

Name \_\_\_\_\_ Date \_\_\_\_\_  
Mini-Lab: What Happens During Mitosis? Living Environment: Comet 2010-2011

### What Happens During Mitosis?

**Purpose:** The purpose of this laboratory investigation is to:  
-determine what exactly happens during mitosis and asexual reproduction.  
-to determine what is meant by the term “fecundity”.  
-to determine the population size of an organism.  
-to calculate the estimated population of an organism when it reproduces freely.

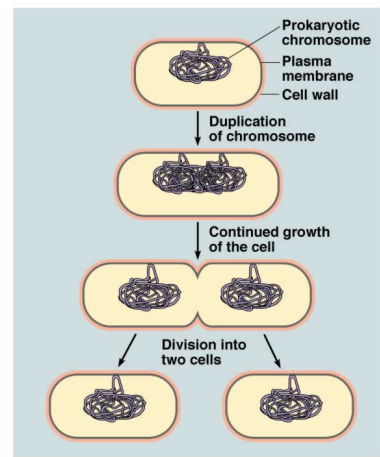
**Materials:** The following materials are needed to perform this investigation:  
-this paper -calculator  
-pen or pencil -scrap paper

**Procedure:** The following procedure is used to complete this investigation:

1. Bacteria (and many other unicellular organisms and cells) grow very rapidly due to the process of binary fission, a special form of mitosis. Similarly, all the cells of your body grow in a similar fashion. Observe the diagram at the right for a more simplified understanding of this.
2. You are going to choose between two different pay scales for the job of painting someone’s house.

**OPTION A:** One time up front payment of \$10,000,000.00, for 31 days (one month) of work.

**OPTION B:** On day 1, you are paid one penny (1 cent) and each day the previous day’s pay will double for 31 days (one month) of work.



WHICH PAY OPTION DO YOU CHOOSE???. Explain why. ESTIMATE what you think you will earn after one month of work.

3. Determine the sum pay of OPTION B in the table provided on the back of this page.
4. Answer the questions that follow.

**Data:** The following data was collected and calculated during this investigation.

| <b>Day</b>             | <b>Pay</b> |
|------------------------|------------|
| 1.                     | 1          |
| 2.                     |            |
| 3.                     |            |
| 4.                     |            |
| 5.                     |            |
| 6.                     |            |
| 7.                     |            |
| 8.                     |            |
| 9.                     |            |
| 10.                    |            |
| 11.                    |            |
| 12.                    |            |
| 13.                    |            |
| 14.                    |            |
| 15.                    |            |
| 16.                    |            |
| 17.                    |            |
| 18.                    |            |
| 19.                    |            |
| 20.                    |            |
| 21.                    |            |
| 22.                    |            |
| 23.                    |            |
| 24.                    |            |
| 25.                    |            |
| 26.                    |            |
| 27.                    |            |
| 28.                    |            |
| 29.                    |            |
| 30.                    |            |
| 31.                    |            |
| TOTAL PAY<br>FOR MONTH |            |



2. Why is it important to cover coughs and sneezes in an attempt to avoid illness?

3. What other ways can you think of to avoid disease?

4. What is a vaccination? How does it prevent disease in your body?

5. Complete the following Regents Examination question

**Avian (Bird) Flu**

Avian flu virus H5N1 has been a major concern recently. Most humans have not been exposed to this strain of the virus, so they have not produced the necessary protective substances. A vaccine has been developed and is being made in large quantities. However, much more time is needed to manufacture enough vaccine to protect most of the human population of the world. Most flu virus strains affect the upper respiratory tract, resulting in a runny nose and sore throat. However, the H5N1 virus seems to go deeper into the lungs and causes severe pneumonia, which may be fatal for people infected by this virus. So far, this virus has not been known to spread directly from one human to another. As long as H5N1 does not change to another strain that can be transferred from one human to another, a worldwide epidemic of the virus probably will not occur.

a. State *one* difference between the effect on the human body of the usual forms of flu virus and the effect of H5N1.

b. Identify the type of substance produced by the human body that protects against antigens, such as the flu virus.

c. State what is in a vaccine that makes the vaccine effective.

d. Identify *one* event that could result in the virus changing to a form able to spread from human to human.