

Chemical Reactions and Enzymes

Standard Summarized: Students will Chapter 2-4

- 1) Identify the role of enzymes
- 2) Summarize how enzymes work
- 3) List three examples of enzymes that work in our body
- 4) Summarize how four factors affect enzyme activity

SBW Questions 8-11

Chemical Reactions

One _____ is changed into something _____

Iron turning into _____

Wood turning into _____

Cake batter becoming a _____

Sugar becoming _____ in our _____

Chemical equation

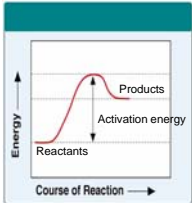
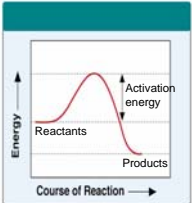
- _____ → _____
- _____ Material → _____ Material
- Bonds are broken and reformed
- _____ + _____ → _____
- Some reactions _____ energy
- Some reactions _____ energy

Obj. 1) Identify the role of enzymes

_____ Energy

- Energy _____ to _____ a chemical reaction

Energy _____ Energy _____

Obj. 1) Identify the role of enzymes

Enzymes

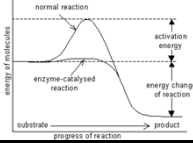
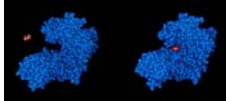
- Made of _____
- Enzymes are _____ in cells
- _____ reactions
- _____ activation energy

Enzyme Structure

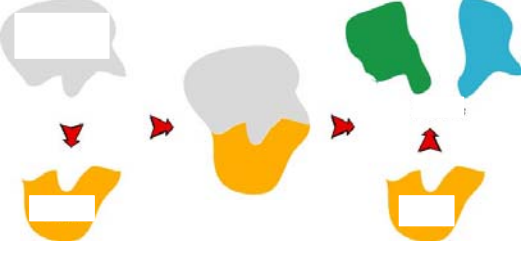
- Made of _____
- Specific _____
- _____

into _____

– _____ and _____

Obj. 2) Summarize how enzymes work



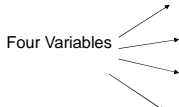
_____ + _____ → _____ + _____

Obj. 3) List three examples of enzymes that work in our body

Degradation reaction

| Substrate | Enzyme | Product | Location |
|-----------|--------|--------------------------|----------|
| Starch | | Maltose | |
| Maltose | | Glucose | |
| Protein | | Peptides | |
| Peptides | | Amino acids | |
| Fats | | Fatty Acids and Glycerol | |

Obj. 4) Summarize how four factors affect enzyme activity

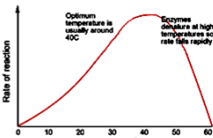
Four Variables 

What is concentration?
 * Amount of _____ in a given _____
 * I think of how _____ it is.

_____ **Condition**


Enzymes function _____ or are _____ in specific conditions known as **conditions**.

Refer to the graph, what is the optimum temperature for this enzyme?



Obj. 4) Summarize how four factors affect enzyme activity

Effect of heat on enzyme activity



_____ the protein

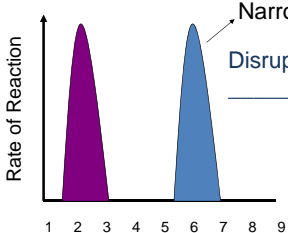
_____ CHANGES

SO _____ NO LONGER FITS

Even if temperature lowered – enzyme _____ regain its correct shape

Obj. 4) Summarize how four factors affect enzyme activity

pH



Disrupts _____ bonds

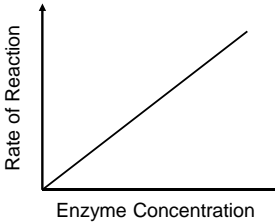
Effect = _____ residues at _____ site

_____ substrate bonding

What is the optimum pH ranges for this enzyme?

Obj. 4) Summarize how four factors affect enzyme activity

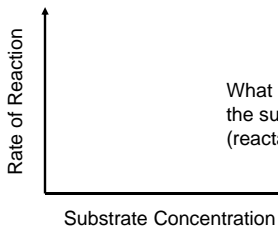
Enzyme Concentration



What happens to the rate of a reaction as an enzyme increases? Reaction rate _____ = more _____ for _____

Obj. 4) Summarize how four factors affect enzyme activity

Substrate Concentration



What if you add water to the substrates (reactants)?

What happens to the rate of a reaction as a substrate increases? Reaction rate _____ initially then reaches _____

Understanding Check

1. Of what are enzymes comprised?
2. Why are enzymes catalysts?
3. List 2 factors that affect enzyme activity.