

**Directed Reading B** *continued*

**20.** What happens during the second stage of the cell cycle in a eukaryotic cell?

In the second stage, the chromatids separate (46X's split into 92V's). This process is called mitosis and each new daughter cell will receive a copy of each chromosome (46 V's into each new cell).

**21.** The four phases of mitosis are **PMAT**

**prophase**

**metaphase**

**anaphase**

**telophase**

**22.** What happens during the third stage of the cell cycle in a eukaryotic cell?

In the third stage, cytokinesis, the cell splits into two cells called daughter cells.

Cytokinesis is the division of cytoplasm and all of the materials in the cytoplasm.

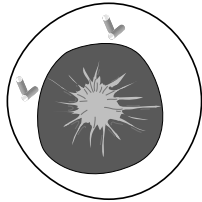
The cell membranes pinch off and separate the two new cells from each other.

**23.** Before mitosis begins, **chromosomes** are copied.

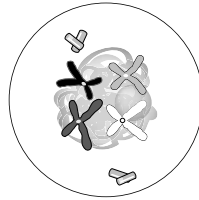
This is at the very top of page 154

**Directed Reading B** *continued*

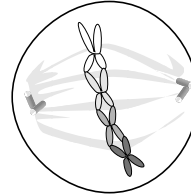
Use the diagram below to answer questions 24–29, which describe the phases of the cell cycle. Write the correct phase in the space provided for each question, using “Interphase,” “Mitosis Phase 1,” “Mitosis Phase 2,” “Mitosis Phase 3,” “Mitosis Phase 4,” or “Cytokinesis.”



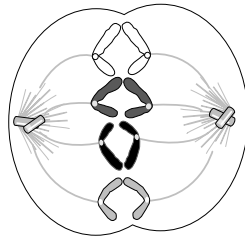
**Interphase**



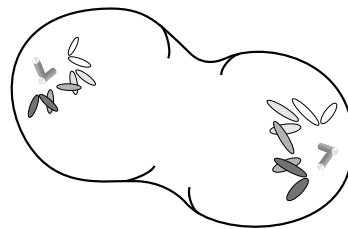
**Mitosis Phase 1**



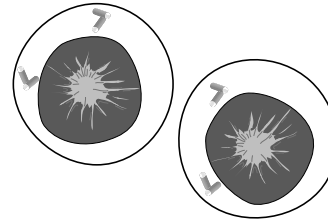
**Mitosis Phase 2**



**Mitosis Phase 3**



**Mitosis Phase 4**



**Cytokinesis**

mitosis phase 3 = Anaphase

**24.** The chromatids separate and move to opposite sides of the cell.

mitosis phase 2 = Metaphase

**25.** The nuclear membrane is dissolved. Paired chromosomes align at the cell’s equator.

Interphase

**26.** Before mitosis begins, chromosomes are copied.

mitosis phase 4 = Telophase

**27.** A nuclear membrane forms around each set of chromosomes, and the chromosomes decondense. Mitosis is complete.

mitosis phase 1 = Prophase

**28.** Mitosis begins. Chromosomes condense from long strands into rodlike structures.

Cytokinesis

**29.** In cells that lack a cell wall, the cell pinches in two. In cells that have a cell wall, a cell plate forms and separates the two new cells.

**Directed Reading B** *continued*

---

**30.** How do animal cells without cell walls divide their cytoplasm during cytokinesis?

For animal cells, division of the cytoplasm begins at the cell membrane. The cell membrane begins to pinch inward to form a groove. Eventually, the cell is pinched in half, and two daughter cells form.

---

---

---

**31.** How do plant cells with cell walls divide their cytoplasm during cytokinesis?

A cell plate forms in the middle of the cell. It contains the materials for the new cell wall and cell membranes. The cell plate is like a wall growing inside a room to separate it into two rooms.

---

---

---

**CONTROL OF THE CELL CYCLE**

**cytokinesis** **32.** After which stage in the cell cycle is each new cell an exact copy of the parent cell?

- a. interphase
- b. mitosis
- c. cytokinesis
- d. prophase

**feedback switches** **33.** Which of the following report cell conditions and control the cell cycle?

- a. feedback switches
- b. DNA
- c. homologous chromosomes
- d. centromeres

**34.** A tumor in which the cells begin dividing at an uncontrolled rate is called

cancer (like melanoma)

---