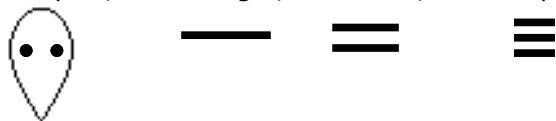


# Molecular Shapes--V.S.E.P.R.

V.S.E.P.R. Theory says--"Sets" of electron density around a central atom repel each other, and therefore, get as far apart as possible.

**One** "set" = a lone pair, or a single, a double, or a triple bond.



$$\text{Sets} = \frac{G + H - C - N}{2}$$

G = Group # of Central Atom  
H = Surrounding Halogens + Hydrogens

C = Charge (including sign)  
N = Surrounding Nitrogens

Central Atom

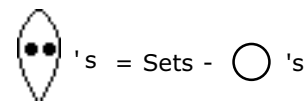


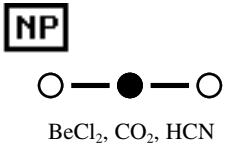
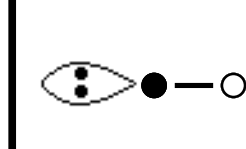

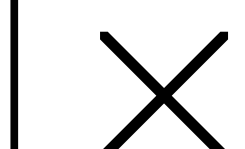
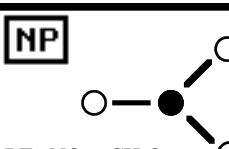
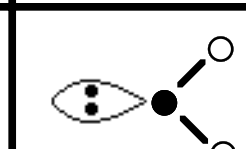
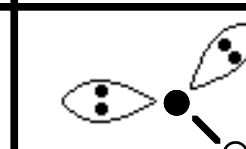
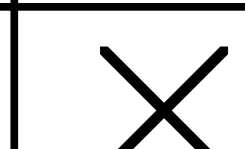
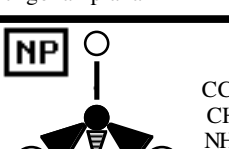
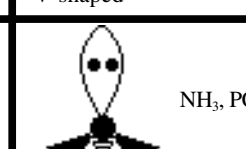
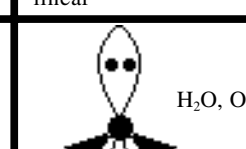

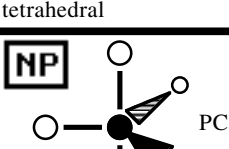
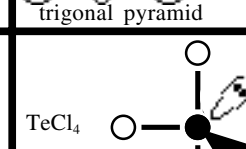
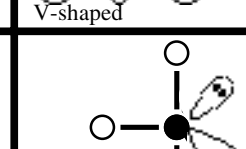
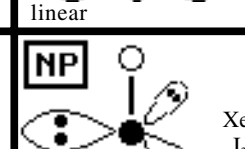
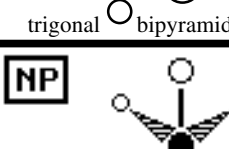
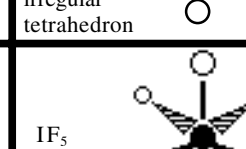
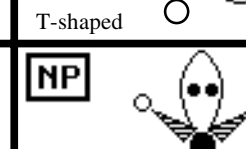
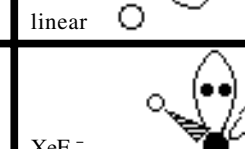
Surrounding Atoms



Nonpolar as long as all  $\bigcirc$ 's are the same.

