Bio12-Q2W1-H.W-Revision on Genetics G10

Matching

Match each item with the correct statement below.

a. crossing over
b. meiosis
c. dihybrid
d. heredity
e. haploid
f. homozygous
g. zygote
h. fertilization

____ 1. The exchange of genetic material between homologous chromosomes
____ 2. The passing of characteristics from parents to offspring
____ 3. A cross involving two different traits
____ 4. The uniting of the male and female gametes
____ 5. The alleles present for a trait are the same

Multiple Choice

Identify the choice that best completes the statement or answers the question.

____ 6. The gamete that contains genes contributed only by the mother is _____.
a. the sperm
b. dominant
c. an egg
d. a zygote

____ 7. Crossing over results in a _____.
a. phenotype replication
b. male genotype
c. genetic recombination
d. female genotype

____ 8. A useful device for predicting the possible offspring of crosses between different genotypes is the _____.
a. law of dominance
b. Punnett square
c. testcross
d. law of independent assortment

____ 9. A female guinea pig homozygous dominant for black fur color is mated with a male homozygous for white fur color. In a litter of eight offspring, there would probably be _____.
a. 2 black, 4 gray, and 2 white guinea pigs
b. 8 black guinea pigs
c. 4 black and 4 white guinea pigs
d. 8 white guinea pigs

____ 10. Which of the following describes an organism that has the genotype Bb?
a. homozygous
b. inbreed
c. heterozygous
d. all of these

____ 11. The tall allele, *T*, is dominant to the short allele, *t*, in Mendel's pea plants. You examine a pea plant which exhibits a phenotype of tallness. What is its genotype?
a. *tt*
b. *TT*
c. *Tt*
d. It cannot be determined from the information given.

____ 12. A pea is heterozygous for a given trait. Which of the following is NOT true?
a. The pea has the dominant phenotype.
b. The pea cannot resemble both parents.
c. The pea resembles at least one parent for this trait.
d. The pea has two different alleles.

____ 13. The passing on of traits from parents to offspring is called _____.
a. genetics
b. heredity
c. inbreeding
d. gene splicing

____ 14. In chickens, rose comb (R) is dominant to single comb (r). A homozygous rose-combed rooster is mated with a single-combed hen. All of the chicks in the F_1 generation were kept together as a group for several years. They were allowed to mate only within their own group. What is the expected phenotype of the F_2 chicks?
a. 50% rose comb and 50% single comb
b. 100% rose comb
c. 75% rose comb and 25% single comb
d. 100% single comb

____ 15. You are given a sample of unknown human cells to examine. Analysis of their nuclei revealed that each cell contains 23 chromosomes. What type of cells might these be?
a. Skin cells
b. Liver cells
c. Ova
d. None of the above

____ 16. During which stage of cell division does the number of chromosomes decrease from diploid (2*n*) to haploid (*n*)?
a. Meiosis II
b. Mitosis
c. Prophase I
d. Meiosis I

____ 17. Cells containing two alleles for each trait are described as _____.
a. gametes
b. diploid
c. homozygous
d. haploid

	MX	Mx	mX	mx
MX				
Mx				
mX				
mx				

Figure 10-7

____ 18. What fraction of this cross will be recessive for both traits?
a. 1/4
b. 1/8
c. 1/16
d. 1/2

____ 19. How should the top row of Figure 10-7 read?
a. MMxX, MMxx, MmxX, Mmxx
b. mMxX, mMxx, mmxX, mmxx
c. MMXX, MMXx, MmXX, MmXx
d. mMXX, mMXx, mmXX, mmXx

____ 20. Pollination can best be described as _____.
a. the transfer of the male pollen grain to the female organ
b. the fusing of the egg nucleus with the pollen nucleus
c. the formation of male and female sex cells
d. the type of cell division that produces diploid gametes

____ 21. When an area of a chromatid is exchanged with the matching area on a chromatid of its homologous chromosome, _____ occurs.
a. fertilization
b. crossing over
c. mutagenesis
d. hybridization

____ 22. In mink, brown fur color is dominant to silver-blue fur color. If a homozygous brown mink is mated with a silver-blue mink and 8 offspring are produced, how many would be expected to be silver-blue?
a. 3
b. 6
c. 0
d. 8

____ 23. A dog's phenotype can be determined by _____.
a. examining the dog's chromosomes
b. looking at the dog
c. looking at the dog's parents
d. mating the dog and examining its offspring

____ 24. Pairs of chromosomes having genes for the same traits are said to be —
a. analogous.
b. homologous.
c. homozygous.
d. None of the above

____ 25. A white mouse whose parents are both white produces only brown offspring when mated with a brown mouse. The white mouse is most probably _____.
a. heterozygous
b. homozygous recessive
c. homozygous dominant
d. haploid

____ 26. The _____ produced by each parent are shown along the sides of a Punnett square.
a. gametes
b. hybrids
c. offspring
d. zygotes

____ 27. A couple has two children, both of whom are boys. What is the chance that the parents' next child will be a boy?
a. 0%
b. 75%
c. 50%
d. 25%

____ 28. Nondisjunction can result in the formation of a zygote with three copies of a chromosome. What is this condition called?
a. Triploidy
b. Turner's syndrome
c. Trisomy
d. None of the above

____ 29. The numbers in Figure 10-1 represent the chromosome number found in each of the dog cells shown. The processes that are occurring at A and B are _____.

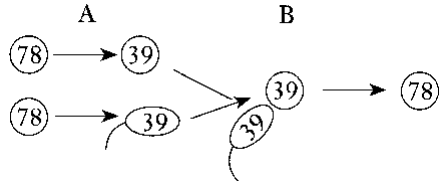

Figure 10-1

a. mitosis and fertilization
b. mitosis and pollination
c. meiosis and pollination
d. meiosis and fertilization

____ 30. The statement: "In meiosis, the way in which a chromosome pair separates does not affect the way other pairs separate," is another way of expressing Mendel's law of _____.

a. first filial generations
b. Punnett squares
c. dominance
d. independent assortment

____ 31. Mendel's law of segregation states that during meiosis, the factors that control each trait separate, and only _____ from each pair is/are passed to the offspring.

a. the dominant trait
b. the recessive trait
c. one factor
d. two factors

____ 32. You perform a monohybrid cross between two true-breeding strains of organisms with genotypes *AA* and *aa*. What do you expect the ratio of genotypes to be in the F1 generation?

a. 3:1
b. 9:3:3:1
c. 1:2:1
d. 2:2

____ 33. During which phase of meiosis do homologous chromosomes align as tetrads in the middle of the spindle?

a. Prophase I
b. Prophase II
c. Metaphase I
d. Metaphase II

____ 34. After performing a monohybrid cross, it is important to analyze the results with a Punnett square. Each box of a Punnett square represents —

a. a possible phenotype.
b. a possible genotype.
c. one individual.
d. two possible genotypes.

____ 35. The law of independent assortment states that the inheritance of alleles for one trait is not affected by the inheritance of alleles for a different trait if the genes for the traits are on _____.

a. separate chromosomes
b. homozygous chromosomes
c. the same chromosome
d. homologous chromosomes

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