Chapter 13 Practice Test

Name_____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

1) What is a genome? 1) _____
A) A specialized polymer of four different kinds of monomers
B) An ordered display of chromosomes arranged from largest to smallest
C) A specific segment of DNA that is found within a prokaryotic chromosome
D) The complete complement of an organism's genes
E) A specific set of polypeptides within each cell

2) A gene's location along a chromosome is known as which of the following? 2) _____
A) Sequence B) Locus C) Variant D) Allele E) Trait

3) What is a karyotype? 3) _____
A) A display of every pair of homologous chromosomes within a cell, organized according to size and shape
B) The combination of chromosomes found in a gamete
C) The collection of all the mutations present within the genome of an individual
D) A system of classifying cell nuclei
E) The set of unique physical characteristics that define an individual

4) The human X and Y chromosomes 4) _____
A) are of approximately equal size and number of genes.
B) are both present in every somatic cell of males and females alike.
C) are almost entirely homologous, despite their different names.
D) include only genes that govern sex determination.
E) include genes that determine an individual's sex.

5) Which of the following is *true* of a species that has a chromosome number of 2n = 16? 5) _____
A) Each cell has 8 homologous pairs.
B) A gamete from this species has 4 chromosomes.
C) The species has 16 sets of chromosomes per cell.
D) The species is diploid with 32 chromosomes per cell.
E) During the S phase of the cell cycle there will be 32 separate chromosomes.

6) How do cells at the completion of meiosis compare with cells that have replicated their DNA and are just about to begin meiosis? 6) _____
A) They have half the number of chromosomes and one-fourth the amount of DNA.
B) They have half the amount of cytoplasm and twice the amount of DNA.
C) They have twice the amount of cytoplasm and half the amount of DNA.
D) They have the same number of chromosomes and half the amount of DNA.
E) They have half the number of chromosomes and half the amount of DNA.

7) A cell divides to produce two daughter cells that are genetically different. 7) _____
A) The statement is true for meiosis II only.
B) The statement is true for mitosis and meiosis I.
C) The statement is true for mitosis and meiosis II.
D) The statement is true for meiosis I only.
E) The statement is true for mitosis only.

8) Homologous chromosomes synapse and crossing over occurs. 8) _____
A) The statement is true for mitosis only.
B) The statement is true for mitosis and meiosis II.
C) The statement is true for mitosis and meiosis I.
D) The statement is true for meiosis I only.
E) The statement is true for meiosis II only.

9) Chromatids are separated from each other. 9) _____
A) The statement is true for mitosis only.
B) The statement is true for meiosis I only.
C) The statement is true for mitosis and meiosis I.
D) The statement is true for mitosis and meiosis II.
E) The statement is true for meiosis II only.

10) Independent assortment of chromosomes occurs. 10) _____
A) The statement is true for meiosis I only.
B) The statement is true for meiosis II only.
C) The statement is true for mitosis and meiosis I.
D) The statement is true for mitosis and meiosis II.
E) The statement is true for mitosis only.

11) Which of the following occurs in meiosis but not in mitosis? 11) _____
A) Chromosome replication
B) Condensation of chromatin
C) Alignment of chromosomes at the equator
D) Synapsis of chromosomes
E) Production of daughter cells

12) Whether during mitosis or meiosis, sister chromatids are held together by proteins referred to as cohesins. Such molecules must have which of the following properties? 12) _____
A) They must be intact for nuclear envelope reformation.
B) They must be removed before meiosis can begin.
C) They must reattach to chromosomes during G1.
D) They must persist throughout the cell cycle.
E) They must be removed before anaphase can occur.

13) Chiasmata are what we see under a microscope that let us know which of the following has occurred? 13) _____
A) Crossing over
B) Asexual reproduction
C) Separation of homologs
D) Meiosis II
E) Anaphase II

14) Independent assortment of chromosomes is a result of 14) _____

A) the relatively small degree of homology shared by the X and Y chromosomes.
B) the random and independent way in which each pair of homologous chromosomes lines up at the metaphase plate during meiosis I.
C) the random nature of the fertilization of ova by sperm.
D) the random distribution of the sister chromatids to the two daughter cells during anaphase II.
E) All of the above

15) When pairs of homologous chromosomes separate during anaphase I, 15) _____

A) recombination is not yet complete.
B) the sister chromatids remain attached to one another.
C) the synaptonemal complex is visible under the light microscope.
D) the maternal chromosomes all move to the same daughter cell.