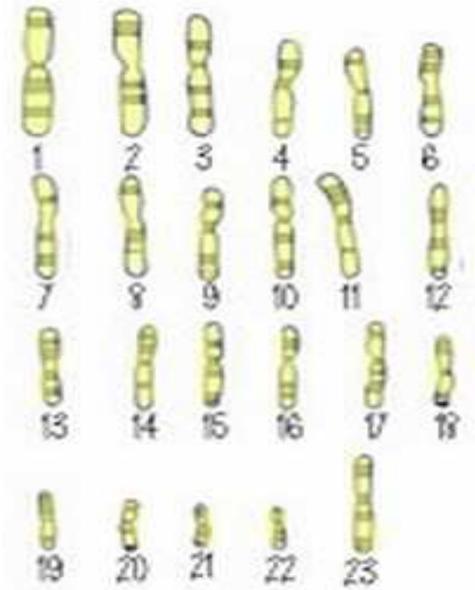


Review for Meiosis and Genetics Unit Test: Practice Multiple Choice

1. The human karyotype shown to the right:
- a) is haploid
 - b) shows 23 chromosomes
 - c) is from a gamete
 - d) all of the above

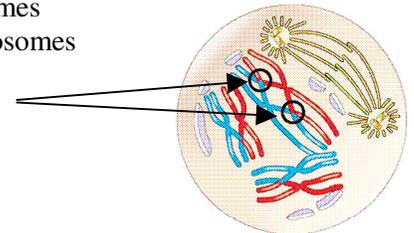


2. The human karyotype shown to the right has:
- a) 1 autosome
 - b) 4 autosomes
 - c) 22 autosomes
 - d) 23 autosomes
3. The human karyotype shown to the right could be from:
- a) a zygote
 - b) a sperm cell
 - c) a somatic cell
 - d) all of the above

4. The process of meiosis begins with:
- a) diploid cells and ends with diploid cells
 - b) haploid cells and ends with haploid cells
 - c) diploid cells and ends with haploid cells
 - d) haploid cells and ends with diploid cells

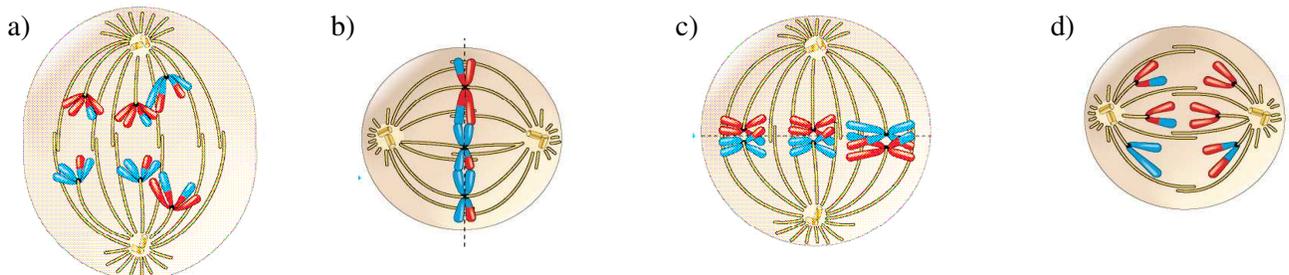
5. Crossing-over takes place during:
- a) anaphase I
 - b) prophase I
 - c) interphase I
 - d) metaphase I
6. DNA is replicated during what phase(s) of meiosis?
- a) interphase
 - b) prophase I
 - c) interphase II
 - d) both 'a' and 'c'
7. During **mitosis**, a parent cell with four chromosomes will produce two daughter cells, each with:
- a) two chromosomes
 - b) eight chromosomes
 - c) four chromosomes
 - d) sixteen chromosomes

8. What is the name of the circled regions in the diagram to the right?
- a) zygotes
 - b) chiasmata
 - c) centrosomes
 - d) centrioles



9. What is the name of the stage of meiosis in the cell in question 8?
- a) interphase
 - b) prophase I
 - c) metaphase
 - d) prophase II

Answer questions 10 – 12 about the cells shown below:



10. Cell 'a' is in which stage of meiosis?
- a) anaphase I
 - b) telophase I
 - c) anaphase II
 - d) telophase II
11. Which of the cells above show random segregation (independent assortment)?
- a) cells 'a' and 'd'
 - b) cells 'b' and 'c'
 - c) cells 'a' and 'c'
 - d) cells 'b' and 'd'
12. Cell 'c' is in which stage of meiosis?
- a) metaphase I
 - b) metaphase II
 - c) tetraploidy
 - d) 4N
13. Crossing over:
- a) takes place during prophase I
 - b) increases genetic diversity
 - c) mixes the genes from non-sister chromatids
 - d) all of the above

