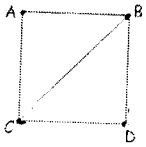
NOTES--Graph Theory Hamilton Paths and Circuits

A "simple" path/circuit does not contain the same edge more than once.

The "length" of a path/circuit is the number of edges traveled.

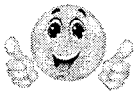


DBCA simple path length = 3
ABCA simple circuit length = 3
DCBACB path (not simple) length = 5
ADBA not valid

A Hamilton path is a path that uses each vertex exactly once.

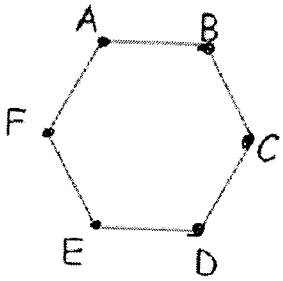
A Hamilton circuit is when a Hamilton path ends at the starting vertex.

cool fact—If a graph has a pendant vertex, no Hamilton circuit exists!!!



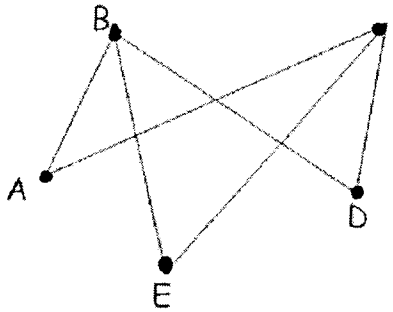
Example Find a Hamilton circuit or Hamilton path, if one exists.

A.



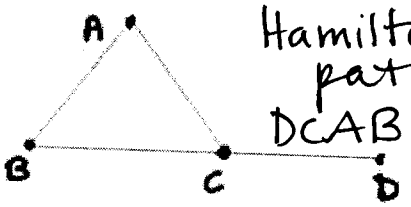
Hamilton circuit
CDEFABC

B.



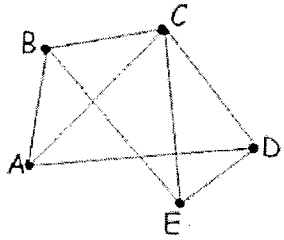
Hamilton path
DBECA

C.



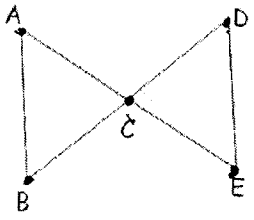
Hamilton path
DCAB

D.



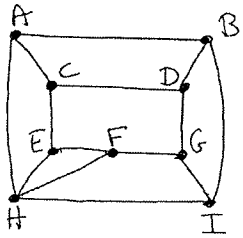
Hamilton circuit
ECDABE

E.



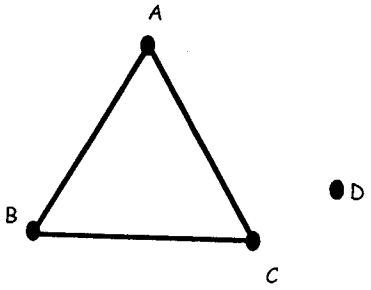
Hamilton path
ABCDE

F.



Hamilton circuit
BIHEFGDCAB

G.



neither

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