

DUE DATE _____**2nd Semester Final Exam Review- PRACTICE TEST: MENDELIAN GENETICS
Unit 13**

- _____ 1. Gregor Mendel used pea plants to study
- flowering.
 - gamete formation.
 - the inheritance of traits.
 - cross-pollination.
- _____ 2. Offspring that result from crosses between parents with different traits
- are true-breeding.
 - make up the F₂ generation.
 - make up the parental generation.
 - are called hybrids.
- _____ 3. Gregor Mendel removed the male parts from the flowers of some plants in order to
- prevent hybrids from forming.
 - prevent cross-pollination.
 - stimulate self-pollination.
 - make controlled crosses between plants.
- _____ 4. Gregor Mendel concluded that traits are
- not inherited by offspring.
 - inherited through the passing of factors from parents to offspring.
 - determined by dominant factors only.
 - determined by recessive factors only.
- _____ 5. When Gregor Mendel crossed a tall plant with a short plant, the F₁ plants inherited
- an allele for tallness from each parent.
 - an allele for tallness from the tall parent and an allele for shortness from the short parent.
 - an allele for shortness from each parent.
 - an allele from only the tall parent.
- _____ 6. The principle of dominance states that
- all alleles are dominant.
 - all alleles are recessive.
 - some alleles are dominant and others are recessive.
 - alleles are neither dominant nor recessive.
- _____ 7. When Gregor Mendel crossed true-breeding tall plants with true-breeding short plants, all the offspring were tall because
- the allele for tall plants is recessive.
 - the allele for short plants is dominant.
 - the allele for tall plants is dominant.
 - they were true-breeding like their parents.
- _____ 8. If a pea plant has a recessive allele for green peas, it will produce
- green peas if it also has a dominant allele for yellow peas.
 - both green peas and yellow peas if it also has a dominant allele for yellow peas.
 - green peas if it does not also have a dominant allele for yellow peas.
 - yellow peas if it does not also have a dominant allele for green peas.
- _____ 9. A tall plant is crossed with a short plant. If the tall F₁ pea plants are allowed to self-pollinate,
- the offspring will be of medium height.
 - all of the offspring will be tall.
 - all of the offspring will be short.
 - some of the offspring will be tall, and some will be short.
- _____ 10. In the P generation, a tall plant was crossed with a short plant. Short plants reappeared in the F₂ generation because
- some of the F₂ plants produced gametes that carried the allele for shortness.
 - the allele for shortness is dominant.
 - the allele for shortness and the allele for tallness segregated when the F₁ plants produced gametes.
 - they inherited an allele for shortness from one parent and an allele for tallness from the other parent.

- ___ 11. In the P generation, a tall plant was crossed with a short plant. If alleles did not segregate during gamete formation,
- all of the F₁ plants would be short.
 - some of the F₁ plants would be tall and some would be short.
 - all of the F₂ would be short.
 - all of the F₂ plants would be tall.
- ___ 12. When you flip a coin, what is the probability that it will come up tails?
- 1/2
 - 1/4
 - 1/8
 - 1
- ___ 13. The principles of probability can be used to
- predict the traits of the offspring produced by genetic crosses.
 - determine the actual outcomes of genetic crosses.
 - predict the traits of the parents used in genetic crosses.
 - decide which organisms are best to use in genetic crosses.
- ___ 14. In the P generation, a tall plant is crossed with a short plant. The probability that an F₂ plant will be tall is
- 25%.
 - 50%.
 - 75%.
 - 100%.
- ___ 15. Organisms that have two identical alleles for a particular trait are said to be
- hybrid.
 - homozygous.
 - heterozygous.
 - dominant.
- ___ 16. In the Punnett square shown in Figure 11–1, which of the following is true about the offspring resulting from the cross?
- About half are expected to be short.
 - All are expected to be short.
 - About half are expected to be tall.
 - All are expected to be tall.
- ___ 17. A Punnett square shows all of the following EXCEPT
- all possible results of a genetic cross.
 - the genotypes of the offspring.
 - the alleles in the gametes of each parent.
 - the actual results of a genetic cross.
- ___ 18. If you made a Punnett square showing Gregor Mendel's cross between true-breeding tall plants and true-breeding short plants, the square would show that the offspring had
- the genotype of one of the parents.
 - a phenotype that was different from that of both parents.
 - a genotype that was different from that of both parents.
 - the genotype of both parents.
- ___ 19. What principle states that during gamete formation genes for different traits separate without influencing each other's inheritance?
- principle of dominance
 - principle of independent assortment
 - principle of probabilities
 - principle of segregation
- ___ 20. How many different allele combinations would be found in the gametes produced by a pea plant whose genotype was *RrYY*?
- 2
 - 4
 - 8
 - 16
- ___ 21. If a pea plant that is heterozygous for round, yellow peas (*RrYy*) is crossed with a pea plant that is homozygous for round peas but heterozygous for yellow peas (*RRYy*), how many different phenotypes are their offspring expected to show?
- 2
 - 4
 - 8
 - 16
- ___ 22. Situations in which one allele for a gene is not completely dominant over another allele for that gene are called
- multiple alleles.
 - incomplete dominance.
 - polygenic inheritance.
 - multiple genes.
- ___ 23. A cross of a black chicken (*BB*) with a white chicken (*WW*) produces all speckled offspring (*BBWW*). This type of inheritance is known as
- incomplete dominance.
 - polygenic inheritance.
 - codominance.
 - multiple alleles.

