

Ques: Raju was asked to draw a Polyhedron on his Mathematics exam. He draws a figure that has 10 faces, 20 edges, and 15 vertices. Did Raju draw a Polyhedron? Answer with the help of Euler's formula.

Ans: According to Euler's formula, in a Polyhedron,

$$\underline{\text{Number of faces} + \text{number of vertices} - \text{number of edges}} = 2$$

Here the given figure has 10 faces, 20 edges, and 15 vertices.

Applying this to Euler's formula, we get

$$\text{L.H.S.} = \text{Number of faces} + \text{number of vertices} - \text{number of edges}$$

$$= 10 + 15 - 20 \neq 2$$

Since L.H.S \neq R.H.S

We can say that such a Polyhedron doesn't exist at all.