Genetics

Topics: Mitosis, Meiosis, DNA

Directions: Please review each question before beginning. If you do not know an answer, find your class notes or go to the relevant Stile lesson. The Stile class code is: WGC7AG if you have not already joined the class

1. Genes are composed of:
    a. RNA
    b. DNA
    c. Chromosomes
    d. Lipids
    e. Carbohydrates

2. Condensed DNA is called:
    a. Proteins
    b. Chromosomes
    c. Carbohydrates
    d. Nucleosomes

3. DNA replication occurs:
    a. During cell division
    b. Continuously
    c. Before cell division
    d. Only once in the life of the organism
    e. Only in gametes

4. DNA replication:
    a. Occurs in the cytoplasm of the cell
    b. Does not require proteins
    c. Takes place in the nucleus of the cell
    d. Is constantly happening in a cell

5. Which nucleotide is not found in DNA?
    a. Thymine
    b. Uracil
    c. Adenine
    d. Guanine
    e. Cytosine

6. Which base pairing is correct?
    a. Thymine- Cytosine
    b. Thymine-Adenine
    c. Cytosine-Thymine
    d. Guanine-Adenine

7. Typical human body cells contain how many chromosomes?
    a. 46
    b. 23
    c. 92
    d. 48

8. Human gamete cells contain how many chromosomes?
    a. 98
    b. 46
    c. 22
    d. 23

9. At the end of meiosis, the resulting 4 cells are:
    a. Identical in all ways
    b. Genetically different from the parent cell but NOT each other
    c. Prepared to enter interphase so the chromosomes can be replicated
    d. Genetically different from both the parent cell and each other

10. Choose all that apply: Mitosis…
    a. Produces genetically identical daughter cells
    b. Occurs in somatic cells
    c. Gives rise to gametes
    d. Generally produces 4 daughter cells
    e. Requires chromosome replication to be completed beforehand

11. Metaphase…
    a. The first phase in which the cells are haploid
    b. The phase where chromosomes align at the center of the cell
    c. The phase where the cell splits into 2 daughter cells
    d. The phase where a diploid number of chromosomes are present at each end of the cell
    e. The phase where sister chromatids start to pull apart

12. Anaphase…
    a. The phase in which the cells are first haploids
    b. The phase where chromosomes align at the center of the cell
    c. The phase where the cell splits into 2 daughter cells
    d. The phase where a diploid number of chromosomes are present at each end of the cell
    e. The phase where sister chromatids start to pull apart

13. Prophase…
    a. The first phase in which the cells are haploid
    b. The phase where chromosomes align at the center of the cell
    c. The phase where the cell splits into 2 daughter cells
    d. The phase where a diploid number of chromosomes are present at each end of the cell
    e. The phase where sister chromatids start to pull apart

14. Telophase…
    a. The first phase in which the cells are haploid
    b. The phase where chromosomes align at the center of the cell
    c. The phase where the cell splits into 2 daughter cells
    d. The phase where a diploid number of chromosomes are present at each end of the cell
    e. The phase where sister chromatids start to pull apart

15. The organelle where genetic material is stored in the cell
    a. Lysosome
    b. Ribosome
    c. Nucleus
    d. Mitochondria
    e. Golgi apparatus

16. When you are injured, this is the process your cells undergo to repair the damage:
    a. Meiosis
    b. Mitosis
    c. Both

17. **True or False**: A human body cell is diploid
    a. True
    b. False

18. **True or False**: A gamete is diploid
    a. True- a gamete is a diploid cell
    b. False- a gamete is a haploid cell that contains 23 chromosomes
    c. False- a gamete is a haploid cell that contains 46 chromosomes
    d. False- a gamete is a diploid cell for only one phase of meiosis

19. DNA replication:
    a. Occurs in the cytoplasm of the cell
    b. Does not require proteins
    c. Takes place in the nucleus of the cell
    d. Is constantly happening in a cell
    e. Occurs only in interphase

20. Choose all that apply: In meiosis…
    a. All 4 daughter cells are genetically identical
    b. 2 daughter cells become visible gametes
    c. Diploid cells are created
    d. Haploid cells are created
    e. All 4 gametes produced are genetically diverse
    f. In males, all 4 gametes produced are viable
    g. In females, only 1 gamete of the 4 haploid cells are viable

21. In order to produce the cells necessary for sexual reproduction, what is the process to create those cells called?
    a. Mitosis
    b. Meiosis
    c. Protein synthesis

22. What is the haploid number for humans?
    a. 25
    b. 23
    c. 46
    d. 92

23. What is the diploid number for humans?
    a. 24
    b. 23
    c. 46
    d. 144

24. Choose all that apply: Meiosis…
    a. Produces genetically identical daughter cells
    b. Occurs in somatic cells
    c. Gives rise to gametes
    d. Generally produces 4 daughter cells
    e. Requires chromosome replication to be completed beforehand

25. What is the correct order of the phases of mitosis?
    a. Metaphase-prophase-telophase-anaphase
    b. Anaphase-telophase-prophase-metaphase
    c. Prophase-metaphase-anaphase-telophase
    d. Prophase-anaphase-metaphase-telophase

26. Chromosomes are:
    a. Separate duplicated structures composed of DNA
    b. Genetic material that is unwound between cell divisions
    c. A strand of DNA is duplicated by a centromere
    d. A structure that holds the sister chromatids to spindle fibers

27. What is the item in our body that determines all living functions?
    a. RNA
    b. DNA
    c. Cells

28. In the box below, draw each of the phases of mitosis

Prophase	Metaphase	Anaphase	Telophase