MA111: Contemporary mathematics

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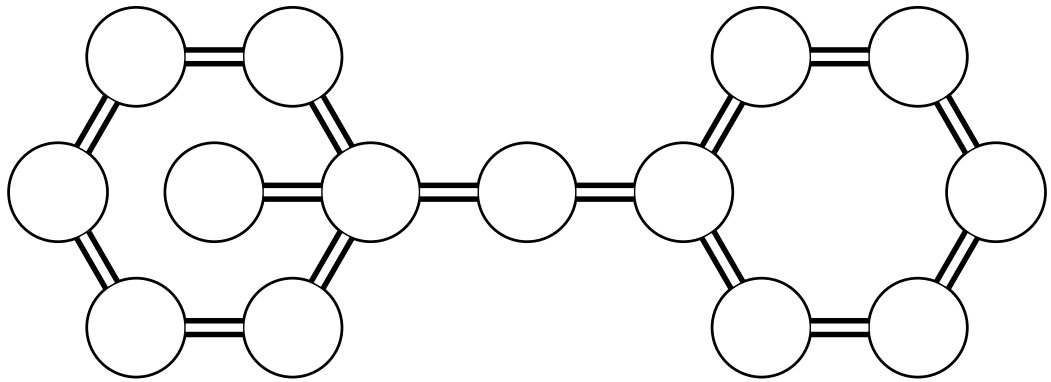
Entrance Slip (due 5 min past the hour):



- Glow puzzle it up.

Today we try to discover Euler's rules.

Context: glow puzzle strategy

- There are 5 pillars to glow puzzle mastery
- I want you to discover them yourself
- You will not find mastery in the book or in the slides
- After today's meditation I will recount Master Euler's observations
- But first let us look into the light

Activity: Meditate on the glow

- The true puzzle lies within, but a shadow lies on the paper
- Complete the four faded puzzles on the paper
- There is no success or failure, only results
- What results in a complete tracing without repeated edges?
- Where must you begin?
- Now design your own puzzles on the back.

  How do you know if they are solvable?

Fast: 5.4 Euler's observations

- Euler discovered three of the five pillars:

Theorem

A glow puzzle is solvable if and only if there are at most two vertices of odd degree.

Theorem

In any glow puzzle, solvable or not, the odd vertices come in pairs.

Theorem

If a solvable glow puzzle has a vertex of odd degree, then it has two, one where the journey must start, and one where it must end.

Assignment and exit slip

- Read 5.1, 5.2, 5.3, 5.5.
- Play some GlowPuzzle or other alternatives or even Jack's first level
- **Exit slip:** How do you solve Jack's glow puzzle?