: Area = length $\times$ width
 - Square: Area = side²
 - Triangle: Area = (base $\times$ height) / 2
 - Circle: Area = $\pi \times$ radius²
 - Trapezoid: Area = (base1 + base2) / 2 $\times$ height
3. Measure Dimensions: Use a scale or measurement tool to find the necessary dimensions (length, width, height, radius, etc.) of the area on the map.
4. Apply the Formula to get the area
5. Adjust for Scale: If the map has a scale (e.g., 1 cm = 1km), convert your area calculation to the actual area by applying the scale factor. For example, if you calculated an area in square inches and the scale is 1cm = 1km, you would convert square cm to square km.

Steps for estimating and calculating the area of an irregular shape

- 1.Count full squares and multiply by 1KiloMetre (Measure of grid square).



2. In this case the number of complete squares is 23 (ticked).

3. Count squares which are not full and treat them as half square KiloMetre (marked x).



In this case the number of incomplete squares is 28. All incomplete squares are assumed to be half squares, which means 14 complete squares. (0.5×28)

4. Add the total number of full squares (23) to the total number of half squares (14). The total number of squares is 37. Each square has an area of 1km squared. So the area of the irregular shape shown is 37km sq