

**Topic:** Cell Cycle Flipbook

**Summary:** Students learn about the cell cycle by creating a flipbook animation.

**Goals & Objectives:** Students will be able to list each phase of the cell cycle. Students will be able to explain what happens in each phase of the cell cycle.

**Standards:** CA Biology 2a. *Students know* meiosis is an early step in sexual reproduction in which the pairs of chromosomes separate and segregate randomly during cell division to produce gametes containing one chromosome of each type.

**Time Length:** 2 hours

**Materials:**

- 3x5 index cards
- Colored pencils
- Pictures of each stage of mitosis, can be from textbook

**Prerequisite Knowledge:** Difference between chromatin and chromosome. Cell organelles and the cytoskeleton.

**Procedures:**

1. Students first draw the circles for each phase and transition of the cell cycle.
2. Students then create a color key on the last index card. This will help them stay consistent with their colors. You can give the students assigned colors if you like.
3. Students then draw each phase of the cell cycle.
4. Students draw the transition for each phase of the cell cycle
5. Students write in the correct labels for each phase card.

**Accommodations:** Students with an IEP can skip the transition cards and only create each phase of the cell cycle.

**Evaluation:**

This assignment is worth a total of 30 points. Look to see if cards are complete, accurate, colored consistently, labeled correctly, and aesthetics. Lower one letter grade for each missing item listed above.

## Cell Cycle Flipbook

### Objective:

Students will be able to see the cell cycle in action by creating a flipbook animation. You will include the three subphases of interphase, mitosis, and cytokinesis.

### Materials:

3 x 5 note cards, stapler, colored pencils, textbook.

### Procedure:

You are to draw the cell cycle as a flipbook animation. Start by numbering your cards sequentially in the top right corner. All odd numbered cards are a stage in mitosis.

- 1<sup>st</sup> card will look like interphase (G1).
  - Draw the cell with organelles and chromatin in the nuclear envelope. Do not draw a nucleolus or the centrioles.
- 3<sup>rd</sup> card will look like interphase (S).
  - Chromatin replicates by drawing
- 5<sup>th</sup> card will look like interphase (G2).
  - Microtubules form to make centrioles and spindle fibers.
- 7<sup>th</sup> card is prophase late or “prophase”.
  - Do not draw the organelles. Draw the nuclear envelope disappearing,
- 9<sup>th</sup> card is metaphase.
- 11<sup>th</sup> card is anaphase.
- 13<sup>th</sup> card is telophase.
- The 15<sup>th</sup> card is cytokinesis. The two separate cells are in interphase.
- All even number cards are a transition between stages. To draw the transitions, draw the in-between of the pervious and following cards.
- After all cards are draw, write in the following four labels using small print.
  - In the top center of the card, write the stage name (leave transitions blank).
  - In the top right portion of the card, write a number in sequential order.
  - To the let of the cell, write the n value.
  - In the bottom right of the card, write diploid or polyploid.

### Requirements:

- Circles for the 3 x 5 notes should be placed in the right center of the card. The diameter for the circles should be at least 3 cm.
- Pencil Colors: DNA (chromatin, chromosomes, chromatids), nuclear envelope, spindles, and centrioles are drawn with different colors.
- Do not color anything else!
- Total of 17 cards:
  - Include a title card with your title, name, period, date and row.
  - Include a concluding card at the end with a color key.
- Do not label the drawings.
- The note cards are stapled together in correct order.