Full grid of measurement points

When this method is applied to an interior lighting installation, the interior is divided into a number of equal size cells that should be as square as possible.

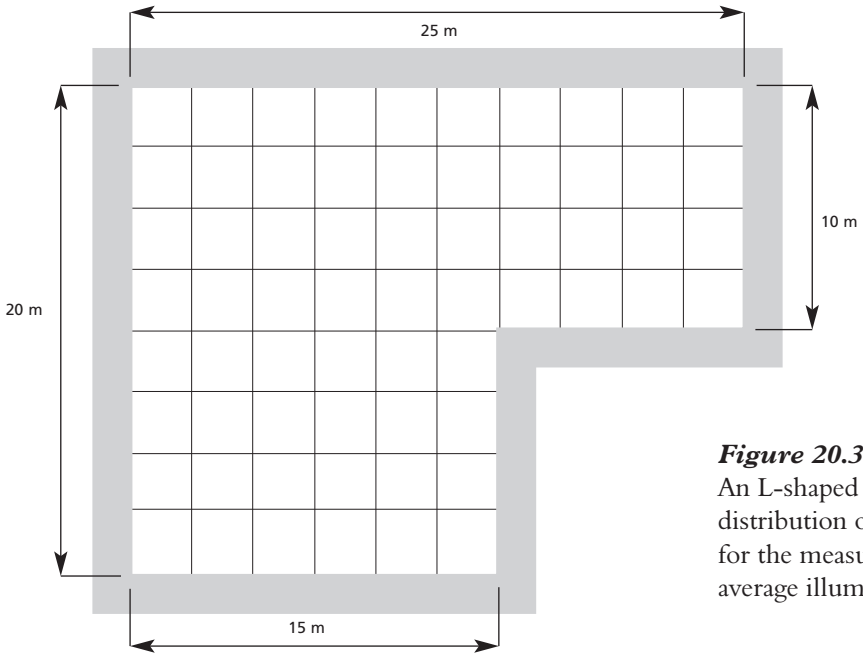

Figure 20.3
An L-shaped room with the distribution of cells required for the measurement of average illuminance

The illuminance at the centre of each cell is measured and the mean value for all the cells is calculated. This gives an estimate of the average illuminance. The accuracy of the estimate depends on the number of cells and the variation of illuminance. Table 20.1 relates the room index (RI) to the number of cells necessary to give an error of less than 10%; the data in Table 20.1 are valid for spacing-to-height ratios up to 1.5:1.

Table 20.1 Minimum number of cells to form a full grid when measuring average illuminance in an interior

Room index (RI)	RI < 1	1 > RI < 2	2 > RI < 3	RI >3
Number of cells	9	16	25	36

The only limitation on the use of the above is when the grid of cells coincides with the grid of lighting points; large errors are then possible and more cells than the number given should be used. The numbers of cells suggested are minima, and it may be necessary to increase their number to obtain a symmetrical grid to suit a particular room shape. The following examples illustrate the use of the method:

(a) An interior measuring 20 m × 20 m and with luminaires mounted 4 m above the working plane has a room index of 2.5. A minimum of 25 cells is therefore required, i.e. a 5 × 5 grid spaced at 4 m × 4 m.

(b) If the room measures 20 m × 33 m with the luminaires mounted at the same height, the room index of 3.1 indicates that a minimum of 36 cells would suffice. To give a grid which is acceptably 'square', 40 cells could be used, spaced at 4 m × 4.125 m.