

Step-1

In 2 dimensional cubes we have 4 corners and 3 edges and one face.

In 3 dimensional cube we have 8 corners and 12 edges and 6 faces.

In n dimensional cube we have 2^n corners and $n \cdot 2^{n-1}$ edges (since each corner is adjoined $n-1$ other corners to give n edges).

Step-2

At each corner $n-1$ edges give rise to a face of $n-1$ dimensions so that n faces are joined at a corner.

Each face is counted 2^{n-1} times. So, the number of faces is 2^n .

The n cube whose edges are the rows of 21 has volume equal to 2^n since 1 has mutually orthogonal columns.