

(12) **Today**

4.1 Symmetry elements and Operations

4.2 Point Groups

(14) **Second Class from Today**

4.2 Point Groups

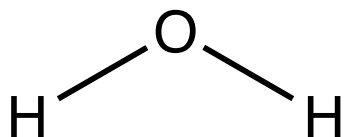
4.3 Character Tables

Next Class (13)

Test 1

Third Class from Today (15)

4.3 Character Tables

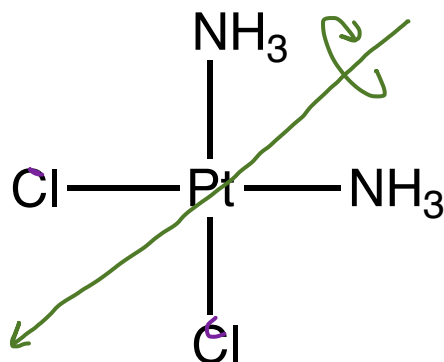


the plane of the molecule
is a mirror plane

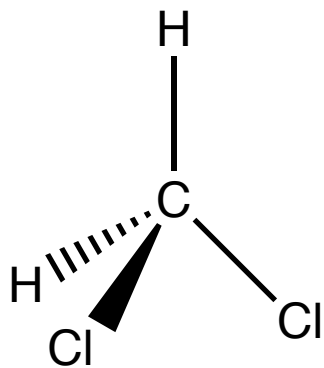
C_2 bisecting N to Pt to N
angle

mirror plane bisecting the
N to Pt to N angle

these are
treated
one as
object



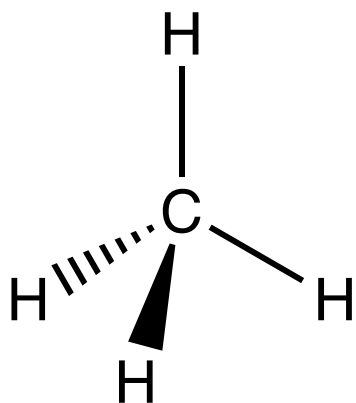
square planar
molecule



C_2 bisecting Cl to C to Cl angle
 two mirror planes bisecting Cl to C to Cl
 and H to C to H

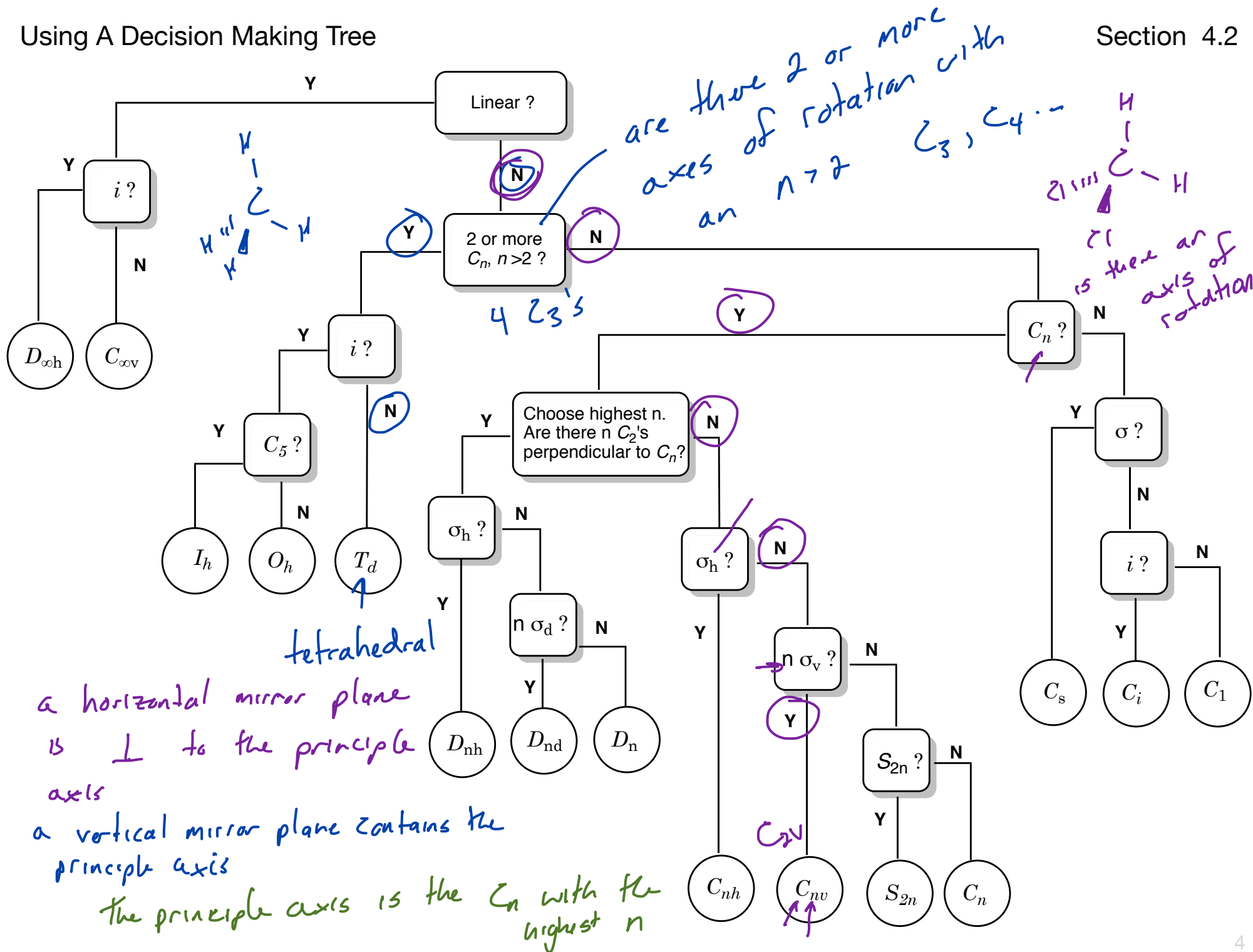
C_2 axes bisecting the $H-C-H$ angles
 C_3 axes along each $C-H$ bond

