## Theorem (Handshaking theorem)

Let $G = (V, E)$ be an undirected graph with $e$ edges. Then $\sum_{v \in V} \deg(v) = 2e$.

(or)

The sum of degrees of all the vertices of an undirected graph is twice the number of edges of the graph.

Since every edge is incident with exactly two vertices, every edge contributes 2 to the sum of the degree of the vertices.

∴ All the 'e' edges contribute '2e' to the sum of the degrees of vertices.

$$\therefore \sum \deg(v) = 2e$$

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