SSSS 2019-2020 Heredity Practice Test

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Section 1: Multiple Choice

1. Punnett squares were created by
    a. Gregor Mendel
    b. Reginald Punnett
    c. Sadi Carnot
    d. Sophia Nora Belzhiwitz
2. Cytosine pairs with_____
    a. Adenine
    b. Thymine
    c. Cytosine
    d. Guanine
3. Cytosine and Thymine are
    a. Pyramids
    b. Purines
    c. Pyrimidines
    d. Pyrating
4. Humans have _____ chromosomes
    a. 23
    b. 22
    c. 46
    d. 26
5. DNA is read
    a. Left to right
    b. Right to left
    c. 3 to 5
    d. 5 to 3
6. What is not part of DNA
    a. Adenine
    b. Phosphate
    c. Allele
    d. Carbon 5 sugar molecule

Section 2: Inheritance

7. If a white mouse with a long tail (bbLl) and a black mouse with a short tail (Bbll) had offspring, what would be the genotype ratio of their offspring?

8. A blend of two possible traits is
    a. Codominance
    b. Incomplete dominance
    c. Allele
    d. Recessive
9. Two genes that are fully expressed simultaneously
    a. Codominance
    b. Incomplete dominance
    c. Genotype
    d. Dominance
10. If a female with type AB blood and a male with type O blood had kids, what are all the possible blood types the children could have?

11. X linked traits are more prominent in which gender? Explain

12. In a genetic disorder that only affects males, please explain how this trait would be passed down from generation to generation.

13. A cell has 23 chromosomes, one of them being an x chromosome, what type of cell is it?
    a. A sperm cell
    b. An egg cell
    c. A female somatic cell
    d. A male somatic cell

14. Please explain nondisjunction

_____

_____

_____

15. What would you call the mating of two varieties from the same species?
    a. Cross pollination
    b. True breeding
    c. Epistasis
    d. Hybridization
16. Which cell organelle is usually inherited from the mothers
    a. Golgi apparatus
    b. Mitochondria
    c. Ribosome
    d. lysosome
17. What makes pleiotropy and polygenic different

_____

_____

_____

18. Which one of these is not a polygenic trait?
    a. Height
    b. Skin color
    c. Hair color
    d. Color blindness

19. Which Chromosome determines gender?
    a. A
    b. B
    c. X
    d. Y
20. There is a yellow and round pea plant (YYRR) and a green and wrinkled pea plant (yyrr). What is the genotype ratio of their hypothetical offspring? (Cross provided below if participants need it)

21. Give an example of a sex-linked trait.

    _____

22. A specific position of a gene is called _____
    a. Trait
    b. Centromere
    c. Locus
    d. Allele
23. What is the difference between genotype and phenotype?

_____
_____
_____

Section 3: Inner Workings of a Cell

24. What are the lagging strands referred to as?
    a. Oganeson fragments
    b. Okazaki fragments
    c. Takoyaki fragments
    d. Teriyaki fragments

25. Explain G1 G2 and S phase

_____
_____
_____

_____

26. What is the name of the imaginary plane that chromosomes line up on in cell division?

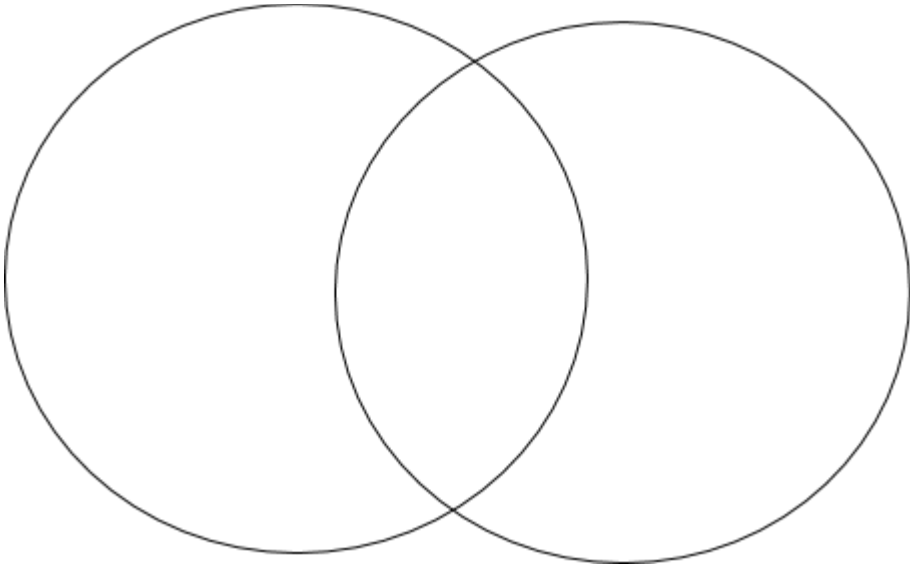
_____

27. Name the phases of cell division in order
    a. _____ c. _____ e. _____
    b. _____ d. _____

28. What is the inactive X chromosome in a female somatic cell called?
    a. Lysosome
    b. Barr bodies
    c. Centromere
    d. Kinetochore

29. DNA replication is
    a. Conservative
    b. Educonservative
    c. Semiconservative
    d. Anti conservative

30. What are the differences and similarities between meiosis and mitosis? (each correct difference and similarity listed is 1point)



31. What is the difference between a protein and a polypeptide?

_____

_____

32. What is the DNA structure in a eukaryotic cell?
    a. Left handed double helix
    b. Right handed double helix
    c. Double helix
    d. Helix
33. What is the difference between exons and introns?