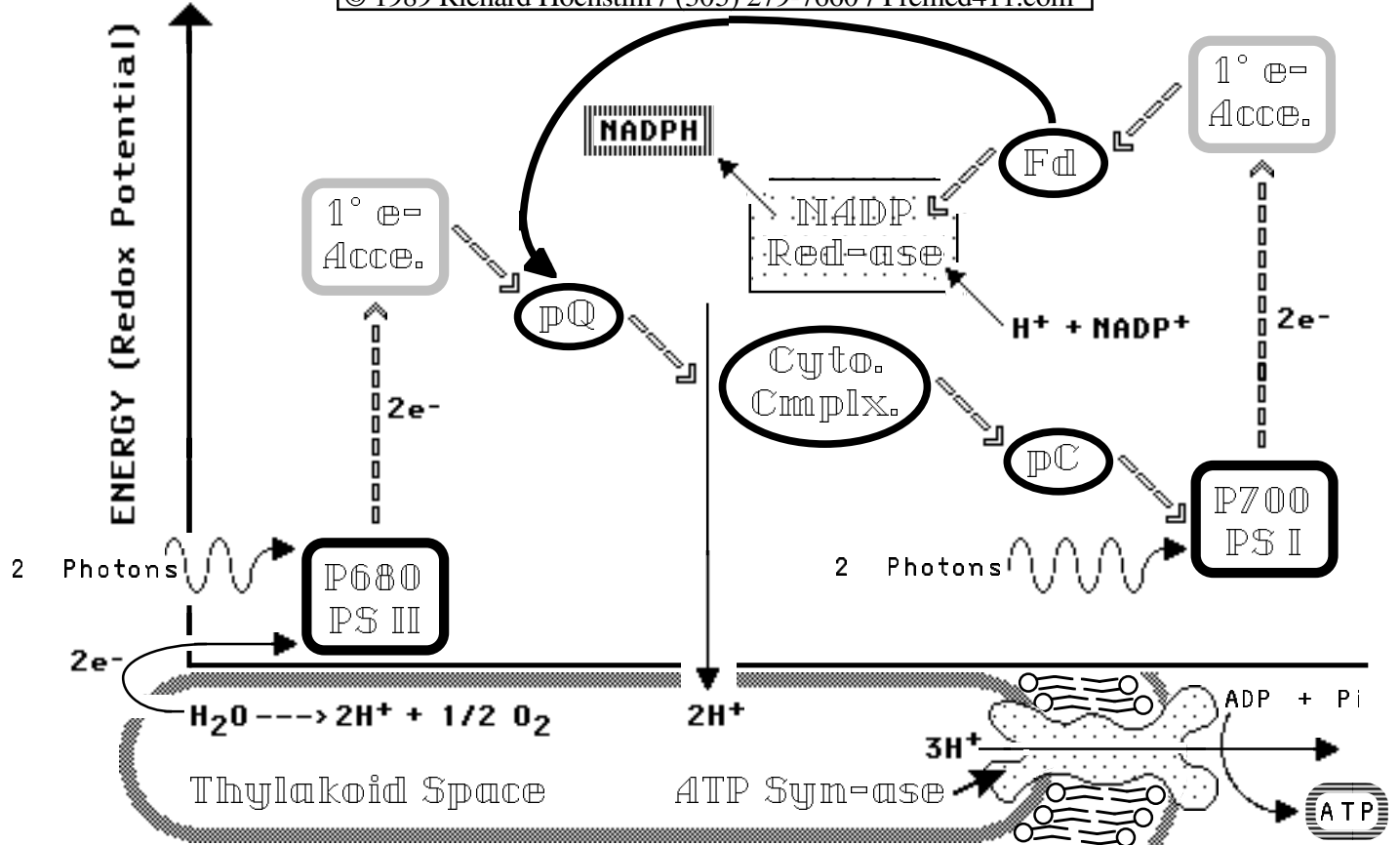
**NP**



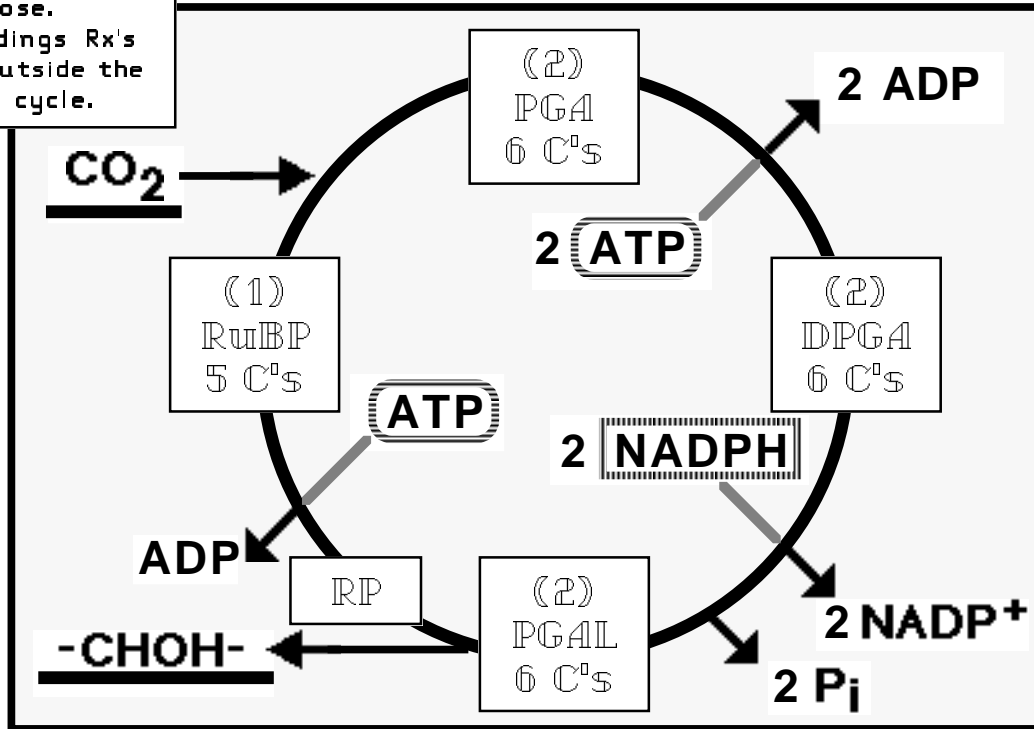
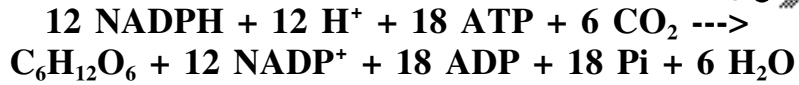
# of sets hybridization bond angle electronic geometry	No	1	2 'S	3 'S
<b>2 sets</b> sp 180° linear	<b>NP</b>  BeCl <sub>2</sub> , CO <sub>2</sub> , HCN linear	 linear		
<b>3 sets</b> sp <sup>2</sup> 120° trigonal planar	<b>NP</b>  BF <sub>3</sub> , NO <sub>3</sub> <sup>-</sup> , CH <sub>2</sub> O trigonal planar	 O <sub>3</sub> , NO <sub>2</sub> <sup>-</sup> V-shaped	 linear	
<b>4 sets</b> sp <sup>3</sup> 109.5° tetrahedral	<b>NP</b>  CCl <sub>4</sub> , CH <sub>4</sub> , NH <sub>4</sub> <sup>+</sup> , POCl <sub>3</sub> tetrahedral	 NH <sub>3</sub> , PCl <sub>3</sub> trigonal pyramid	 H <sub>2</sub> O, OCl <sub>2</sub> V-shaped	 HCl linear
<b>5 sets</b> sp <sup>3</sup> d 90°/120° trigonal bipyramid	<b>NP</b>  PCl <sub>5</sub> trigonal bipyramid	 TeCl <sub>4</sub> irregular tetrahedron	 ClF <sub>3</sub> T-shaped	<b>NP</b>  XeI <sub>2</sub> , I <sub>3</sub> <sup>-</sup> linear
<b>6 sets</b> sp <sup>3</sup> d <sup>2</sup> 90° octehedral	<b>NP</b>  SF <sub>6</sub> octehedral	 IF <sub>5</sub> square pyramid	<b>NP</b>  IBr <sub>4</sub> <sup>-</sup> square planar	 XeF <sub>3</sub> <sup>-</sup> T-shaped

