

## Test-Taking Tip

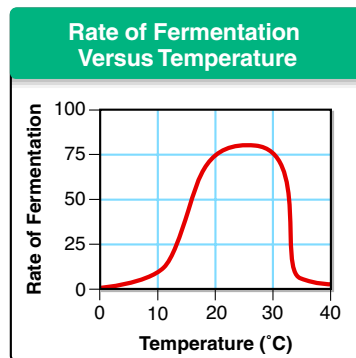
When you are asked to analyze a graph showing experimental data, first look at the shape of the curve. Identify the variables and try to determine how they are related. Then, read and answer the questions that relate to the graph.

Directions: Choose the letter that best answers the question or completes the statement.

- What raw materials are needed for cellular respiration?
  - glucose and carbon dioxide
  - glucose and oxygen
  - carbon dioxide and oxygen
  - oxygen and lactic acid
  - carbon dioxide and water
- What happens during the Krebs cycle?
  - Hydrogen ions and oxygen form water.
  - The cell releases a small amount of energy through fermentation.
  - Each glucose molecule is broken down into two molecules of pyruvic acid.
  - Hydrogen ions build up on one side of the mitochondrial membrane.
  - Pyruvic acid is broken down into carbon dioxide in a series of reactions.
- Which substance is needed to begin the process of glycolysis?
  - ATP
  - NADP
  - NADH
  - pyruvic acid
  - carbon dioxide
- In eukaryotic cells, most of cellular respiration takes place in the
  - nuclei.
  - cytoplasm.
  - mitochondria.
  - cell walls.
  - centrioles.
- What substance produced by alcoholic fermentation makes bread dough rise?
  - oxygen
  - lactic acid
  - carbon dioxide
  - water
  - alcohol
- The human body can use all of the following as energy sources EXCEPT
  - ATP in muscles.
  - glycolysis.
  - lactic acid fermentation.
  - alcoholic fermentation.
  - cellular respiration.

- Which of the following best represents the waste products of cellular respiration?
  - CO<sub>2</sub>
  - H<sub>2</sub>O
  - O<sub>2</sub>
  - CO<sub>2</sub> and H<sub>2</sub>O
  - CO<sub>2</sub> and O<sub>2</sub>

Questions 8–9 The graph below shows the rate of alcoholic fermentation for yeast at different temperatures.



- What is the relationship between the rate of fermentation and temperature?
  - The rate of fermentation continually increases as temperature increases.
  - The rate of fermentation continually decreases as temperature increases.
  - The rate of fermentation increases with temperature, then it rapidly decreases.
  - The rate of fermentation decreases with temperature, then it increases.
  - There is no relationship between the rate of fermentation and temperature.
- Which statement could explain the data shown in the graph?
  - The molecules that regulate fermentation perform optimally at temperatures above 30°C.
  - The yeast begins releasing carbon dioxide at 30°C.
  - The yeast cannot survive at temperatures above 30°C.
  - The molecules that regulate fermentation perform optimally below 10°C.
  - The yeast cannot survive at temperatures below 30°C.

## Standardized Test Prep

- |      |      |      |
|------|------|------|
| 1. B | 4. C | 7. D |
| 2. E | 5. C | 8. C |
| 3. A | 6. D | 9. C |

## Writing in Science

Students' paragraphs should expand the analogy by making a comparison in detail between cellular respiration and a savings account in a bank. After comparing the use of 2 ATPs in glycolysis to the initial bank deposit and the net gain of 2 ATPs to the first return of interest, students might compare the pyruvic acid and NADH from glycolysis for use in the next two stages of cellular respiration as the buildup of funds in a bank account that returns more interest. The total yield in ATPs from cellular respiration might be compared to the total interest gained after money is left in the bank for a year.

## Performance-Based Assessment

Diagrams of the 30-second run should show that runners use the ATP that was already present in the muscles as well as that produced by lactic acid fermentation. Diagrams of the 20-minute run should show runners using carbohydrates to release energy through cellular respiration.

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