

# Unit 3: Enzymes & Digestion

## Review Guide

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### LEARNING TARGETS

*Place a checkmark next to the learning targets you feel confident on. Then go back and focus on the learning targets that are not checked .*

### Enzymes

- Describe the relationship between enzyme, substrate, and active site. (2.1.3.A)
- Predict the effect of factors on enzymatic activity. (2.1.3.B)
- Explain the importance of enzymes to metabolism. (2.1.3.C)

#### Resources:

Textbook Section 2.4

Student Glossary

Enzyme Notes

Toothpickase Lab

Catalase Lab

Lab Summaries Worksheet

### Digestion

- Identify and describe the structure and function of the human digestive system. (2.1.4.A)

#### Resources:

Textbook Section 30.3

Student Glossary

Digestion Notes

**LT 2.1.3.A: Describe the relationship between enzyme, substrate, and active site.**

1. What is an enzyme?
2. What is the relationship between enzymes and catalysts?
3. What type of proteins (in terms of structure) make up enzymes?
4. Describe how enzymes “work”.
5. What is a substrate? What is another name for a substrate?
6. What is an active site?
7. Draw a diagram to represent how enzymes interact with substrate(s). Label all parts of your diagram.
8. How would a reaction with enzymes compare to a reaction without enzymes?

9. Can a reaction occur without enzymes? Explain your thinking (do not give a simple "yes" or "no" answer).

10. What is the difference between an active site and activation energy?

11. What are the different types of inhibitors?

12. Draw a picture to represent each type of inhibitor.

**LT 2.1.3.B: Predict the effect of factors on enzymatic activity.**

11. What is activation energy? How does it relate to enzymes?

12. Draw two graphs: one that represents a generic reaction over time and a second one that shows the impact of adding enzymes to that same reaction. Circle the main difference between your two graphs.

13. What does it mean for an enzyme to be denatured? How do enzymes become denatured?

14. How does temperature affect enzymes?

15. How does pH affect enzymes?

16. How does the amount of enzymes present affect the number of products made?

17. How does the amount of substrate present affect the number of products made?

18. What is an inhibitor? Does it increase or decrease enzymatic activity?

19. Temperature, pH, and inhibitors all affect enzymes. In what way does the impact of temperature and pH affect enzymes compared to inhibitors?

20. Use the following clusters of terms to write a sentence:

a. enzyme/substrate/active site

b. temperature/pH/denature

c. enzyme/reaction/activation energy

d. inhibitor/active site/denature

**LT 2.1.3.C: Explain the importance of enzymes to metabolism.**

21. What two types of reactions have been discussed in class that can be facilitated by enzymes?

1:

2:

22. Define metabolism in your own words.

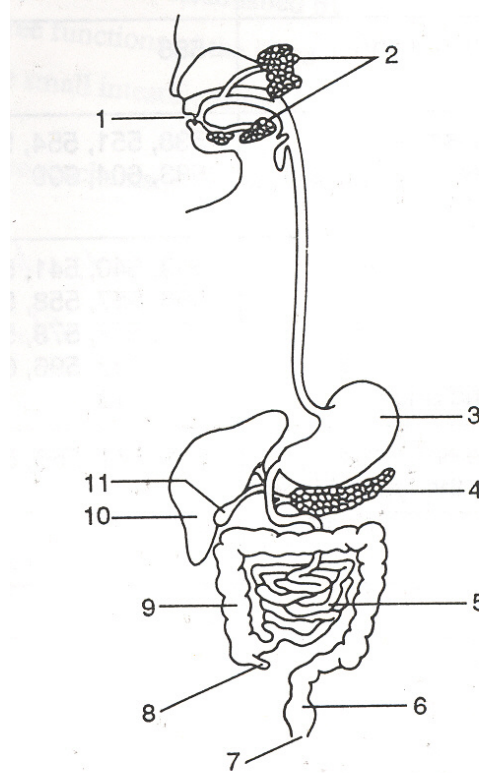
23. How does metabolism relate to enzymes and digestion?

24. For each type of organic molecule, describe which enzyme(s) break it down and the products that form as a result:

	<b>Enzyme(s)</b>	<b>Resulting Products</b>
<i>Carbohydrates</i>		
<i>Lipids</i>		
<i>Proteins</i>		

**LT 2.1.4.A: Identify and describe the structure and function of the human digestive system.**

25. Label the following diagram:



26. Complete the following table summarizing the digestive system in terms of structure and function:

Structure	Function
<i>Anus</i>	
<i>Esophagus</i>	

<i>Gallbladder</i>	
<i>Large intestine</i>	
<i>Liver</i>	
<i>Mouth</i>	
<i>Pancreas</i>	
<i>Rectum</i>	
<i>Small intestine</i>	
<i>Stomach</i>	

27. Which organs (in order) does food pass through on its journey through the digestive system?



28. Some organs play a vital role in the digestive system but food does not necessarily pass through them. These organs are referred to as accessory organs. List three accessory organs discussed in class and what they do.

1.

2.

3.

29. What is bile and why is it important?

30. How is it possible that we are able to swallow food even if we are in outer space (without gravity) or upside down in a headstand?

31. Why is the epiglottis important?

32. What is the most important organ in the digestive system? Why?

33. What is the second most important organ in the digestive system? Why?