Name: _____Date: _____ Period: _____

Unit 5: Chapter 11 Test Review

1. **Vocabulary you should know. Recommendation (optional): make flashcards, or write the definition down. Make sure you understand the meanings of all of these vocabulary words**

Chapter 11-1	Chapter 11-2	Chapter 11-3	Chapter 11-4
Genetics	Punnett square	Independent assortment	Homologous
True-breeding	Homozygous	Incomplete dominance	Diploid
Trait	Heterozygous	Codominance	Haploid
Hybrid	Phenotype	Polygenic Traits	Meiosis
Gene	Genotype		Crossing-over
Allele	Genotype		
Segregation	Dominant		
Gamete	Recessive		

Chapter 14-1	Chapter 14-2	Write down any other words you want to remember here	
Karyotype	Sex linked genes		
Sex chromosome	Color blind		
Autosome	Hemophilia		
Pedigree	Sickle Cell		
Cystic Fibrosis			
Blood Types			

2. **Questions:**
   Chapter 11-1:
   A. By crossing two true-breeding pea plants of different flower types you get a: _____. What generation where the parents? P, F1 or F2? _____ What generation is the new pea plant they produced? _____
   B. What are dominant alleles? _____
   C. What are recessive alleles? _____
   D. What is the principle of dominance? _____
   E. What does segregation have to do with gametes? _____
   _____
   F. How did Mendel cross pollinate pea plants? How was he able to prevent the plants from self pollinating? _____
   _____
   _____
   _____

   Chapter 11-2:
   A. Purple is a dominant color in pea plants, white is recessive. If you were to make a Punnett square of a cross between two plants that were heterozygous for the flower color purple, What probability would you have of getting PP: _____ Pp: _____ pp: _____
   B. When you calculate a percentage in a punnett square: What do the percentages mean?circle 1
      a. The plant will have exactly 4 seeds one will be PP, 2 will be Pp, and 1 will be pp.
      b. The plant has to have 3 purple and 1 white offspring
      c. Each time the plant makes a seed there will be a 25% chance of having a PP, a 50% chance of having a Pp, and a 25% of having a pp.
   C. Give one example of a heterozygous trait: Genotype: ____ Phenotype:_____
   D. Give one example of a homozygous trait: Genotype: _____ Phenotype:_____
   E. If an organism has two identical alleles for the same trait the organism is said to be _____or _____ for that trait.

Chapter 11-3:

    A. The principle of independent assortment says: **(circle one)**
        a. During gamete formation genes for different traits separate without influencing each other's inheritance.
        b. During gamete formation genes for different traits do influence each other's inheritance.
    B. Give an example of codominance: _____
    C. Give an example of incomplete dominance: _____
    D. Compare and contrast an example of a codominant gene with a gene that shows incomplete dominance. _____

        _____

        _____
    E. What is a polygenic trait? _____

        _____What is one example of a polygenic trait we talked about in class? _____
    F. Answer the following Punnett square questions. Each answer should include: a punnett square, phenotype percentages, and genotype percentages for all possible offspring.
        a. If the gene for cow fur color is codominant: Red fur (R) and White fur (W). What is the offspring and percentages for a cross between two heterozygous cows.

<div align="center">

Phenotype Percentages:

</div>

        b. Show a cross between a mother that is AB- for blood type crossed with a father that was blood type O and heterozygous for Rh factor. Show all of the blood phenotypes and percentages.
            i. What is the Mother's Genotype: _____

            ii. What is the Father's Genotype: _____

<div align="center">

Phenotypes Possible with Percentages:

</div>

c. The gene for fur color in Labrador retrievers (dogs) shows **incomplete dominance**. Black (B) fur is dominant, yellow (b) fur is recessive, and brown fur is the heterozygous fur color. Nose color shows **regular complete dominance**: Black nose (N), Pink nose (n). Draw a dihybrid cross for a female dog that is heterozygous for nose color and heterozygous for fur color crossed with a male dog that is homozygous dominant for nose color and heterozygous for fur color.

     i. List the phenotypes for the parents and all of the phenotypes and percentages possible for the puppies.

Phenotypes Possible with Percentages:
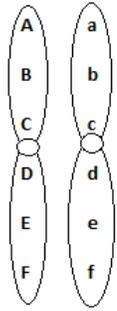

Chapter 11-4

A. What is the purpose of meiosis? _____

_____

	Mitosis	**Meiosis**
Purpose		
How many cells are made?		
How similar are the cells that are made		
Haploid or Diploid?		
# of cell divisions?		

B. Compare and contrast Mitosis and Meiosis

C. How many gametes are produced by the end of meiosis? _____ How many chromosomes are in each gamete? _____ Are sperm and eggs haploid or diploid? _____Why? _____

D. When does crossing over occur in meiosis? _____

E. What is the difference between a haploid and a diploid cell? _____

_____

F. What is the difference between Meiosis I and Meiosis II? _____

_____

_____

G. Explain Homologous chromosomes in terms of haploid and diploid cells: _____

_____

_____

Chapter 11-5:

A chromosome diagram with genes labeled A, B, C, D, E, F on left chromatid and a, b, c, d, e, f on right chromatid.

