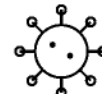




# MICROBIOLOGY HOMEWORK 1



## Meet and Classify the Microorganisms

Name: \_\_\_\_\_

Date: \_\_\_\_\_

**Directions:** Complete each part. Use complete sentences where requested.

### PART 1 - MATCH THE TERMS

Write the correct letter on each line.

A. bacteria   B. microscopic fungi   C. protists   D. viruses   E. microbiology

1. \_\_\_\_ The study of microorganisms and other microscopic agents
2. \_\_\_\_ Single-celled organisms found almost everywhere
3. \_\_\_\_ Molds and yeasts
4. \_\_\_\_ A diverse group found mostly in water or moist places
5. \_\_\_\_ Not cells; must use a living host cell to make copies

### PART 2 - CHECK YOUR UNDERSTANDING

6. Circle the three groups that are living and made of cells:  
bacteria   fungi   protists   viruses

7. Why do scientists use microscopes to study most microorganisms?

\_\_\_\_\_

8. Name one place where microorganisms can live: \_\_\_\_\_

### PART 3 - THINK LIKE A SCIENTIST

9. A student says, "All microbes cause disease." Explain why this claim is incorrect. Include one helpful example as evidence.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

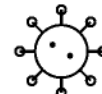
10. Describe two differences between a bacterium and a virus.

Difference 1: \_\_\_\_\_

Difference 2: \_\_\_\_\_



# MICROBIOLOGY HOMEWORK 2



## Decomposers, Fermentation, and Food Spoilage

Name: \_\_\_\_\_

Date: \_\_\_\_\_

**Directions:** Apply what you learned about helpful and harmful microorganisms.

### PART 1 - HELPFUL OR HARMFUL?

Write H for helpful or X for harmful in each situation.

- |                                             |                                             |
|---------------------------------------------|---------------------------------------------|
| 1. ____ Yeast makes bread dough rise.       | 4. ____ Mold spoils a strawberry.           |
| 2. ____ Fungi break down dead leaves.       | 5. ____ Some bacteria cause food poisoning. |
| 3. ____ Some gut bacteria help digest food. | 6. ____ A virus infects living cells.       |

### PART 2 - FOLLOW THE MATTER

7. Number the events from 1-4 to show how matter is recycled.

- \_\_\_\_ Bacteria and fungi decompose the material.
- \_\_\_\_ Organisms die and waste is left behind.
- \_\_\_\_ Some materials return to the soil and environment.
- \_\_\_\_ Detritivores break the material into smaller pieces.

8. Why are decomposers important to an ecosystem?

\_\_\_\_\_

### PART 3 - USE THE MODELS

9. Complete the fermentation model:

SUGAR → \_\_\_\_\_ gas + \_\_\_\_\_

10. Explain why bread dough rises after yeast is added.

\_\_\_\_\_  
\_\_\_\_\_

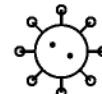
11. Predict which bread will spoil faster: bread kept in a warm, damp place or bread kept in a cool, dry place. Explain your reasoning.

\_\_\_\_\_

12. FOOD SAFETY: What should you do if food has unexpected mold? \_\_\_\_\_



# MICROBIOLOGY HOMEWORK 3



## Bacteria, Viruses, and Everyday Choices

Name: \_\_\_\_\_

Date: \_\_\_\_\_

**Directions:** Use B for bacteria, V for viruses, and BOTH when directed.

### PART 1 - BACTERIA, VIRUSES, OR BOTH?

- |                                          |                                                       |
|------------------------------------------|-------------------------------------------------------|
| 1. ____ Is made of a cell                | 4. ____ Can cause disease                             |
| 2. ____ Contains genetic material        | 5. ____ Is not classified as living                   |
| 3. ____ Needs a host cell to make copies | 6. ____ May be treated with antibiotics in some cases |

### PART 2 - CHOOSE THE BEST ANSWER

7. Why do antibiotics not work on viruses?  
A. Viruses are too small.    B. Viruses do not have the bacterial targets antibiotics attack.  
C. All viruses are harmless.    D. Viruses are a kind of fungus.
8. TRUE or FALSE: Antibiotics can treat colds and flu. \_\_\_\_\_
9. Antibiotic resistance happens when \_\_\_\_\_ change so an antibiotic no longer works.
10. Circle the accurate statement:    All microbes are harmful.    /    Most microbes are harmless, and many are helpful.

### PART 3 - EXPLAIN YOUR THINKING

11. Correct this misconception: "Antibiotics cure every infection."

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12. The flu is caused by a virus. Explain why an antibiotic would not treat the flu.

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13. Name one action that can reduce the spread of harmful microbes. Explain how it helps.

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# MICROBIOLOGY HOMEWORK

## ANSWER KEY - SAMPLE RESPONSES

### HOMEWORK 1 - MEET AND CLASSIFY

1. E 2. A 3. B 4. C 5. D

6. bacteria, fungi, protists

7. Most microorganisms are too small to see without a microscope. 8. Accept: soil, water, food, living things, or on/inside the body.

9. The claim is incorrect because most microorganisms are harmless and many are helpful. Example: yeast produces carbon dioxide that helps bread rise; fungi decompose dead leaves; or helpful bacteria make yogurt/help digestion.

10. Accept two: bacteria are living cells; viruses are not cells/not classified as living. Bacteria can divide under suitable conditions; viruses need a host cell to make copies.

### HOMEWORK 2 - MICROBES AT WORK

1. H 2. H 3. H 4. X 5. X 6. X

7. Organisms die/waste is left = 1; detritivores make smaller pieces = 2; bacteria and fungi decompose = 3; materials return = 4.

8. Decomposers break down dead matter and recycle materials through the ecosystem.

9. carbon dioxide; alcohol 10. Carbon dioxide bubbles become trapped in the dough and make it expand.

11. Warm, damp bread should spoil faster because many microbes grow faster with warmth and available moisture.

12. Do not taste or closely smell it; tell an adult and follow food-safety directions.

### HOMEWORK 3 - BACTERIA AND VIRUSES

1. B 2. BOTH 3. V 4. BOTH 5. V 6. B

7. B 8. False 9. bacteria 10. Most microbes are harmless, and many are helpful.

11. Antibiotics work only against certain bacterial infections; they do not treat viral infections.

12. Viruses do not have the bacterial structures or processes that antibiotics target.

13. Sample: Handwashing removes microbes from the hands and can reduce their spread. Accept other accurate actions and explanations.

TEACHER NOTE: Accept scientifically accurate equivalent wording. Require evidence and complete sentences where requested.