Name: _____

Induced-Fit Model

There are multiple models of how an enzyme and a substrate interact. The first was developed by Emil Fischer in 1890. In this model the enzyme has a rigid structure and is specific to one enzyme. This was the prevailing theory for 68 years until Daniel Koshland developed the induced-fit model. The induced-fit model describes an enzyme as a flexible protein that changes to bond to the substrates it bonds with. It is important to note that this model did not throw out the old model, but instead builds on it and changes it so that it better described what Koshland observed.

1.) Draw a picture of Fischer's Lock-and-Key model. You should include two steps one showing the enzyme and substrate before and after binding.

2.) Draw Koshland's Induced-fit model. You should include two steps one showing the enzyme and substrate before and after binding.

3.) Create a Venn diagram comparing the lock-and-key and the induced-fit models.

4.) Why might Koshland began to question if the lock-and-key model even though it was the accepted theory of the time?

5.) What are the advantages of the induced-fit model? What are some disadvantages?

6.) Do you think the bonds between the enzymes and substrates are weak bonds or strong bonds? Why?

7.) Create an analogy with everyday objects for the induced-fit model.