Part 1: Tour of Basic Genetics

Directions: Go to https://learn.genetics.utah.edu/content/basics/oldtour/ and use the info to answer these questions.

1. What is DNA?
2. What is a Gene?
3. What is a Chromosome?
4. What is a protein?
5. What is Heredity?
6. What is a Trait?

Part 2: Basic Genetics

Directions: Go to https://learn.genetics.utah.edu/content/basics/, and find “Tour of Basic Genetics.”

1. In the “DNA & Genes” section: if all living things have DNA, and it is the same type of molecule in all organisms, what makes us different from each other? _________________________________
2. What makes up a “sequence” of DNA? ____________________________________________________________
3. All humans have the same _______ arranged in the same order. And more than _______ % of our DNA sequence is ____________. But the few differences between us are enough to make each one of us _______________.
4. How many nucleotides, on average, are different person to person in each gene we have? ______________________
5. Differences in the DNA sequence lead to differences in the shape and function of what molecules? _______________
6. Go back, and find the “What is Inheritance?” section. Why is genetic variation important? _________________________________
7. Where does variation come from in asexual reproduction? _______________________________________________________________________________________
8. Where does variation come from in sexual reproduction? _______________________________________________________________________________________
9. Which type of reproduction produces more genetic variation? _______________________________________________________________________________________
10. Most traits are influenced by ________________________ and the ________________________
11. In rare cases, changes in the DNA sequence can cause what? ____________________________________
12. Females have two ____ chromosomes, but males have one ___ and one ___ chromosome.
13. Why are sex-linked disorders more common in males? ________________________________________________

Part 3: Chromosomes and Karyotypes

Directions: Go to https://learn.genetics.utah.edu/content/basics/, and find where it says “More About Chromosomes”

1. In the “How Do Scientists Read Chromosomes” section, how can scientists identify all 46 different chromosomes?
2. In the “Make a Karyotype” section, drag each of the chromosomes beside their partner chromosomes. Is this karyotype from a male or a female? __________ Does this individual have any chromosomal abnormalities? ______
3. In the “Mitosis, Meiosis, and Fertilization” section a human cell has _____ chromosomes: _____ autosomes, come in pairs, and _____ sex chromosomes, which specify whether someone is male (usually _____) or female (usually ____). 
4. What are the pairs of autosomal chromosomes called? ________________________________________________
5. Homologous chromosomes have the same _______ in the same order, but have different what? ______________________________
6. When cells divide to make more cells (_________) or reproductive cells (_________), and when reproductive cells join to make a new individual (______________), what is important? ________________________________
Part 4: Biological Sex and Sex Chromosome Linked traits
A) Go to https://learn.genetics.utah.edu/content/pigeons/sexlinkage/, use the information to complete this section.
1. What does sex linkage apply to? ____________________________________________________________
2. With sex-linkage, is the inheritance pattern the same, or different, between males and females? _____________
3. What do sex chromosomes determine? __________________________________________________________
4. What are non-sex chromosomes called? _______________________________________________________
5. What are some well-known examples of sex-linked traits? ____________________________________________

Female offspring get what from each parent? ______ Males get an _____ from their mom, and a _____ from dad.
X chromosomes never pass from _______ to _______ Y chromosomes always pass from _______ to _______

B) Go to https://www.hhmi.org/biointeractive/testing-athletes?_sm_au_=iVV4tQK0jP4qSTD5 and press “Start Click & Learn.”
1. Click on “Human Development” at the top. What is biological sex?
2. What is gender, and how is it different from biological sex?
3. Click on “Case Studies” at the top, and scroll down to pick “Sprinter” or “Swimmer.” Go through the different tests to decide if the athlete is a male or a female. ___________ What is the athlete’s correct genotype? ___________

Part 5: Genes and Blood Type
Go to https://learn.genetics.utah.edu/content/basics/blood/ and answer the questions.
1. Everyone inherits ________ alleles of the gene, ________ from each parent. The combination of your two alleles determines your ___________ ___________.
2. Fill out the chart to the right to show the blood type created by the two alleles.
3. In blood transfusions, what is important? ______________________________________________________

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<thead>
<tr>
<th>Alleles</th>
<th>Blood Type</th>
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<tbody>
<tr>
<td>AA</td>
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Part 6: Genetic Disorders
A) Go to https://learn.genetics.utah.edu/content/disorders/extraormissing/, and answer the questions.
1. What is an aneuploidy?
2. How many chromosomes does a normal human have?______ How many pairs of sex chromosomes are there? _____
3. People with a monosomy are ________ a chromosomes. People with a trisomy have an ___________ ___________ of one of their chromosomes. If someone has a trisomy 18, that means they have 3 copies of what? ___________________ 

4. When a mutation is ____________ from parent to offspring, all of the offspring’s cells will carry the _____________. Therefore, mutations can be passed on to subsequent ________________.
5. What is Cystic Fibrosis? _____________________________________________________________
6. What is Huntington disease? ____________________________________________________________

Part 7: Reading Pedigrees Practice
Directions: Go to the website below to practice pedigrees. There is a link to review on the left if you need help.
Go to https://www.khanacademy.org/science/high-school-biology/hs-classical-genetics/hs-pedigrees/e/hs-pedigrees and take the pedigree practice quiz. Write down your score here (you can retake the quiz): __________

Part 9: Review Quiz
Go to https://quizizz.com/join and complete the review quiz. Code is: 348568    Score:_____________________

Part 10: Online Textbook Review
Complete the chapters of the online textbook you’re missing. Chapters 10 and 11 are short, while 13 is longer.