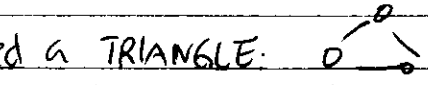
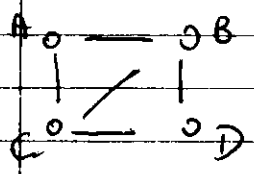
- The density of a graph or subgraph with n nodes is
  $\frac{\text{the number of edges}}{\text{maximum possible number of edges}} = \frac{\text{the number of edges}}{\frac{n(n-1)}{2}}$
- A CLIQUE is a subgraph with density = 1, i.e., a complete subgraph
- A clique of size 3 (nodes) is called a TRIANGLE: 
- A common graph mining task is to find communities (or cliques, or dense subgraphs).

Degree

- The degree of a node is the number of edges connected to it.



degree(A) = 2

- For directed graphs, each node can be associated with in-degree (number of incoming edges) and out-degree (num. of outgoing edges)

shortest paths / Diameter

- The diameter of a graph is the maximum shortest path between any pair of vertices. In the above example:

shortest path A–B = 1
A–C = 1
A–D = 2
B–C = 1
B–D = 1
C–D = 1

maximum shortest path = 2, so DIAMETER = 2

- For data analytics using DIAMETER, see "six degrees of separation" and "the small world phenomenon"