



The Meiosis Game

Annotation: The objective of this activity is for the students to learn all the phases in meiosis. This will be done by utilizing the students as structures in cell division (chromatids) and having them go through the actual phases of meiosis, going from one large cell to four smaller cells. This activity will also promote personal skills and team work among students by causing them to interact with one another.

Learning outcome: Students will represent a chromosome/chromatid to model the steps of meiosis.

Additional learning outcomes:

Students will be able to identify the role of a strand of DNA in transmitting cellular information.

Georgia Performance Standards

SB2. Students will analyze how biological traits are passed on to successive generations.
c. Using Mendel's law, explain the role of meiosis in reproductive variability

Total duration: 60 minutes

Materials:

1. Judges: Teacher and Fellow
2. Students
 - A) *Team captain:* The team captain will act as the leader of the group to keep order and facilitate the activity for their team.
 - B) *Students on the team:* Each student will represent a chromatid or any other structure that is needed for cell division in the nucleus.
3. Illustrations of the entire process of meiosis
4. Stop watch (optional)
5. Whistle (optional)

Procedure:

Step 1: Preparation:

The students will be split up in to two teams with team captains and given diagrams of the phases of meiosis. Each team will have 30-40 minutes to come up with creative ways to illustrate all the phases in meiosis. The teacher should use their own judgment; the teams might need a longer time to get a true understanding of the phases and what they are doing. At this point the students may ask any questions and have any help they need by the teacher.

Note: If possible the teacher and the fellow should each have one team that they are able to help during the prep time. This will make sure that the students stay on task and that they understand what they are doing in each phase.

Estimated time: 30 to 40 minutes

Step 2: Demonstration

Once the time is up, each team will get a chance to demonstrate all the phases of meiosis in front of the class. The teacher will help facilitate these phases if needed, by blowing the whistle and giving the team the name of the appropriate phase. The students should be able to do each formation in a timely fashion. Some on the teams might need help during the demonstration. If the team has a formation that the teacher does not understand, the team captain should be able to explain the formation.

Assessment

The winning team will be determined by how well they understand the process of meiosis. That is the team that moves in a timely manner with easy and clear formations into each phase. The judges will announce the winning team at the end of both presentations.

Grading process: Once the teams are finished with their formations, the students will be judged on the following criteria:

- A) How quickly they get into the formation.
- B) The ability to stand in the correct formation without excess talking.
- C) How well the formation illustrates the appropriate phase.

Rules:

1. Both teams will have the exact amount of time to practice their formations. The students will be able to use their own ideas with respect to formation, but they must effectively illustrate the appropriate phases of meiosis.
2. The judges will only talk to the team captain, who should be able to explain the formation if needed
3. Points will be deducted:
 - a. If the students are still working on the formation or talking during the demonstration.
 - b. If the judges do not understand the formation after discussing it with the team captain.

Estimated time: 20 minutes