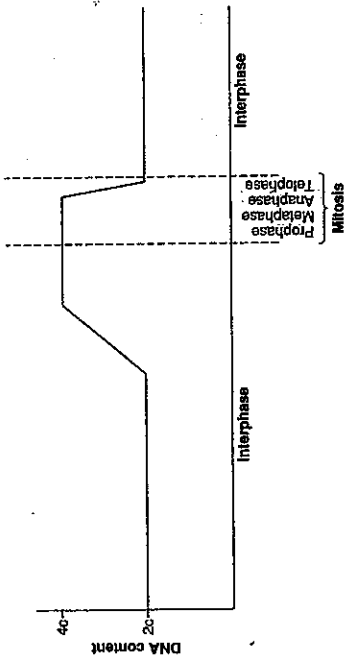


CHAPTER 8 **SKILL ACTIVITY**  
 Cell Growth and Division **Interpreting graphs**  
 Section 8-2

### Cell Reproduction

The amount of DNA in a diploid cell is represented by the symbol  $2c$ . As a cell replicates the DNA in its chromosomes, the DNA content rises from  $2c$  to  $4c$ . At the next mitotic division, the separation of the chromosomes returns the DNA content of the daughter cells to  $2c$ . This information is represented in the graph below. Study the graph and answer the questions that follow.



- Draw an X on the graph to mark the point at which DNA content reaches  $3c$  during interphase.
  - Draw a Y on the graph to mark the point at which DNA content begins to decrease.
  - Draw a Z on the graph to mark the point where daughter cells begin a new cell cycle.
- For each of the following questions, circle the letter that corresponds to the correct answer.
- The DNA content of the cell represented in the graph changes
    - once.
    - twice.
    - three times.
    - four times.
  - Which of the following situations lasts for the longest time before the end of mitosis?
    - DNA content remains steady at  $4c$ .
    - DNA content increases from  $2c$  to  $4c$ .
    - DNA content decreases from  $4c$  to  $2c$ .
    - DNA content remains steady at  $2c$ .

- Which of the following statements is correct?
  - The decrease from  $4c$  to  $2c$  occurs more rapidly than the increase from  $2c$  to  $4c$ .
  - The decrease from  $4c$  to  $2c$  occurs more slowly than the increase from  $2c$  to  $4c$ .
  - The changes in  $a$  and  $b$  occur at the same rate.
  - The changes in  $a$  and  $b$  cannot be compared.
- The DNA content increases
  - throughout interphase.
  - at the beginning of interphase.
  - in the middle of interphase.
  - at the end of interphase.
- The DNA content decreases
  - throughout mitosis.
  - during prophase.
  - during metaphase.
  - from anaphase to telophase.
- DNA content is at  $4c$  during
  - the end of interphase and the beginning of mitosis.
  - interphase.
  - mitosis.
  - the end of mitosis and the beginning of interphase.
- The graph shows that DNA content falls to  $1c$ 
  - when gametes are produced.
  - at no time during mitosis or interphase.
  - during the second half of mitosis.
  - during the second half of interphase.
- Which of the following statements most accurately describes the graph?
  - The graph shows how a cell changes its activities as a result of changes in DNA content.
  - The graph shows why the DNA content of a cell changes.
  - The graph shows how the DNA content of a cell changes during interphase and mitosis.
  - The graph shows how DNA is replicated.

12. Why does DNA content increase during interphase? \_\_\_\_\_

13. Why does DNA content decrease during mitosis? \_\_\_\_\_