**Unit 5 Study Guide**

1. **Sexual vs. Asexual Reproduction**
2. Asexual Reproduction: mitosis, very little genetic variation, fast and easy, one parent.
3. Sexual Reproduction: meiosis, greater genetic variation, two parents, slower but greater adaptability
4. **Meiosis**
5. Meiosis is the formation of gametes. This only occurs in sex cells aka sperm and egg
6. Meiosis creates four haploid or n cells with ½ the original DNA
7. Mitosis happens in all other cells and results in two identical cells that are 2n
8. Crossing over occurs in prophase 1 and allows for the exchange of genetic material between homologous chromosomes independent assortment occurs during metaphase1 and allows for the random assortment of chromosomes each time meiosis occurs.
9. Know the phases: prophase 1, metaphase 1, anaphase 1, telophase 1, prophase 2, metaphase 2, anaphase 2, and telophase 2
10. **DNA and RNA**
11. DNA is a double helix or twisted ladder and stays in the nucleus
12. RNA is single stranded and can enter and leave the nucleus
13. DNA and RNA are made of nucleotides
14. A nucleotide is made of one phosphate, one nitrogen base and one sugar
15. The sugar is deoxyribose in DNA and Ribose in RNA
16. The nitrogen bases in DNA are Adenine, Thymine, Cytosine and Guanine A: T and C: G
17. The nitrogen bases in RNA are Adenine, Uracil, Cytosine and Guanine A: U and C: G
18. Every three bases are a codon which code for a specific amino acid
19. **DNA Replication**
20. Replication occurs during interphase in preparation for mitosis or meiosis
21. Occurs in the nucleus
22. Copies the entire DNA molecule
23. DNA helicase opens up the DNA
24. DNA polymerase creates a new complimentary strand of DNA
25. DNA replication is semi conservative (one old and one new strand)
26. A bonds with T and C bonds with G
27. **Translation**
28. Occurs in the nucleus
29. Makes a copy of a small segment of DNA that codes for a specific protein
30. RNA polymerase creates a copy of the code called mRNA
31. U replaces T in the code
32. mRNA leaves the nucleus and goes to the ribosome
33. DNA closes back up and stays in the nucleus
34. **Translation**
35. occurs in the cytoplasm at the ribosome
36. mRNA goes to the ribosome and the codons are read
37. a tRNA with a matching anti codon comes brings in the corresponding amino acid
38. amino acids are bonded together with peptide bonds
39. a polypeptide chain forms into a protein
40. **Genetics**
41. Gregor Mendel was an Austrian Monk who discovered basic genetic principals
42. Dominant: the allele which will always show up in the phenotype if present
43. Recessive: the allele which will not be seen unless there is no dominant present
44. Genotype: the written expression of the alleles present in the organism
45. Phenotype: what traits are seen in the physical appearance of the organism
46. Homozygous: when both alleles are the same ex. AA or aa
47. Heterozygous: when one of each allele is present ex. Aa
48. Incomplete dominance: when both dominant traits are expressed equally and blended ex. RR = red WW = white RW = pink
49. Codominance: when both dominant traits are expressed equally but not blended ex. RR= red, WW= white, RW = red and white spotted
50. Sex linked traits; traits which are found only on the X chromosome and are more likely found in males since they only have one X chromosome

k. Pedigree is a diagram showing the transmission of a trait through several generations