# Photosynthesis & Calvin Cycle

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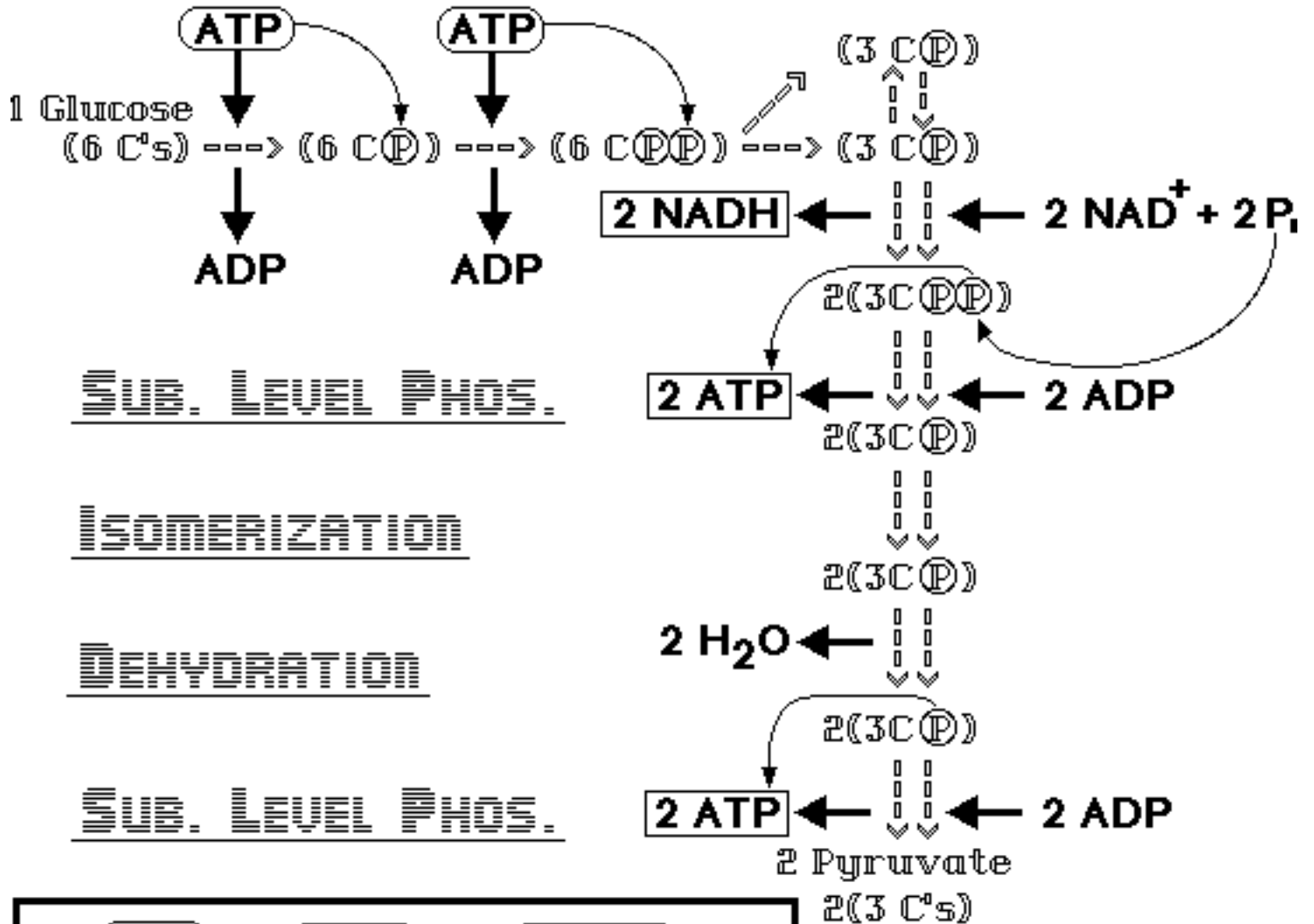


Net Rx----->  
for making 1 mole of  
glucose.  
This includes Rx's  
occurring outside the  
Calvin cycle.

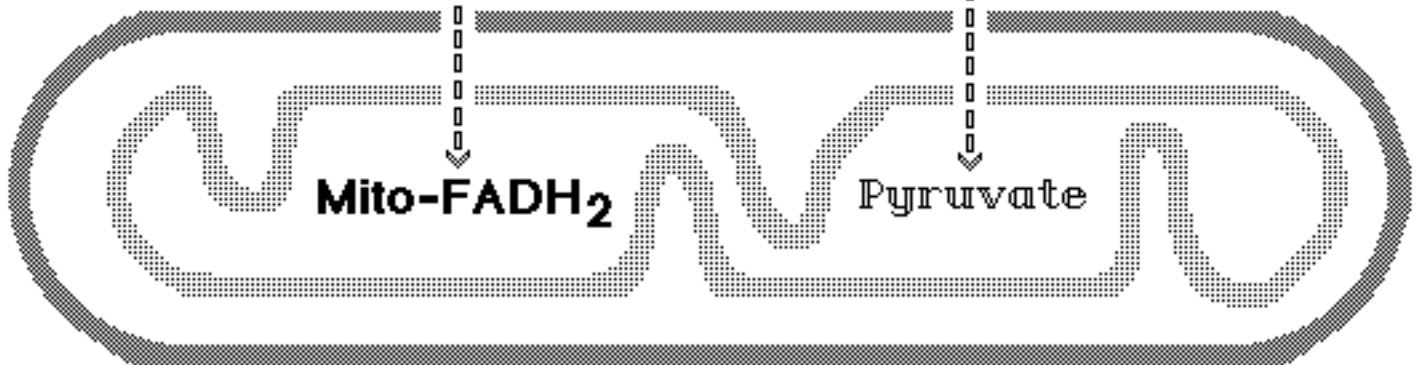


# GLYCOLYSIS (in the cytosol)

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**- 2 (ATP) + 4 [ATP] & 2 [NADH] =  
2 ATP (net) & 2 [NADH] per glucose**

