Regents Biology

Off Site Learning Packet

(pp. 397 - 415)

Assignment #1: ____/22

Assignment #2: ____/10

Assignment #3: ____/12

Crossword Puzzle: ____/22

North Salem High School

MISSION: *Engage students to continuously learn, question, define and solve problems through critical and creative thinking.*

Mitosis

(*Asexual Reproduction*)

Now that you know how the DNA molecule located in the nucleus of every cell can make a copy or replicate itself, this unit will look at the stages of ***cell division*** *that separates this replicated DNA* ⟶ *replicated chromosomes into 2 genetically identical daughter cells. We will also discuss the disease associated with uncontrolled cell division called* ***cancer****.*

Let's get to work!

If you have any problems – please sign up for extra help after school.

Mr. Collea
Room W-19

ASSIGNMENT #1

DIRECTIONS: Please use ***complete sentences*** to answer each of the questions that follow. Please place all answers in the space provided.

1. How are new cells formed? ***(p. 397)***

   New cells are formed when one cell enlarges and divides into two cells.

2. Define **MITOSIS** ***(p. 398)***

   Mitosis is the division of the nucleus.

3. Define **CYTOKINESIS** ***(p. 398)*** -

   Cytokinesis is the division of the cytoplasm.

4. What is **CHROMATIN**? ***(p.398)***

   Chromatin is the existence of DNA in nondividing cells as a mass of thin, twisted threads.

5. What happens to the chromatin in cells undergoing mitosis? ***(p. 398)***

   When a cell undergoes mitosis the chromatin shortens and thickens (condenses) into rod-like structures called chromosomes.

6. Each type of organisms has a specific number of chromosomes in its body cells, how many chromosomes are found in each of the following organisms? ***(p.398)***

(a) humans = 46 chromosomes

(b) crayfish = 20 chromosomes

(c) potatoes = 48 chromosomes

(d) fruit flies = 8 chromosomes

7. List, **IN ORDER**, the stages of mitosis. ***(pp. 399 - 400)***

(1) Interphase

(2) Prophase

(3) Metaphase

(4) Anaphase

(5) Telophase

8. Briefly describe the **LOCATION** of the chromosomes in each of the following stages of mitosis. ***(pp. 399 - 400)***

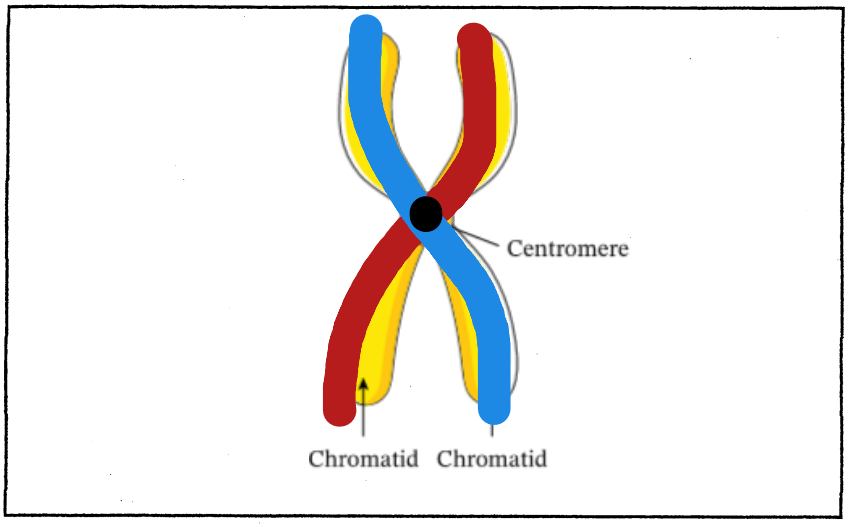
(a) Prophase - The double-stranded chromosomes begin to move toward the equator (center) of the cell.

(b) Metaphase - The double-stranded chromosomes line up in the middle of the cell.

(c) Anaphase - The duplicated chromosomes move AWAY from the center towards opposite sides of the cell.

(d) Telophase - The chromosomes reach the opposite sides of the cell (poles) and a nuclear membrane forms around each new nucleus.

9. In the box below, **DRAW** and **LABEL** a duplicated chromosome. ***(p. 401)***



10. *In four words or less*, define **CYTOKINESIS**. ***(p. 400)***

Division of the cytoplasm.

11. How is cell division different in animal and plant cells? ***(pp. 401 - 402)***

Cytokinesis in animal cells involves the PINCHING IN of the cell membrane resulting in the formation of two new daughter cells about the same size. Cytokinesis in plant cells involves the formation of a cell plate across the middle of the cell that grows outward and joins the old cell wall, which divides the cell in half resulting in two new plant cells.

12. What is thought to trigger mitosis in unicellular organisms? ***(p. 402)***

The protein cyclin is thought to trigger mitosis in unicellular organisms.