14. Which stage of meiosis **FIRST** produces haploid cells?
 a) interphase I b) interphase II c) telophase I d) telophase II

15. The diagram to the right shows:

- i) one tetrad
 ii) one homologous pair
 iii) four chromatids
 iv) two chromosomes



- a) i only b) i and ii only c) iii and iv only d) i, ii, iii and iv

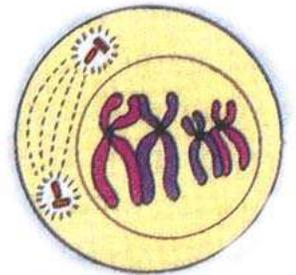
16. Turner's syndrome has the genotype:
 a) XXY b) XYY c) XO d) XXX

17. A student at GCI has trisomy XXY. They will probably be:
 a) taller than average c) seriously cognitively impaired and learning disabled
 b) aggressive and muscular d) all of the above

18. Trisomy 21 is also known as:
 a) Patau syndrome b) Edwards syndrome c) Klinefelter's syndrome d) Down syndrome

19. The pairing up of homologous chromosomes (shown to the right) is called:

- a) synapsis c) segregation
 b) homology d) mutation



20. Prophase I of meiosis is different from prophase of mitosis because in meiosis I:

- a) no spindle fibers form c) tetrads form
 b) the nuclear membrane stays intact d) the cell is haploid

21. Meiosis can be carried out by cells in the:

- a) liver b) testes c) skin d) all of the above

22. Non-disjunction means that homologous chromosomes:

- a) do not cross over during synapsis c) do not separate from one another during anaphase
 b) do not replicate during interphase d) have serious mutations

23. The jimson weed plant normally has 12 chromosomes in its stem and leaf cells. How many chromosomes will the pollen from jimson weed have?

- a) 4 b) 6 c) 12 d) 24

24. What separates during Anaphase II?

- a) the cytoplasm c) sister chromatids
 b) homologous chromosomes d) tetrads

25. The process of production of sperm and eggs is called:

- a) gametogenesis b) patagonia c) ovulation d) fertilization

26. Which of the following is a reduction division?

- a) mitosis b) meiosis I c) meiosis II d) cytokinesis

27. A cell which contains two copies of each chromosome is:

- a) haploid b) diploid c) a gamete d) an oocyte

28. The traits of an individual are described as its:

- a) phenotype b) genotype c) haplotype d) phylogeny

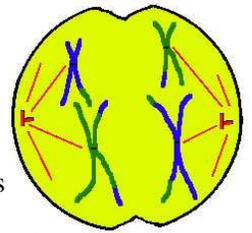
29. A zygote has 8 chromosomes. Which statement is true?

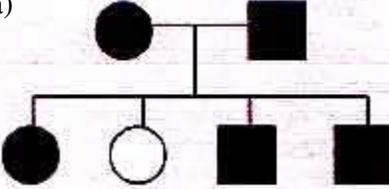
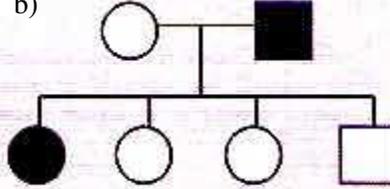
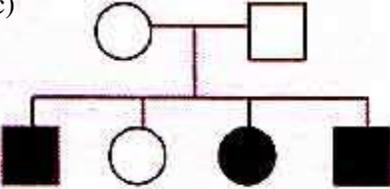
- a) the zygote is diploid c) the zygote will reproduce by mitosis
 b) the gametes would have had 4 chromosomes d) all of the above

30. Oogenesis results in:

- a) one viable egg b) one viable sperm c) four viable eggs d) four viable sperm

31. The cell in the diagram shown to the right is in:
 a) mitosis b) anaphase I c) anaphase II d) synapsis
32. If an individual has two different alleles of a particular gene, it is:
 a) heterozygous b) homozygous c) hemizygous d) monozygous