←— A. During a crossing over event are genes A and B or A and F more likely to be separated from one another? _____ Why? _____

B. In general: Are genes that are closer together or farther apart more likely to be separated? _____ Why? _____

Ch 14: Blood Type Practice

1. Fill in the blood type for each person on the right →
2. From the phenotypes that you figured out in the blood Typing chart, write in all of the possible GENOTYPES each person could be (should list 4 letters: 2 "I's" and 2 "R's")
   A. Person #1: _____
   B. Person #2: _____
   C. Person #3: _____
   D. Person #4: _____
   E. Person #5: _____
3. Assume that person #4 had an O- mother.
   Complete a Dihybrid Cross for Person #1 and Person #4.
   a. Possible gametes made by person #1: _____
   b. Possible gametes made by person #4: _____
   c. Fill in the Punnett Square below:

Person #1
Blood Type: _____
1. Anti-A 2. Anti-B 3. Anti-Rh

Person #2
Blood Type: _____
1. Anti-A 2. Anti-B 3. Anti-Rh

Person #3
Blood Type: _____
1. Anti-A 2. Anti-B 3. Anti-Rh

Person #4
Blood Type: _____
1. Anti-A 2. Anti-B 3. Anti-Rh

Person #5
Blood Type: _____
1. Anti-A 2. Anti-B 3. Anti-Rh

4. List all of the possible phenotypes and percentages possible:

5. Could they have a type O+ baby? Why or Why not?

Blood Typing:

1. What are ALL of the possible genotypes for a person with the following blood types:

Phenotype: Genotype	Phenotype: Genotype
Type A+:	Type A-:
Type B+:	Type B-:
Type AB+:	Type AB-:
Type: O+	Type: O-

2. What possible blood types could a man with Type O and women with type AB have:
   _____

3. Why can't a person with blood Type A give blood to a person with blood Type B.
   _____

4. Draw a red blood cell for each blood type, with antigens that occur on each blood type:
   a. A -   B +   AB -   O+

Karyotypes:

Identify and explain the problems with each karyotype. (Phenotype would be what kind of problems they will have)

Disorder:	Disorder:	Disorder:	Disorder:
Phenotype:	Phenotype:	Phenotype:	Phenotype:

Explain the flowing genetic disorders: (be sure to include what kind of dominance (inheritance) the disorder is)

Disorder	Problem it Causes	What type of inheritance?
Colorblindness	**Example**: Usually cannot see either Green, Red or Blue	Sex Linked X recessive
Tay Sachs		
Marfans		
Sickle Cell		
Huntington's		
Hemophilia		

Pedigrees: (with sex linked traits) Use the pedigree below to answer the following questions:

1. How many children did parents #4 and 5 have? _____

2. What is the genotype of a carrier for colorblindness? _____

3. Which numbers on the pedigree show the carriers for colorblindness? _____

4. Are carriers colorblind? _____ Why? _____

5. Which men on the chart are colorblind? _____

6. Answer the following questions about person 13 and 14

   a. How are they related to each other? _____
   b. Who are their grandparents? _____
   c. Who are their aunts and uncles? _____
   d. Who are their cousins? _____
7. Are any of the females colorblind? _____

   a. Why/why not? _____

8. What is the genotype for the following people:

   a. 1: _____   4: _____   9: _____   14: _____
9. Draw a <u>Punnett Square</u> to show a cross between # 9 and 10
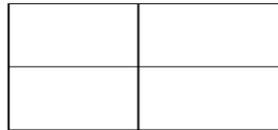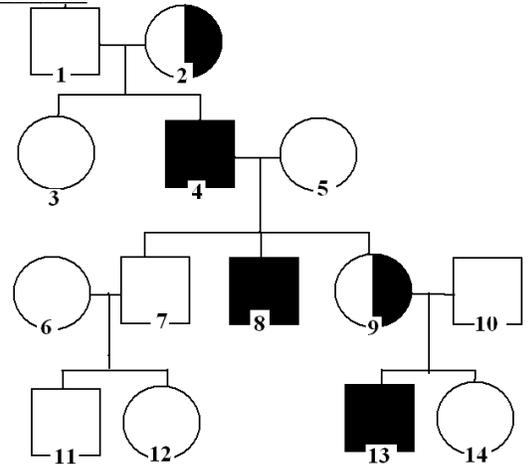
Sex Linked Traits:

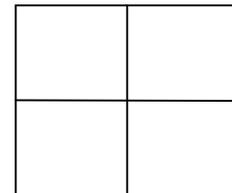## <u>Colorblind Pedigree and Punnett Square:</u>
Make a pedigree for Mr. Schramm's family following the trait Colorblindness.
   A. Grandfather (Carl): Normal Vision, Grandmother (Betty): Carrier
   B. Had two sons: Charlie and Richard Both are colorblind
   C. Charlie marries Debbie they have three sons: Andrew, James and Patrick all have normal vision.
   D. Richard marries Kathy: They have two children: Girl: Emily normal vision. Boy: David: Colorblind.
   E. Make a pedigree showing each family member's **name and genotype**.
   F. Also make a Punnett Square for Carl and Betty, list their kids phenotypes/genotype percentages:

Key:
- ☐ Men normal
- ■ Men colorblind
- ○ Women normal
- ◑ Women carrier
- ● Women colorblind

Draw part F: Punnett Square here:

Draw Pedigree Here:

Punnett Square Percentages (part F):

   G. Andrew, from the pedigree you drew above, is Mr. Schramm. Will Mr. Schramm have any chance of having colorblind children? _____Explain_____