Name _____ Date _____ Class _____

**SECTION 2-3** **REVIEW AND REINFORCE**

# Cell Division

## ◆ Understanding Main Ideas

*Fill in the blanks in the table below. Then answer the questions that follow in the spaces provided.*

**Phases of Mitosis**

| Phase | Event |
|---|---|
| Prophase | 1. _____ |
| 2. _____ | Chromosomes attach to spindle fibers |
| Anaphase | 3. _____ |
| 4. _____ | New nuclear membranes form |

5. Which stage of the cell cycle usually lasts longest?

_____

6. During which stage of the cell cycle does DNA replication occur?

_____

7. During which stage of the cell cycle does the cell membrane pinch the cell in two?

_____

## ◆ Building Vocabulary

*Match each term with its definition by writing the correct letter in the blank.*

_____ **8.** Regular sequence of growth and division that cells undergo

_____ **9.** First stage of the cell cycle

_____ **10.** Process in which DNA is copied

_____ **11.** Stage of the cell cycle during which the cell's nucleus divides

_____ **12.** Doubled rod of condensed chromatin

_____ **13.** Each identical rod of a chromosome

_____ **14.** Final stage of the cell cycle

**a.** interphase
**b.** mitosis
**c.** cell cycle
**d.** chromatid
**e.** cytokinesis
**f.** replication
**g.** chromosome

# THE CELL CYCLE WORKSHEET

Name: _____

**Fill in the blank: Some will be used more than once.**

| | | | |
|---|---|---|---|
| A. Prophase | D. Metaphase | G. Chromatid | J. Spindle fiber |
| B. Interphase | E. Anaphase | H. Cytokinesis | K. Cell plate |
| C. Telophase | F. Centromere | I. Mitosis | |

_____1. During what phase of mitosis do centromeres divide and the chromosomes move toward their respective poles?

_____2. What is the phase where chromatin condenses to form chromosomes?

_____3. What is the name of the structure that connects the two chromatids?

_____4. In a chromosome pair connected by a centromere, what is each individual chromosome called?

_____5. What are the two parts of cell division?

_____6. What structure forms in prophase along which the chromosomes move?

_____7. Which phase of mitosis is the last phase that chromatids are together?

_____8. Which phase of the cell cycle is characterized by a non-dividing cell?

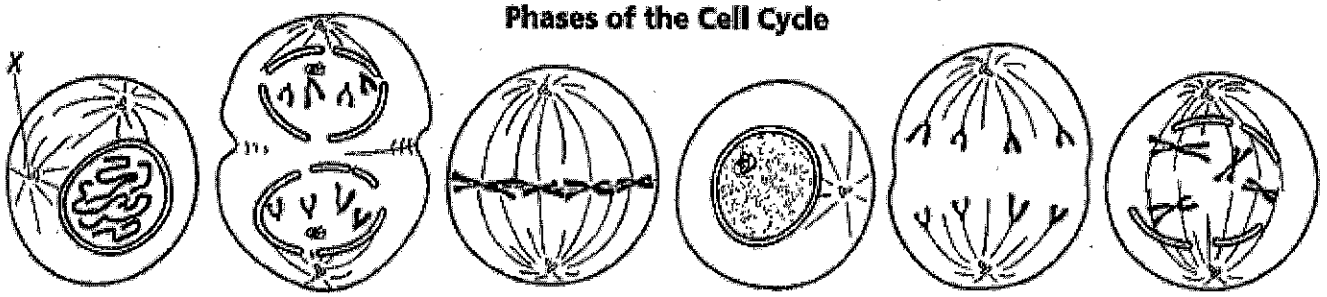
_____9. What structure is produced when protein fibers radiate from centrioles?

_____10. What forms across the center of a plant cell near the end of telophase?

_____11. The period of cell growth and development between mitotic divisions?

The diagram below shows six cells in various phases of the cell cycle. Note the cells are not arranged in the order in which the cell cycle occurs. Use the diagram to answer questions 1-7.

