

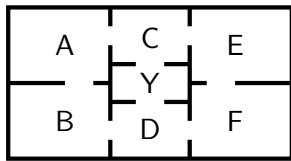
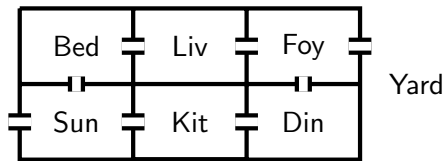
# MA111: Contemporary mathematics

Jack Schmidt

University of Kentucky

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Entrance Slip (due 5 min past the hour):



- Match Yard, Bed, Liv, etc. to A, B, C, etc. so that the connections are the same!

Today we get a lot more definitions to help us talk about finding tours.

## 5.3: Definitions

- **Adjacency:** Two vertices are adjacent if the edge set says at least one edge connects them. Two edges are adjacent if there is a vertex connected by both of them.

Vertex set:  $\{A, B, C\}$ .

Edge set:  $\{AB, BC\}$ .



- A and B are adjacent, B and C are adjacent, A and C are NOT adjacent
- AB and BC are adjacent

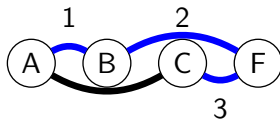
## 5.3: More definitions

- **Degree:** Basically counts how many edges connect to a specific vertex, but loops count twice.
- **Path and circuit:** A sequence (ordered list) of edges, so that each edge is adjacent to the next one. If the “start” and “end” of the sequence is the same vertex, then we call it a circuit, otherwise a path. We require that no edge is used more often than it occurs in the edge set.

Vertex set:  $\{A, B, C, D\}$

Edge set:  $\{AB, AC, BF, CF\}$

Path: AB-BF-CF



## 5.3: Even more definitions

- **Connected:** A graph is connected if every two distinct vertices are connected by a path
- **Euler path and circuit:** An Euler path or circuit is a path or circuit that uses **all** the edges in the graph.
- Here are some more [examples of graphs](#).

# Assignment and exit slip

- Read 5.1, 5.2, 5.3. Play some GlowPuzzle.
- **Exit slip:** Draw the right hand graph on your index card, then label its vertices so the edge sets are the same.