_____

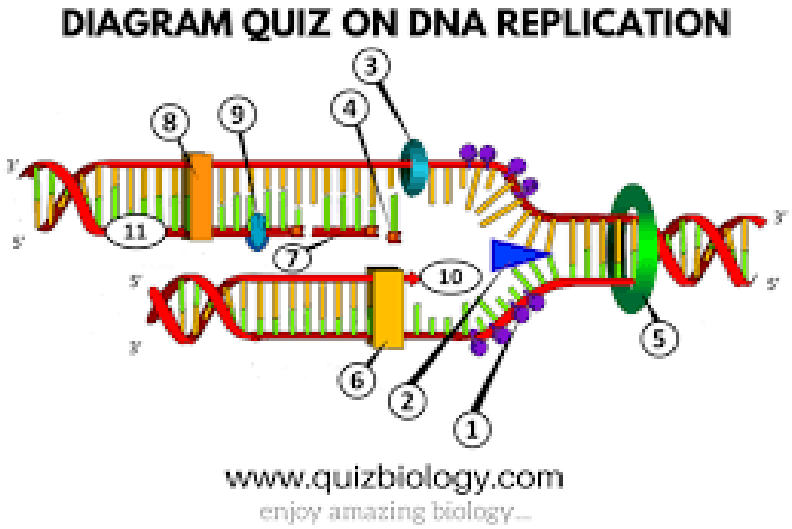
_____

34. What is the start codon(for 2 extra point what is the name of the start codon)_____
    a. Arg
    b. Aug
    c. Ala
    d. Asp

35. What are 3 differences between DNA and RNA?

1. _____
2. _____
3. _____

36. Label the diagram below



1. 2. 3. 4.
5. 6. 7. 8.
9. 10. 11.

37. How long does it take for mitosis to be completed?
    a. 1 hour
    b. 2 hours
    c. 3 hours
    d. 4 hours

38. What is the difference between transcription and translation?

_____

_____

39. What is the difference between a zygote and a gamete?

_____

_____

Section 4: Karyotype and Pedigrees

40. What is the purpose of a karyotype?

_____

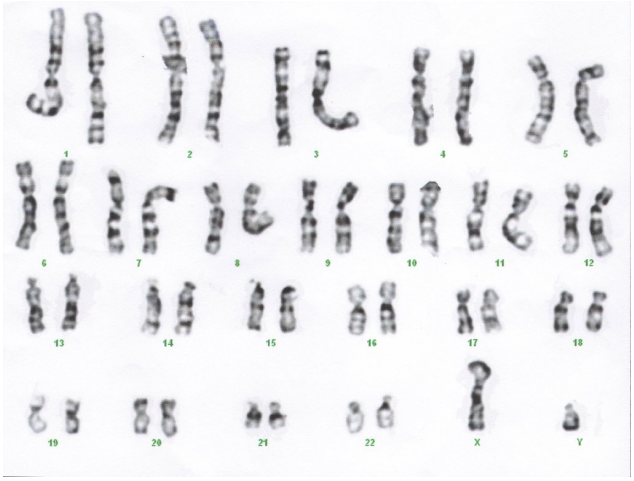
_____

41. What is the purpose of a pedigree?

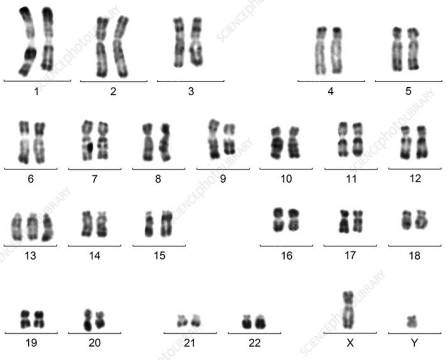
_____

_____

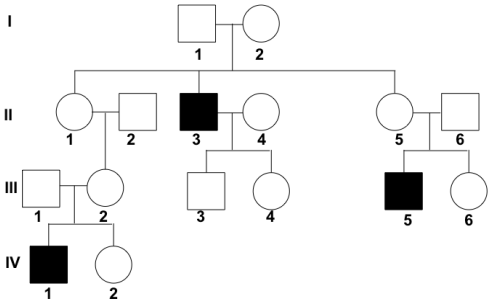
42. What is the gender of the person below?



43. Does the karyotype below show a person with a nondisjunction disorder of any kind, if so name it in two ways.



44. Is the trait shown in this pedigree dominant or recessive?



45. Hypothetically, if a female named Anna has hemophilia what could be the possible genotypes of her parents.