Unit 3 – Understanding Inheritance
Key Terms and Theory Review

This review will cover the theory and background info from the unit on inheritance of genes and traits. It is Part 1 of a two-part review. Included is a list of important terms that you should be able to recognize and, if necessary, define. Following this list is a series of review questions that will refresh and reinforce your understanding of the theory that underpins the terms and practice problems we have worked with.

Key Terms:

Gene	Test cross	X-inactivation
Chromosome	P, F_1, and F_2 generations	Barr body
Homologous pair	Purebred	Genetic variation
Allele	Hybrid / Carrier	"Crossing-over"
Dominant allele	Dihybrid cross	Nondisjunction
Recessive allele	Polygenic trait	Aneuploidy (monosomy, trisomy)
Genotype	Incomplete dominance	
Homozygous	Codominance	Turner syndrome
Heterozygous	Autosome	Down syndrome
Phenotype	Sex chromosome	Klinefelter syndrome
Monohybrid cross	Sex-linked trait	Karyotype

Review Questions:

1) Explain, briefly, why it is that you contain two copies of basically every gene in your body.
2) What does the Law of Segregation say about what happens to homologous chromosomes?
3) What is similar between chromosomes that are part of a homologous pair? What differs?
4) Contrast the terms **genotype** and **phenotype**.
5) Suppose a person argued that "a person's phenotype causes their genotype". Would you agree with this statement? If not, explain the error(s) in the statement.
6) If a person possesses a dominant trait, such as brown eyes, why is it much harder to determine what their genotype would be compared to someone who has a recessive trait, such as blue eyes?
7) Describe, in no more than a sentence or two, how you could tell if an animal was **heterozygous** or **homozygous dominant** for a trait.
8) Why might it be important to know if you are a "carrier" for a certain gene?
9) What does the Law of Independent Assortment say about the action of pairs of chromosomes during meiosis?
10) Distinguish between autosomes and sex chromosomes.
11) What, precisely, determines the gender of a newly-conceived child?
12) What are some notable examples of sex-linked, recessive disorders?
13) Explain, briefly, why men ***cannot*** be carries of sex-linked disorders.

14) Why does x-inactivation occur in females, but ***not*** in males?
15) Why, in the grander scheme of things, is it important to have genetic variation?
16) Briefly describe how crossing-over leads to genetic variation in offspring.
17) What is **nondisjunction**? Describe the differences between the consequences of nondisjunction in meiosis I and the consequences of nondisjunction in meiosis II.
18) What consequences may occur if gametes formed from non-disjunction end up being used to conceive a child?
19) Describe (briefly) and distinguish between Turner syndrome and Klinefelter syndrome.
20) Down syndrome (trisomy of chromosome 21) is described as an **autosomal** disorder. What do you think this means?
21) What, if anything, is abnormal about the karyotypes shown below? If possible, give an appropriate name for disorders caused by any abnormalities you see: