Heredity Answer Sheet

1)

Type	Receivable
AB+	O-, O+, B-, B+, A-, A+, AB-, AB+
AB-	O-, A-, B-, AB-
A+	O-, O+, A-, A+
A-	O-, A-
B+	O-, O+, B-, B+
B-	O-, B-
O+	O+, O-
O-	O-

2)
The letters refer to certain carbohydrates found on red blood cells. For example, “A” carbohydrates are found on A blood cells. The + or - refer to the RH factor.

3)
The amount of adenine is equal to the amount of thymine and the amount of guanine is equal to the amount of cytosine.

4)
The male.

5)

Hb	hb
Hb	hb

6) ½;50%

7) ½;50%

8)

Hb	hb

Hb	hb

9) ½;50%

10) ½;50%

11) 0%

12) Reginald C. Punnett, he created the Punnett square

13) crossing over, random fertilization, independent assortment

14) Nucleotides

15) A theory to explain inheritance. According to it, pangenes travel from each part of an organisms's body to the eggs or sperm and are passed onto the next generation.

16) Hippocrates

17) Incorrect

18) Gregor Mendel

19) He discovered the principles of genetics by crossing peas (breeding them).

20) The P generation

21) The F_1 generation

22)

HhsS	HhsS	hhsS	hhsS
Hhss	Hhss	hhss	hhss
HhsS	HhsS	hhsS	hhsS
Hhss	Hhss	hhss	hhss

23) ¼

24) ¼

25) ¼

26) ¼

27) 4 pups would have short and gray fur, 4 would have long and gray fur, 4 would have short and black fur, and 4 would have long and black fur.

28) 90%

29) Prophase 1

30) Homologous chromosomes, -WORK

31) Same alleles

32) The expression of one gene depends on another.

33) Mutations, Gene Flow, Small Populations, Natural Selection, Non-Random Mating

34) $p^2 + 2pq + q^2 = 1$ *and* $p + q = 1$

35) 12.7%

36) 64.3%

37) 35.7%

38) 45.9%

39) 45.3%

40) 34.6%

41) 65.4%

42) 42.7%

43) Non-gamete cells

44) I) Prophase - dna -> Chromosomes, Nuclear membrane breaks down.

II) Metaphase - Mitotic spindle formed, chromosomes aligned on metaphase plate.
III) Anaphase - Centromeres come apart, separating chromatids. Chromosomes move to the two poles of the cell.
IV)Telophase - Cytoplasm divides by cytokinesis.

45) Prophase 1 -> Metaphase 1 -> Anaphase 1 -> Telophase 1 -> Prophase II -> Metaphase II -> Anaphase II .> Telophase II

46) Interphase

47) 90%

48) The sex chromosome

49) One gene affects multiple, seemingly unrelatable, phenotypic traits. The chicken's frizzle gene

50) An allele, that if is homozygous, will kill the organism.

52) Amount of steps, amount of daughter cells produced, cells used

53) A cell with a complete set of chromosomes.

54) Female

55) Trisomy 13

56) Patau Syndrome

57) Male

58) 2 X Chromosomes 1 Y Chromosome

59) Klinefelter Syndrome

60) Female

61) Trisomy 21

62) Down Syndrome

63) 1/691 babies born with it, neotenization of brain and body usually

64) 2003

65) Hemophilia, red-green colorblindness, Duchenne Muscular Dystrophy. Affect males because males only need one copy of defective gene to show the recessive trait, while females need two.

66) The coiled up, unused copy of the second X chromosome in females.

67) J
68) H
69) C
70) A
71) F
72) I
73) B
74) E
75) G
76) D
77) K

78) Nitrogenous Base, Phosphate Group, Ribose Sugar

79) The descendants of a group of “founder” organisms that colonized a new area will have decreased biodiversity.

80) If a large part of a population is destroyed, the remaining individuals will have lower diversity.

81) 1) Large population 2) no in- or out- migration 3) random mating 4)no selection 5) no beneficial mutations

82) Tay Sach’s- Central European Jews. Cystic Fibrosis- Europeans. Sickle-cell Disease- Blacks.

83) Yes, because only males appear to get it. (Females are carriers)

84) Heterozygous Bb

85) 50%

86) 0%

87) Pauling worked on the shape of the DNA molecules, and discovered its formula, but incorrectly considered it to be a triple helix. He also worked identiied sickle-cell disease as a

genetic disorder.

88) Watson and Crick determined the overall structure of the DNA molecule (double helix)

89) The body cannot synthesize phenylalanine, and if phenylalanine is ingested, it leads to mental retardation. If spotted early, the child can be put on a phenylalanine free diet.

90) 12

91) Telophase

92) Inversion

93) somatic cells; gametes

94) 92

95) 50 units

96) False

97) Cancer, tumors appear that are composed of cells that divide without restraint, can lead to death if not treated.

98) It is the guardian angel of the cell because it helps prevent tumors from forming. AKA tumor suppressor gene.

99) Metastasis is when a tumor cell enters the bloodstream and moves to a different part of the body.

100) RNA

101) Ribosomes

102) A multifactorial trait is influenced by both genes and the environment. A person can be born susceptible to heart disease, but this is magnified if the person has an unhealthy diet and does not exercise.