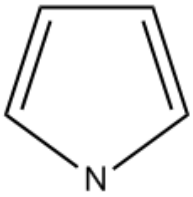
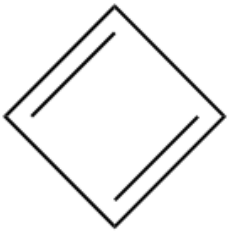
CONCEPT: INSCRIBED POLYGON METHOD

Also known as the ***polygon-in-circle*** method, or ***Frost Circle***, this helps us visualize the identities of π electrons and molecular orbitals in a ring.

EXAMPLE: Use the polygon-in-circle method to predict stability of the following molecules.



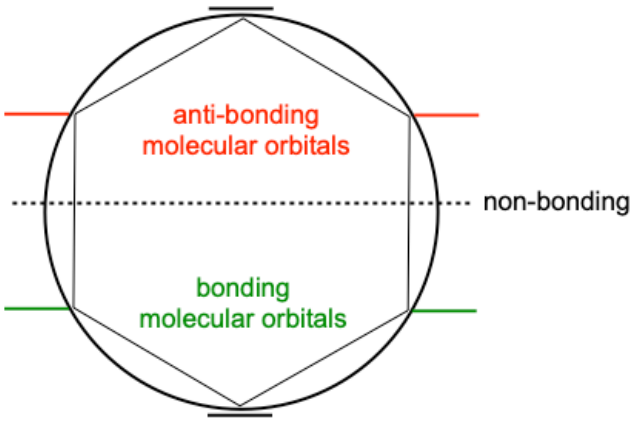


Step 1: Draw polygon with one corner facing down.

Step 2: Draw molecular orbitals on all corners of ring

Step 3: Draw a line that splits the polygon down the middle

Step 4: Insert π electrons into orbitals starting from lowest energy and working up (*Aufbau Principle*).



- Filled molecular orbitals contribute to unique stability (aromaticity)
- Partially filled molecular orbitals contribute to unique instability (antiaromaticity)

PRACTICE: Apply the polygon circle method to the following compound. Does it show any special stability? If yes, why?

Tropyllium cation

PRACTICE: Draw the inscribed polygon for the following molecule.