Journals - 3rd Marking Period

Topics:

DNA

Cell Division - Meiosis and Mitosis

Genetics

DNA

1/28

Q: What is a nucleotide? List the three components.
A: A nucleotide is the subnits (molecule) that DNA is made of. The three components are deoxyribose sugar, phosphate (phosphoric acid), and a nitrogenous base.

1/29

Q: List the four nitrogenous bases. Which pair together?
A: Adenine, Cytosine, Guanine, and Thymine. Adenine and Thymine pair together. Guanine and Cytosine pair together.

1/30

Q: Why does DNA condense into chromosomes? When does it decondense?
A: It condenses into chromosomes to save space and to protect itself. It decondenses when it's going to be replicated.

2/5

Q: What are the building blocks of DNA? Proteins?
A: The building blocks of DNA are the nucleotides (phosphoric acid, deoxiribose sugar, and the nitrogenous bases) The building blocks of proteins are Amino Acids. (The DNA sequence determines the proteins in your body – making of proteins, which are your traits)

2/6

Q: What outside factors can change chromosomes (cause mutations)?
A: Some outside factors include: chemical damage, x-ray damage, UV damages, viruses, and mutagens like nicotine and cigarette smoke.

2/7

Q: List the three types of mutations and explain what happens with each.
A: 1.) An insertion – when a base is inserted and everything following it moves down
2.) A deletion – when a base is completely gone/ left out, the sequence must shift.
3.) A substitution – when one base is substituted for another – it is the only base affected (wrong base is used in place of one correct base.)

2/8

Q: Are all mutations harmful? Explain your answer.
A: No, most have no effect at all. Genetic mutations may help an individual, harm an individual;, or cause no change at all. (mutations can help in evolution)

2/11

Q: What is DNA fingerprinting? Think of Friday's activity.
A: DNA fingerprinting is a method of identification that compares fragments of DNA. It can be used in crimes, finding out family members and other things.

2/12

Q: Generally, explain how a protein is made.

A: It starts out as DNA and then part of the DNA is copied, which is RNA. The RNA is sent out to the ribosomes, every three bases (a codon) sequences for an amino acid. The chain of amino acids form a protein.

2/14

Q: What would happen if you did not add meat tenderizer to your test tube, during your DNA extraction lab?

A: You would still get a product, but it would also contain protein. The meat tenderizer breaks away or cut down the protein from the DNA.

The Cell Cycle - Mitosis and Meiosis

2/20

Q: What is the function of Mitosis? (Why is that important?)

A: To allow for cell division (for growth and repair)

2/21

Q: Mitosis has been occurring in your body since you were an embryo. Is this true of meiosis? Explain your answer,

A: Meiosis begins in males during puberty. In females, meiosis begins before birth. The process stops and begins again when the female reaches sexual maturity.

2/25

Q: Describe what happens inside a cell during interphase.

A: The cell is preparing to divide – DNA replicates, organelles replicate and the cell grows.

2/27

Q: What is the first stage of Mitosis? Describe what happens.

A: Prophase – the chromosomes fully condense into chromosomes, the nucleus disappears, and spindles form.

2/29

Q: List the Steps of Mitosis

A:

1. Prophase
2. Metaphase
3. Anaphase
4. Telophase

3/3

Q: What cells are diploid and what cells are haploid? Explain.

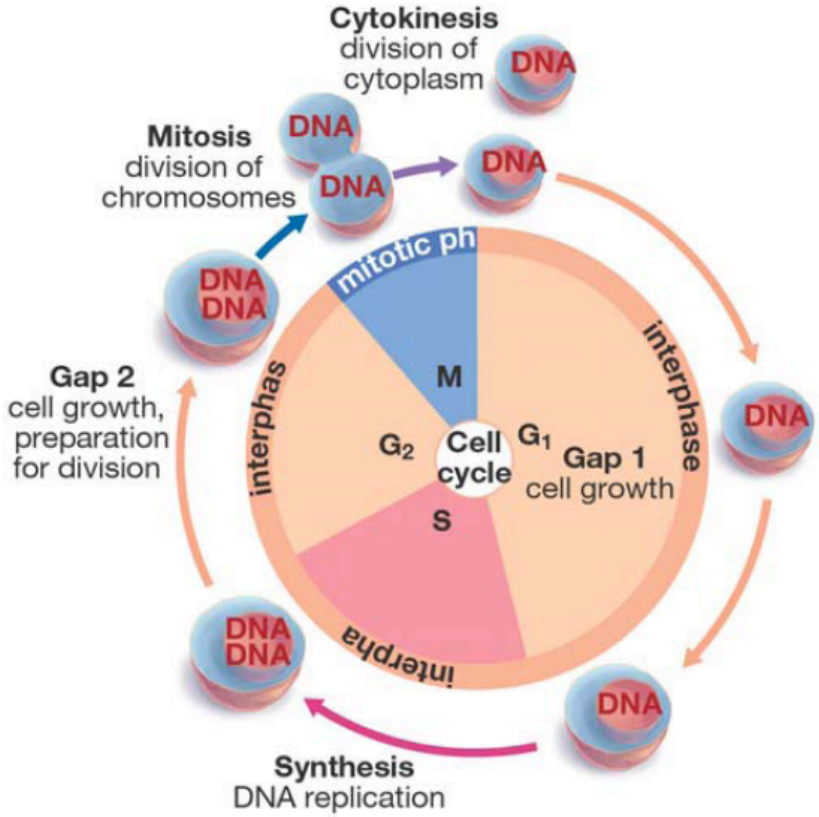
A: Diploid – Body cells (2x) contain pairs of chromosomes. Haploid – sex cells (x) contain one chromosome of each pair

