

PreAP Biology
Genetics Test Review (Chapters 11, 13, and 14)

1. Be able to apply the rules of probability

- $1.0=100\%$... $0.5=50\%$... $0.25=25\%$
- When flipping a coin there is a fifty-fifty chance it lands on heads or tails

2. Be able to identify and predict blood types

Phenotypes:	Genotypes
Type A	$I^A i$ or $I^A I^A$
Type B	$I^B i$ or $I^B I^B$
Type AB	$I^A I^B$
Type O	ii

3. Be able to predict the results of a dihybrid cross...Practice Punnett Squares...Mendelian Genetics PowerPoint on website

4. Be able to predict the results of a monohybrid cross...Practice Punnett Squares...Mendelian Genetics PowerPoint on website

5. Be able to use a Punnett square...Practice Punnett Squares...Mendelian Genetics PowerPoint on website

6. Genotype is:

- gene combination for a trait (e.g. RR, Rr, rr)

7. How did Mendel control the crosses of pea plants?

- Cutting off the male part of the flower and then mechanically (by-hand) fertilized the flowers using a paintbrush

8. How do we use the principles of probability?

- To predict the traits of the offspring produced by genetic crosses.

9. How is colorblindness inherited?

- Sex-linked trait on X-chromosome

10. How would a female inherit hemophilia?..

- Father must have hemophilia and mother could be a carrier or affected with hemophilia

11. If an organism's diploid number is 46, its haploid number is 23.

12. In which gender do sex-linked traits usually occur?

- Males have a greater chance of inheriting a sex-linked trait b/c their genotype is XY...so they only need one affected x-chromosome to inherit the sex-linked trait

13. Know how to use a pedigree

- Prevue Pedigree Lab 25

14. Know Mendelian genetics!!

- a. P, F1, F2 generations

- b. Test-crosses
- c. Self-pollination
- d. What ifs.....

- Example: Brown is dominant Blonde... If homozygous Black is crossed with homozygous Blonde, what would the phenotypic and genotypic ratio of crossing two from F₁

15. Meiosis results in the formation of ?????

- 4 haploid gametes (sperm or egg)...remember haploid is reduction of chromosome to half a body cell (diploid)
- Example in humans: diploid is 46 and haploid is 23

16. Phenotype is:

- Physical outward appearance of a genotype (genes)

17. Sperm cells form from the maturation of what cells?

- Spermatozoon cells

18. What are genes?

- Chemical factors that determine our traits....CHROMOSOME/DNA

19. What are sex chromosomes?

- X and Y

20. What can result from nondisjunction?

- Gametes with one extra (n+1) or one less (n-1) homologous chromosome

21. What causes translocation to occur?

- When part of a chromosome breaks off and attaches to a non-homologous chromosome.

22. What did Gregor Mendel conclude?

- Traits are inherited through the passing of factors from parents to offspring....FACTORS known as GENES

23. What did Mendel study?

- Pea Plants

24. What do hox genes do?

- Determines the body segments of an organism

25. What does crossing over look like?



26. What does it mean to be homozygous? Heterozygous?

- **Homozygous** contain the same allele for a trait (BB or bb) **Heterozygous** contain one of each alleles for a trait (Bb)

27. What does Mendel's law of segregation state?

- **Two alleles for a trait separate when gametes are formed.**

28. What genetics disorders can be detected by karyotyping?

- **Chromosomal Disorders**

29. What happens during independent assortment?

- **Alleles for *different* traits are distributed to sex cells (& offspring) independently of one another.**

30. What is a dominant trait?

- **Trait which overrides the recessive...more POWERFUL**

31. What is a mutation?

- **a change in DNA sequence/material: A protein with a different AA sequence**

32. What is a pedigree?

- **A chart or diagram of genetic history of a family over several generations**

33. What is a point mutation?

- **A base-pair substitution- the wrong base is paired with another with another.**

34. What is a Punnett square?

- **A chart used to predict the expected offspring of a genetic cross**

35. What is an example of a multiple allele trait?

- **Blood type**

36. What is an example of something that would result from a sex-linked trait?

- **Hemophilia, color-blindness**

37. What is an example of something that would result from multiple allele inheritance?

- **Blood type**

38. What is an example of something that would result from polygenic traits?

- **Variation in skin color and eye color**

39. What is an example of something that would result from polygenic inheritance?
- Eye or skin color
40. What is codominance?
- Two alleles are expressed (multiple alleles) in heterozygous individuals.
41. What is crossing over?
- Increases the genetic variability between gametes
42. What is Down Syndrome?
- Trisomy chromosome 21
43. What is genetic counseling?
- Helps parents assess if their offspring is at risk of a genetic disorder, and by studying a pedigree to help parents decide if they are ready to start a family
44. What is genetics?
- The study of heredity
45. What is independent assortment?
- Alleles for *different* traits are distributed to sex cells (& offspring) independently of one another.
46. What is Klinefelter Syndrome?
- Persons having an XXY karyotype are nearly normal males but produce few or no sperm.
47. What is nondisjunction? What would it look like on a karyotype?
- Failure of homologous chromosome separation...results in a karyotype with an extra or lack of chromosomes...example is Down's Syndrome (trisomy chromosome 21)
48. What is phenylketonuria?
- human genetic defect that results in the failure to metabolize the amino acid phenylalanine
49. What is the Human Genome Project?
- Project planned to sequence the entire all the human chromosomes
50. What is Turner Syndrome?
- Female with genotype XO...missing the second X-chromosome
51. What results from crossing over?
- Chromosomes with genetic variation

52. What would a sex-linked trait look like on a pedigree?