**Phases of the Cell Cycle**




_____1. Cells A & F show an early and a late stage of the same phase of the cell cycle. What phase is it?

_____2. Which cell is in metaphase?

_____3. Which cell is in the first phase of Mitosis?

_____4. In cell A, what structure is labeled X?

_____5. List the diagrams in order from first to last in the cell cycle.

_____6. Are the cells depicted plant or animal cells?

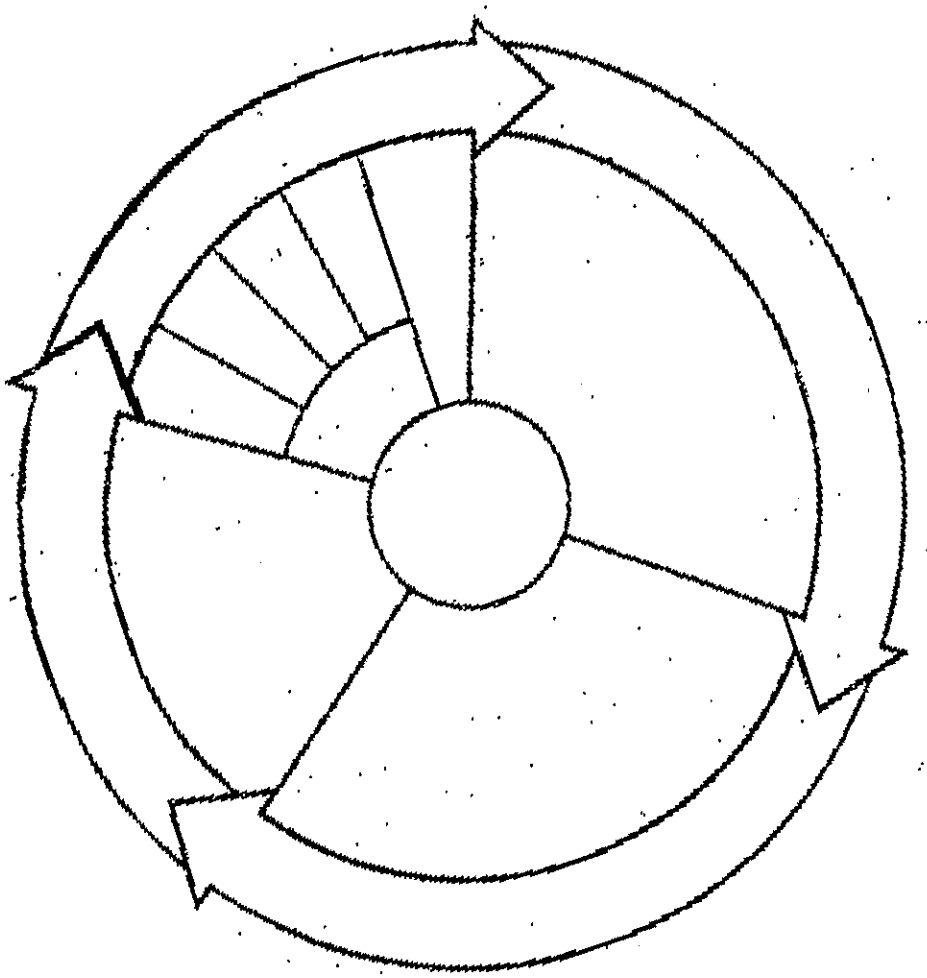
Name: _____ Date: _____ Period: _____

# The Cell Cycle Coloring Worksheet

Label the diagram below with the following labels:

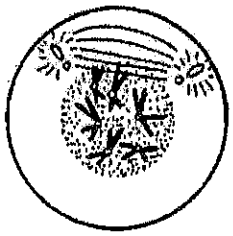
| | | |
|---|---|---|
| Anaphase | Interphase | Mitosis |
| Cell division (M Phase) | Interphase | Prophase |
| Cytokinesis | Interphase | S-DNA replication |
| G1 – cell grows | Metaphase | Telophase |
| G2 – prepares for mitosis | | |

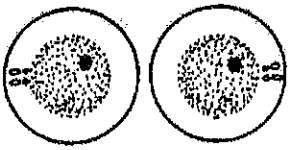
Then on the diagram, lightly color the G1 phase **BLUE**, the S phase **YELLOW**, the G2 phase **RED**, and the stages of mitosis **ORANGE**. Color the arrows indicating all of the interphases in **GREEN**. Color the part of the arrow indicating mitosis **PURPLE** and the part of the arrow indicating cytokinesis **YELLOW**.

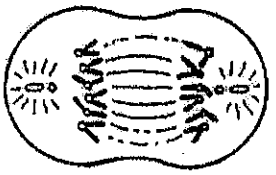


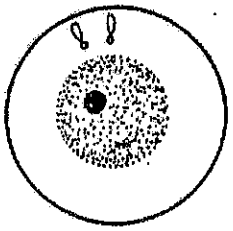
# Stages of Cellular Division

*Directions:* *Number the following six stages of cell division in animal cells in the proper order. Then label each stage (interphase, prophase, metaphase, anaphase, telophase, cytokinesis).*

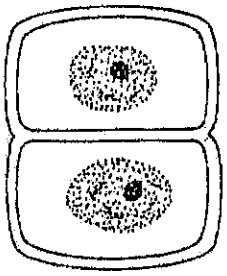


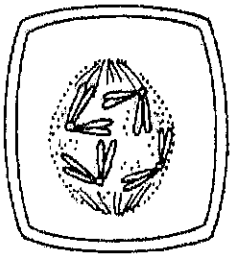


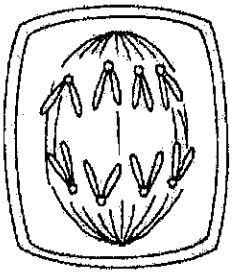


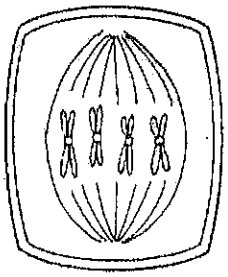


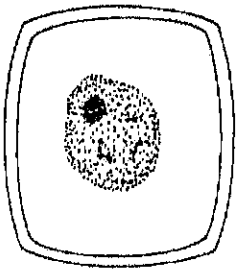
*Directions: Do the same for the plant cell below. Also label the cell plate!*