33. Mendel stated that organisms have two factors for each characteristic and these factors separate from one another during gamete formation giving the offspring one factor from each parent. This is the:
 a) principle of dominance c) law of independent assortment
 b) principle of inheritance d) law of segregation
34. Which of the following is an example of an autosomal dominant disorder?
 a) cystic fibrosis b) Turner's syndrome c) hemophilia d) Huntington's disease
35. Which of the following is an example of a non-disjunction disorder?
 a) Down syndrome b) hemophilia c) cystic fibrosis d) red-green colour blindness
36. A heterozygous individual is also known as a:
 a) a carrier b) a hybrid c) true-breeding d) both 'a' and 'b'
37. Which stage of meiosis is responsible for Mendel's law of independent assortment?
 a) interphase b) anaphase I c) metaphase I d) telophase I
38. When an individual with the dominant phenotype is bred with an individual having the recessive phenotype, it is called a(n):
 a) dihybrid cross c) random segregation
 b) test cross d) independent assortment
39. Which of the following is an example of a trait with multiple alleles?
 a) sex-linked inheritance c) dihybrid cross
 b) human blood types d) a recessive pedigree
40. Which of the following is an autosomal genetic disorder?
 a) PKU which is due to a gene on chromosome 12
 b) thalassaemia which is due to a gene on chromosome 16
 c) sickle cell disorder which is due to a gene on chromosome 11
 d) all of the above
41. Which of the following pedigrees shows a recessive genetic disorder?
 a)  b)  c) 

42. If Mendel crossed a tall, purple-flowered plant with yellow seeds with a dwarf, white-flowered plant with green seeds, this would be:
 a) a monohybrid cross b) a trisomy c) a tri-hybrid cross d) impossible
43. In the F_1 generation, Mendel's ratio of 3:1 refers to the ratio of:
 a) males to females b) the genotypes c) the phenotypes d) the number of alleles
44. Which of the following represents a test cross?
 a) $Ww \times WW$ b) $ww \times WW$ c) $Ww \times Ww$ d) $WW \times WW$
45. The genotypes of a husband and wife are $I^A I^B \times I^A i^O$. How many different genotypes and phenotypes are possible in their children?
 a) 2 genotypes and 3 phenotypes c) 4 genotypes and 3 phenotypes
 b) 3 genotypes and 4 phenotypes d) 4 genotypes and 4 phenotypes

46. Which patterns of inheritance are show by human blood types?
 I) co-dominance
 II) incomplete dominance
 III) completely dominant and recessive alleles
 IV) sex-linked inheritance
 V) multiple alleles
 a) I, II and IV b) I, III and V c) II, III and IV d) I and IV
47. A man who is heterozygous A has children with a woman who has type AB blood. Their children can NOT be
 a) type AB b) type O c) type B d) type A
48. Which combination could cause the mother to form antibodies to her baby during pregnancy? (pg. 301 in text)
 a) an Rh- mother with an Rh+ baby c) an Rh+ mother with an Rh+ baby
 b) an Rh+ mother with an Rh- baby d) an Rh- mother with an Rh- baby
49. Red-green colour blindness is an X-linked trait. A man who is red-green colour blind marries a woman with normal vision. The woman's father was colour blind. What are the chances that their first child will be a colour blind male?
 a) 100% b) 50% c) 25% d) 33%
50. For the question above, what are the chances that their daughters will be colour blind?
 a) 0 % b) 25% c) 50% d) 33%
51. Normal human eggs have:
 a) 22 autosomes and an X chromosome c) 22 autosomes and a Y chromosome
 b) 23 autosomes d) 46 chromosomes
52. Mendel did dihybrid crosses and discovered that the inheritance of one trait was not affected by the inheritance of the other traits. He called this the:
 a) Law of Independent Assortment c) Principle of Dominance
 b) Law of Segregation d) dihybrid dichotomy
53. Mendel's principle of dominance stated that when an individual has a hybrid genotype, it will only express the dominant trait in its phenotype. Which of the following types of inheritance do not agree with this principle?
 I) co-dominance
 II) multiple alleles
 III) incomplete dominance
 a) I and II only b) II and III only c) I and III only d) I, II and III
54. Genetic traits of peas are shown in the box to the right.
 Which of following genotypes would produce a short plant with smooth seeds, purple flowers and yellow pods?
 a) Tt Ww PP Gg c) tt Ww PP Gg
 b) tt ww Pp gg d) Tt ww pp Gg

T = tall plant, t = short plant
 W = wrinkled seeds, w = smooth seeds
 P = purple flowers, p = white flowers
 G = green pods, g = yellow pods

1. d	7. c	13. d	19. a	25. a	31. b	37. c	43. c	49. c
2. c	8. b	14. c	20. c	26. b	32. a	38. b	44. b	50. c
3. b	9. b	15. d	21. b	27. b	33. d	39. b	45. c	51. a
4. c	10. a	16. c	22. c	28. a	34. d	40. d	46. b	52. a
5. b	11. b	17. a	23. b	29. d	35. a	41. c	47. b	53. d
6. a	12. a	18. d	24. c	30. a	36. d	42. c	48. a	54. b