

Compactness Index

Compactness Index = C.I.

A = Area of District

P = Perimeter

$$C.I. = A / P^2$$

For a Circle of Radius r:

$$C.I. = \pi * r^2 / (2 * \pi * r)^2 = 0.0796$$

A more convenient way to put it:

$$C.I. = 400 * \pi * A / \pi^2 = 1,257 * A / \pi^2$$

For a circle: C.I. = 100

Gerrymandered plans usually contain districts having strange shapes. We call such districts non-**compact**. Compactness can be measured by a simple formula. The Compactness Index (C.I.) of any district is its area (A) divided by the square of its perimeter (P). If we multiply A over P-squared by 1257, the compactness index of a circle will come out as 100; that of a square as 78.54.