Heredity ANSWER KEY

Answers highlighted in yellow are **tiebreakers**.

1. B
2. D
3. C
4. B
5. A, B
6. B, D
7. A
8. C
9. A, D
10. C
11. F
12. D
13. D
14. C
15. C
16. C

17. A

18. A, B, D, F

19. D

20. B

21. D

22.B

23.D

24. C

25. A

26. B

27. C

28. False

29. False

30. True

31. True

32. False

33. True

34. True

35. True

36. False

37. False

38. True

39. SsRR and ssrr (also accept RRSs and rrss)

40. 1:1:1:1 (accept 4:4:4:4, also accept if they put the trait after each number)

41. An individual showing features characteristic of a genotype other than its own, but produced environmentally rather than genetically.

42. Height, weight, skin color, risk of cancer, personality traits, IQ, etc

43. Conservative, Semi-conservative, Dispersive

44. Mature mRNA has its introns spliced out, while pre-mRNA has both introns and exons. Mature mRNA has a 5' modified guanine cap, while pre-mRNA doesn't. Mature mRNA has a 3' poly(A) tail, while pre-mRNA doesn't.

45. Telomerase lengthens telomeric DNA by adding repetitive nucleotide sequences to ends of eukaryotic chromosomes, which allows cells to avoid the Hayflick Limit, which limits cells from dividing after a certain number of times because of loss of genetic material at the telomeres.

46. X-inactivation occurs in females because, if it didn't, females would make twice as many (compared to males) proteins that are encoded on the X chromosome.

47. In Metaphase I, homologous pairs are lined up, while in Metaphase II, sister chromatids are separated.

48. A kinetochore is a complex of proteins associated with the centromere of chromosomes during cell division, to which the microtubules of the spindle attach.

49. During G1 phase, the cell grows in size. The cell synthesizes various enzymes and nutrients that are needed later on for DNA replication and cell division. The restriction point happens during G1 phase, and it is when the cell has fully committed to reproduction/mitosis. During S phase, the DNA of the cell is replicated to prepare for mitosis.

50. Transitions are interchanges of purines for another purine, or of pyrimidines for another pyrimidine. Transversions are interchanges of purines for pyrimidines.

51. Fragile X Syndrome

52. Intellectual disabilities, attention deficit and hyperactivity, especially in young children, anxiety, unstable mood, autistic behaviors,

hypersensitivity to sensory stimuli, speech delay, seizures (epilepsy), long face, large prominent ears, flat feet, hyperextensible joints, low muscle tone

53. FMR1

54.

a. Lagging strand
b. Leading strand
c. Polymerase
d. Helicase
e. Single Stranded Binding Proteins (accept “SSBs”)
f. Topoisomerase
g. Primase
h. RNA Primer
i. Okazaki Fragment
j. Ligase

55. One with 150 base pairs, because smaller molecules can move more easily through the gel in gel electrophoresis.

56. Huntington's Disease, Marfan's Syndrome, Familial Hypercholesterolemia, Hereditary Spherocytosis, Neurofibromatosis, Tuberous Sclerosis

57. Cystic fibrosis, Hurler's Syndrome, Sickle Cell Anemia, Albinism, Alkaptonuria, Homocystinuria, Phenylketonuria, Fanconi Anemia, Hartnup's Disease, Kartagener's Syndrome, Gaucher Disease

58. Fragile X Syndrome, X-linked lissencephaly and double-cortex syndrome, Rett Syndrome, incontinentia pigmenti type 1

59. Hemophilia, Color Blindness, Fabry's Disease, Hunter’s Syndrome, Lesch-Nyhan Syndrome, Duchenne muscular dystrophy, X-linked ichthyosis