- ____ 24. Variation in human skin color is an example of
- incomplete dominance.
 - codominance.
 - polygenic traits.
 - multiple alleles.
- ____ 25. Gregor Mendel's principles of genetics apply to
- plants only.
 - animals only.
 - pea plants only.
 - all organisms.
- ____ 26. Why did Thomas Hunt Morgan use fruit flies in his studies?
- Fruit flies produce a large number of offspring.
 - Fruit flies take a long time to produce offspring.
 - Fruit flies share certain characteristics with pea plants.
 - Fruit flies have a long lifespan.
- ____ 27. A male and female bison that are both heterozygous for normal skin pigmentation (Aa) produce an albino offspring (aa). Which of Mendel's principles explain(s) why the offspring is albino?
- dominance only
 - independent assortment only
 - dominance and segregation
 - segregation only
- ____ 28. The number of chromosomes in a gamete is represented by the symbol
- Z.
 - X.
 - N.
 - Y.
- ____ 29. If an organism's diploid number is 12, its haploid number is
- 12.
 - 6.
 - 24.
 - 3.
- ____ 30. Gametes have
- homologous chromosomes.
 - twice the number of chromosomes found in body cells.
 - two sets of chromosomes.
 - one allele for each gene.
- ____ 31. Gametes are produced by the process of
- mitosis.
 - meiosis.
 - crossing-over.
 - replication.
- ____ 32. What is shown in Figure 11-3?
- independent assortment
 - anaphase I of meiosis
 - crossing-over
 - replication
- ____ 33. Chromosomes form tetrads during
- prophase I of meiosis.
 - metaphase I of meiosis.
 - interphase.
 - anaphase II of meiosis.
- ____ 34. What happens between meiosis I and meiosis II that reduces the number of chromosomes?
- Crossing-over occurs.
 - Metaphase occurs.
 - Replication occurs twice.
 - Replication does not occur.
- ____ 35. Unlike mitosis, meiosis results in the formation of
- diploid cells.
 - haploid cells.
 - $2N$ daughter cells.
 - body cells.
- ____ 36. Unlike mitosis, meiosis results in the formation of
- two genetically identical cells.
 - four genetically different cells.
 - four genetically identical cells.
 - two genetically different cells.
- ____ 37. Crossing-over rarely occurs in mitosis, unlike meiosis. Which of the following is the likely reason?
- Chromatids are not involved in mitosis.
 - Tetrads rarely form during mitosis.
 - A cell undergoing mitosis does not have homologous chromosomes.
 - There is no prophase during mitosis.
- ____ 38. Which of the following assort independently?
- chromosomes
 - genes on the same chromosome
 - multiple alleles
 - codominant alleles
- ____ 39. Linked genes
- are never separated.
 - assort independently.
 - are on the same chromosome.
 - are always recessive.

- _____ 40. If the gene for seed color and the gene for seed shape in pea plants were linked,
- all of Mendel's F_1 plants would have produced wrinkled, green peas.
 - Mendel's F_2 plants would have exhibited a different phenotype ratio for seed color and seed shape.
 - Mendel's F_1 plants would have exhibited a different phenotype ratio for seed color and seed shape.
 - all of Mendel's P plants would have produced wrinkled, green peas.
- _____ 41. If two genes are on the same chromosome and rarely assort independently,
- crossing-over never occurs between the genes.
 - crossing-over always occurs between the genes.
 - the genes are probably located far apart from each other.
 - the genes are probably located close to each other.
- _____ 42. The farther apart two genes are located on a chromosome, the
- less likely they are to be inherited together.
 - more likely they are to be linked.
 - less likely they are to assort independently.
 - less likely they are to be separated by a crossover during meiosis.