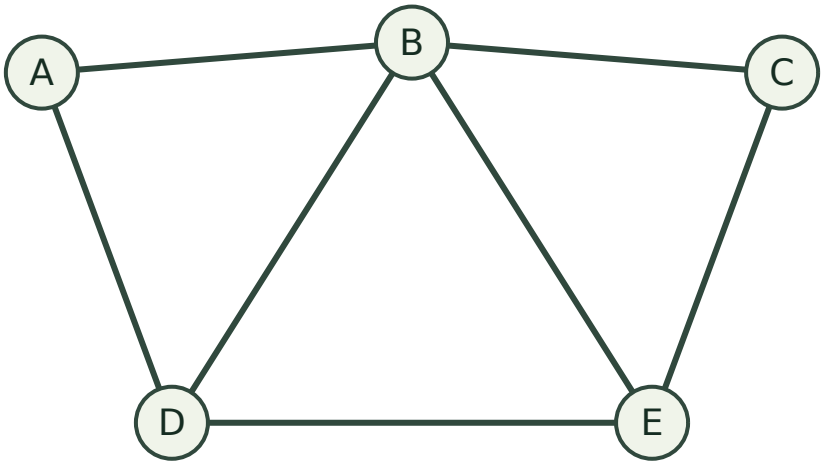
Vertices, edges and connections

6 questions | 14 marks

Equivalent correct methods earn the corresponding marks.

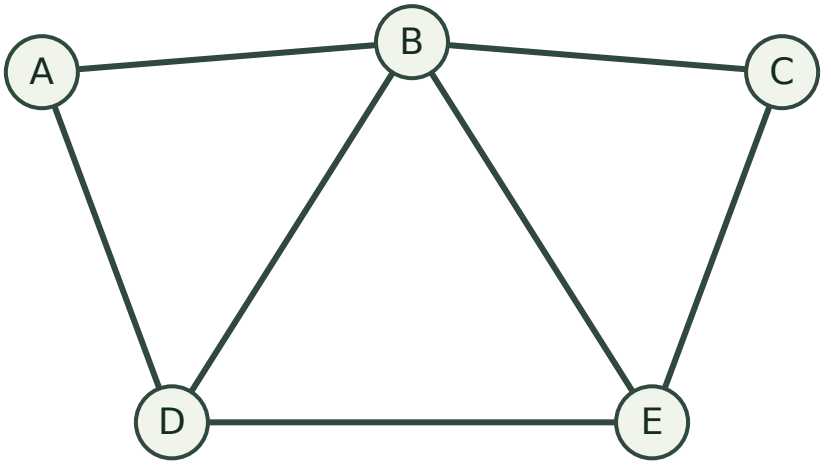
1. Count the vertices and edges. [2 marks]



Count A-E and list the seven distinct links.

Answer: 5 vertices, 7 edges.

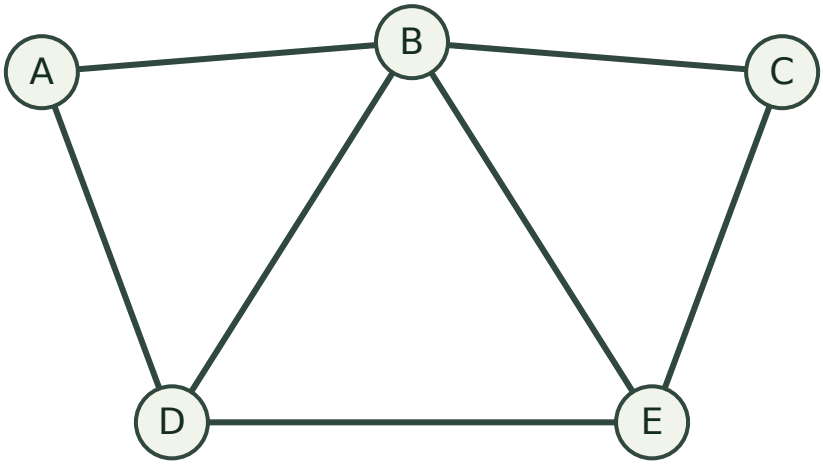
2. List all neighbours of D. [2 marks]



Read AD, BD, DE.

Answer: A, B, E.

3. Find all degrees and check their sum. [3 marks]



Count incident links.

$14 = 2 \times 7.$

Answer: A2, B4, C2, D3, E3; sum 14.

4. A network has degrees 2,2,2,2,0. Find its edge count. [2 marks]

$\text{Sum} = 8.$

$8 \div 2 = 4.$

Answer: 4.

5. Can three vertices each have degree 1, with no other vertices? Explain. [3 marks]

The degree sum would be 3.

An undirected degree sum is even.

Answer: No.

6. In a mutual-friendship network, what does degree 4 represent? [2 marks]

Interpret one vertex as one person and its four edges as four direct relationships.

Answer: A person with four recorded mutual friendships.