

# Digestive Enzymes and Gut Bacteria

KS3 Biology · Follows the national curriculum

Name \_\_\_\_\_ Class \_\_\_\_\_ Date \_\_\_\_\_

## 1. Worked example

### What does an enzyme do?

Step 1 · Definition

An enzyme is a protein that acts biological catalyst — it speeds up a chemical reaction without being used up.

Step 2 · In digestion

Digestive enzymes break large food molecules into small ones.

**Answer: A biological catalyst that speeds up reactions**

Check: One enzyme molecule can be used again and again.

## 2. Now try one with the steps

### Which enzyme breaks down the fat in butter, and what are the products?

Step 1 · Match enzyme to molecule

Step 2 · Products

**Answer:**

## 3. Practice

Show your working. The marks tell you how much is expected.

1. What type of molecule is an enzyme? [1]

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2. Which enzyme breaks down protein? [1]

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3. What are starch molecules broken down into? [1]

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4. What are proteins broken down into? [1]

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5. Name the enzyme in saliva. [1]
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6. What does 'biological catalyst' mean? [2]
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7. At what temperature do most human enzymes work best? [1]
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8. Give ONE way bacteria in the large intestine help us. [1]
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9. What does 'denatured' mean? [2]
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10. Explain why a course of antibiotics can sometimes cause an upset stomach. [2]
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11. Starch digestion took 120 s at 30 °C and 80 s at 37 °C. How many seconds faster was it at 37 °C? [1]
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12. Explain why bile helps lipase digest fat faster. [2]
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13. In the amylase investigation, name ONE control variable. [1]
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14. Suggest why eating plenty of fibre-rich foods keeps gut bacteria healthy. [2]
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#### 4. Before you hand it in

**"Enzymes are killed at high temperature."**

Say they are DENATURED: their shape changes so they no longer work.

**"All bacteria in the body are harmful."**

Trillions of gut bacteria digest fibre, make vitamins and protect against harmful microbes.

**"Bile is an enzyme."**

Bile emulsifies fat (physical) and neutralises acid. Lipase is the enzyme that digests fat.