σ



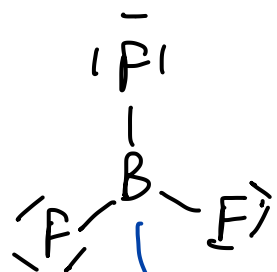
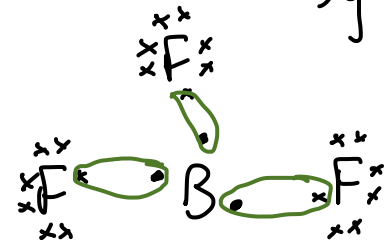
the collection of all of the symmetry elements for a molecule is call its point group

Using A Decision Making Tree

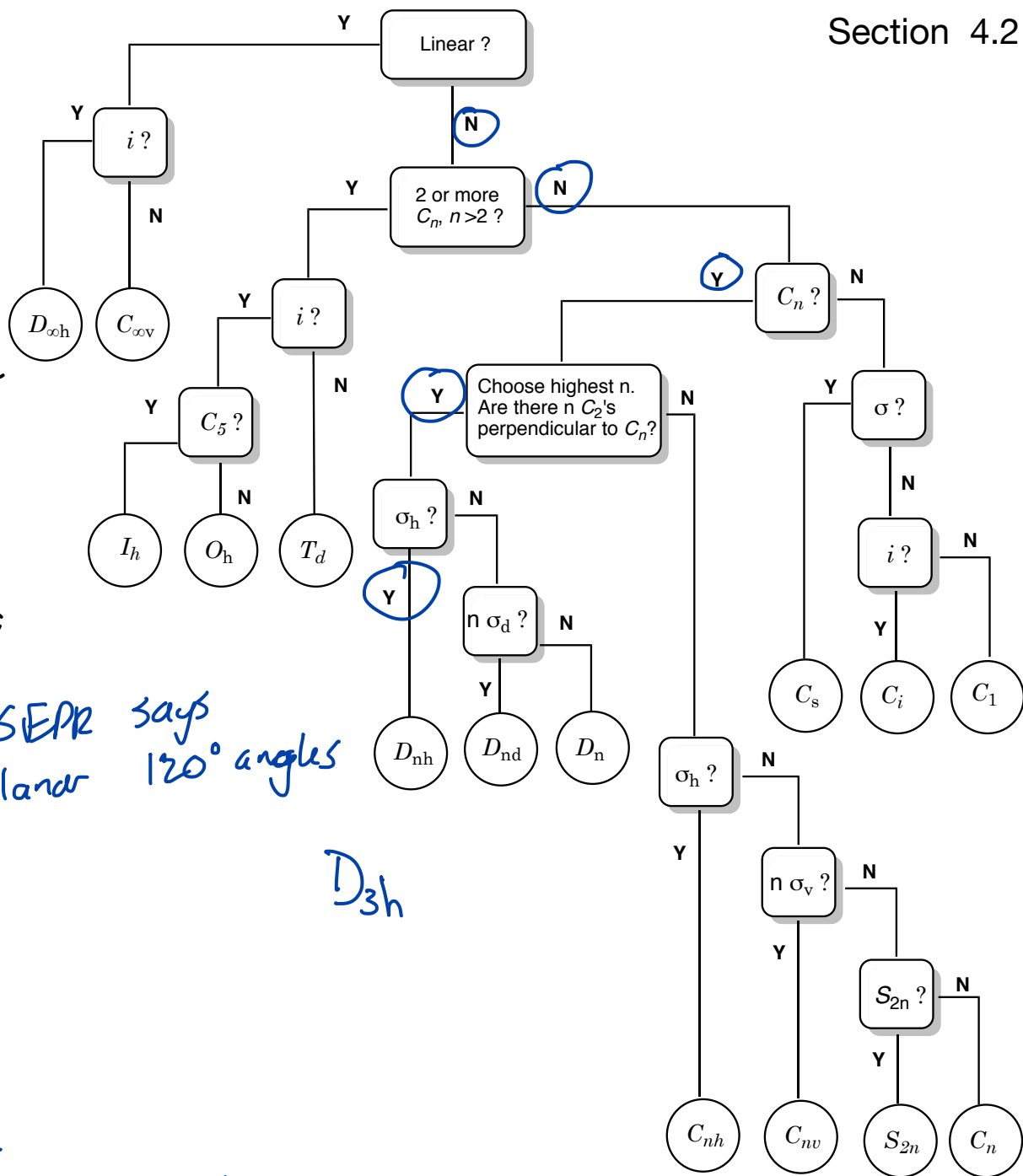


Using the Tree

- BF₃
1. Draw Lewis structure
 2. Use VSEPR to determine geometry
 3. Use key to determine symmetry



VSEPR says
planar 120° angles



D_{3h}

linear? no

2 or more C₃'s? no

C_n? yes

3 C₂'s ⊥ to C₃? yes

σ_h (mirror plane ⊥ to principle axis)?
yes... its a planar molecule