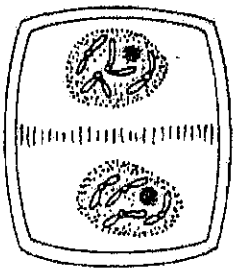








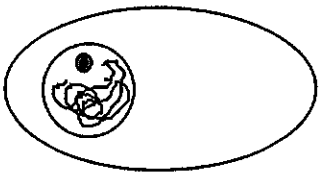




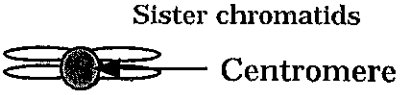
**Mitosis Notes**

# Cell division occurs in a series of stages, or phases.

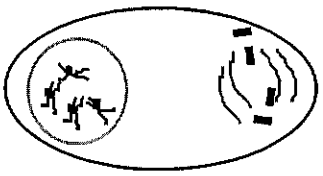
**1st: INTERPHASE**



- Chromosomes are copied (# doubles)
- Chromosomes appear as threadlike coils (chromatin) at the start, but each chromosome and its copy (sister chromosome) change to sister chromatids at end of this phase

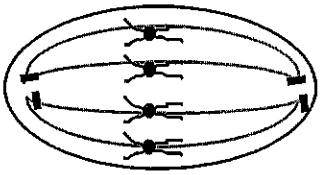



**2nd: PROPHASE**

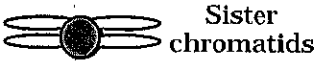


- Mitosis begins (cell begins to divide)
- Centrioles (or poles) appear and begin to move to opposite ends of cell
- Spindle fibers form between the poles

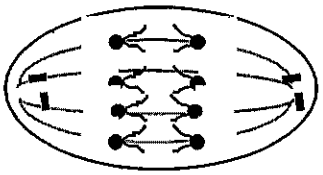
**3rd: METAPHASE**



- Chromatids (or pairs of chromosomes) attach to the spindle fibers

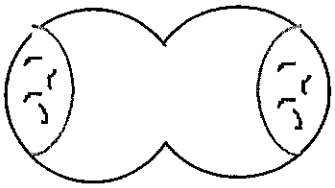



**4th: ANAPHASE**



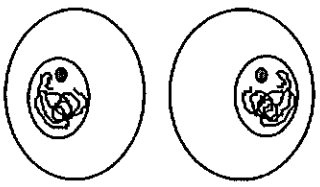
- Chromatids (or pairs of chromosomes) separate and begin to move to opposite ends of the cell


**5th: TELOPHASE**



- Two new nuclei form
- Chromosomes appear as chromatin (threads rather than rods)
- Mitosis ends

**6th: CYTOKINESIS**

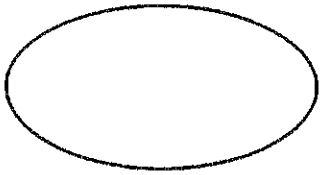


- Cell membrane moves inward to create two daughter cells - each with its <u>own nucleus</u> with <u>identical chromosomes</u>

**Mitosis Notes** **Name** _____

_____ _____ occurs in a series of stages, or _____.

**1st:** _____

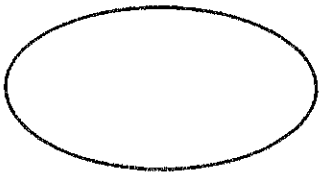


- Chromosomes are _____ (# doubles)
- Chromosomes appear as threadlike coils (_____) at the start, but each chromosome and its copy (_____ chromosome) change to sister chromatids at end of this phase

Sister chromatids

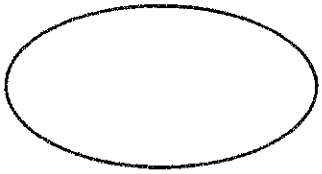
_____

**2nd:** _____



- _____ begins (cell begins to divide)
- _____ (or poles) appear and begin to move to opposite ends of cell
- _____ _____ form between the poles

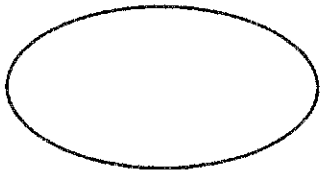
**3rd:** _____



- _____ (or pairs of chromosomes) attach to the spindle fibers

Sister chromatids

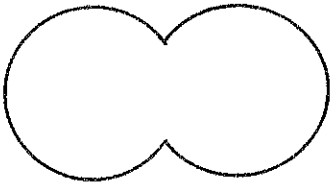
**4th:** _____



- Chromatids (or pairs of chromosomes) _____ and begin to move to _____ ends of the cell

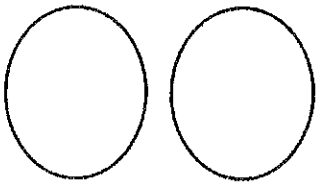
Sister chromatids split

**5th:** _____



- Two new _____ form
- Chromosomes appear as chromatin (_____ rather than _____)
- _____ ends

**6th:** _____



- Cell membrane moves inward to create two _____ cells - each with its own _____ with identical _____