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| **Guided Notes: Enzymes** |
| enzymeWhat is an **ENZYME**?  | * An enzyme is a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ that speeds up/slows down (circle one) a chemical reaction
* **CATALYST**:
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| enzymeHow does an enzyme work?  | * An enzyme works by lowering \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ energy
* **ACTIVATION ENERGY**:
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| What does this look like? \*Label the graph to the right with the following terms:1. Reactants
2. Products
3. Catalyzed Reaction (w/an enzyme)
4. Uncatalyzed Reaction (w/out an enzyme)
 | activationenergy1 |
| **Enzyme Action (Step-by-Step)**enzyme5\*Explain what “Lock & Key” means in your own words.\***Word Bank**: Enzyme (2x), Active Site, Substrate, Products, Enzyme-Substrate Complex | 1. Enzyme binds to one or more of the \_\_\_\_\_\_\_\_\_\_\_\_\_ in a reaction
* The reactants that bind to the enzyme are called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* The site where the enzyme and substrate bind is called the… \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* The shape of the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is very specific (LOCK & KEY) to the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
1. The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is formed when the enzyme and substrate connect to each other, this **bonding lowers ACTIVATION ENERGY**
2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is released from the enzyme-substrate complex
* **KEY POINT:**
1. The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is now free to react with another \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
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**Enzyme Practice**

1. Enzymes are which type of macromolecule? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2. What do enzymes do? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3. **Label** the picture below with the following terms:

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| 1. Activation Energy w/Enzyme
2. Activation Energy w/out Enzyme
3. Energy Released from Reaction
4. Enzyme Activity
5. Time
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4. ***Explain*** what takes place in each step of the diagram below:



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| 1. What 2 environmental conditions can affect the activity of an enzyme?
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1. What is the optimal pH at which this enzyme functions?
2. What is the optimal temperature at which this enzyme functions?
3. What happens when the pH is 2?
 | 1. What is the optimal pH for the enzyme intestinal protease?
2. What is the optimal pH for the enzyme gastric protease?
3. Which enzyme works best in an acidic environment?
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