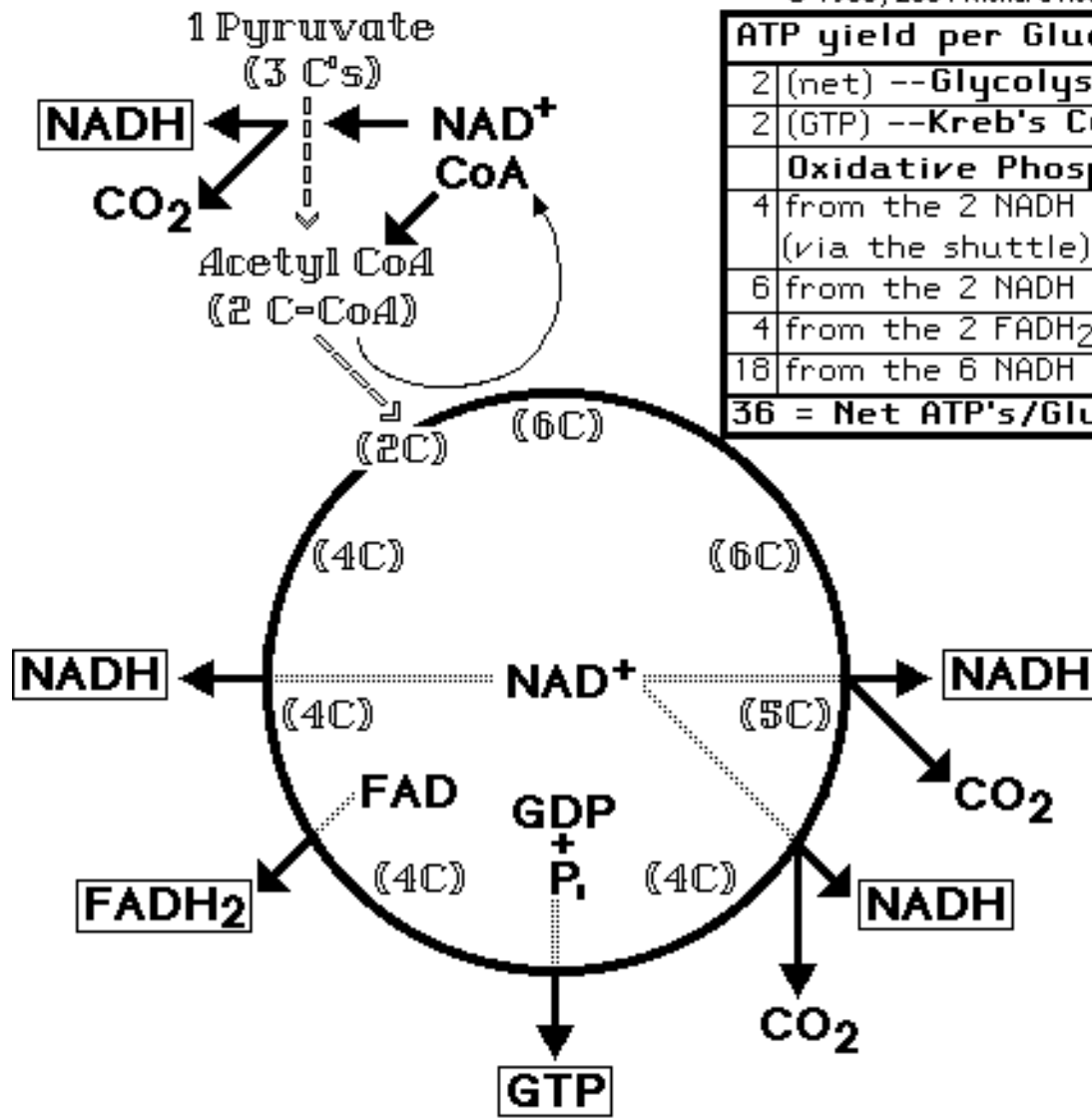


# Decarboxylation of Pyruvate

## The Kreb's Cycle

### Oxidative Phosphorylation

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ATP yield per Glucose	
2 (net)	-- Glycolysis (-2 ATP + 4 ATP)
2 (GTP)	-- Kreb's Cycle
<b>Oxidative Phosphorylation</b>	
4	from the 2 NADH in Glycolysis (via the shuttle)
6	from the 2 NADH in Decarbo. of Pyr.
4	from the 2 FADH <sub>2</sub> in Kreb's Cycle
18	from the 6 NADH in Kreb's Cycle
<b>36</b>	<b>= Net ATP's/Glucose</b>