3/4

Q: What would happen Cytokinesis occurred without Mitosis?

A: If Cytokinesis occurred without Mitosis, then each cell would only have half of the parent cell's genetic material.

3/5
Q: Draw the cell cycle.
A:



3/6
Q: How does the number of chromosomes an organism has relate to its complexity?
A: The chromosome number has **NOTHING** to do with an organisms complexity. (It really has to do with the genes the organism has.)

3/12
Q: What would happen if egg and sperm cells were produced by Meiosis instead of Mitosis?
A: If egg and sperm cells were produced by Mitosis then the cells would have 46 chromosomes instead of 23 chromosomes.

3/13
Q: Where and why do cells go through Meiosis?
A: Where: The Gonads (Testis and Ovaries)
Why: Produce the gametes (sperm and eggs)

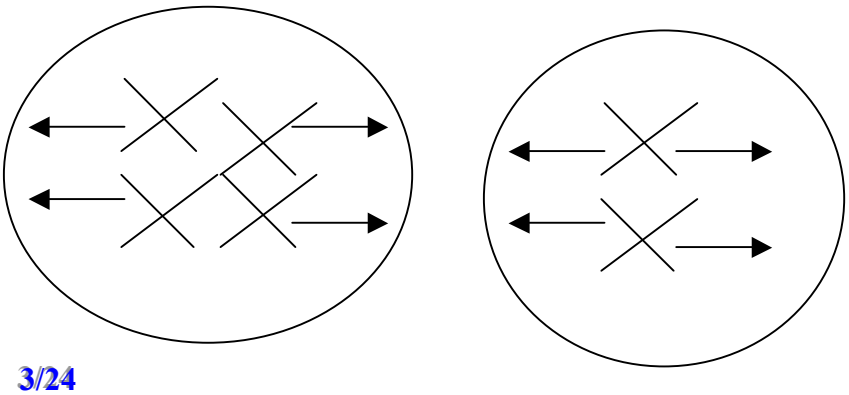
3/14
Q: How many stages are involved in Meiosis?
A: 8

3/19
Q: How many times in Meiosis do chromosomes double themselves? Do homologous pairs of chromosomes line up along the center of the cell? Do sister chromatids separate?
A: 1 for all answers - it divides twice, but doubles/ replicates once, in Interphase and there is one Interphase.

3/20

Q: What is the difference between Anaphase I and Aanaphase II in meiosis?

A: In anaphase I, the homologous pairs/chromosomes separate. In anaphase II, the sister chromatids separate.



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Q: How do Metaphase I and Metaphase II differ?

A: In Metaphase I, the homologous pairs line up in the middle of the cell. In Metaphase II, the sister chromatids line up in the middle of the cell, which is similar to Mitosis.

3/25

Q: Cytokinesis occurs during what stage of Meiosis?

A: Telophase I and II (When the cytoplasm splits in half)

(Telophase 1 - 2 cells produced and Telophase 2 - 4 cells produced)

Genetics

4/2

Q: Explain the difference between self-pollination and cross-pollination.

A: Self-pollination: Pollen from one plant is deposited on a stigma from the same plant. Cross-Pollination: Pollen and stigma are from two different plants.

4/3

Q: What is the difference between a trait and a characteristic? Give one example of each.

A: A characteristic is something that has different forms in a population, and a trait is each one of the possible forms.

4/7

Q: When Mendel crossed purple and white flowers all offspring were purple. Explain.

A: Purple is the dominant to white and in the hybrid, the dominant trait will be expressed.

4/8

Q: Two pea plants, hybrid for a singe characteristic, produce 60 pea plants. Approximately how many of the pea plants are expected to exhibit the recessive trait?

A: 15 will be recessive. (25% will be recessive in a hybrid cross)