

Biology Test II  
Genetics

Reminders: Answer all the questions within each numbered question. Answer completely using the vocabulary of genetics. Show what you know. Check your work.

1. What four bases are found in DNA? What four are found in RNA? Use the full name for each base and tell how the bases are paired -- what pairs with what.
  
2. What is a mutation? How can a mutation come to be? Are all mutations bad for an individual? Why or why not?
  
3. Mitosis:
  - What are the 5 main phases of the cell cycle? (draw and label or write a paragraph) What happens (briefly) during each phase? (use separate paper or make spaces here before printing if you plan to draw)
  
  - How many daughter cells are formed by mitosis?
  
  - How many chromosomes are in each daughter cell compared to the parent cell?
  
  - Genetically, are the daughter cells identical to or different from the parent cell?
  
4. Meiosis:
  - List the stages of meiosis. (no need to explain each step)
  
  - How many daughter cells are formed?
  
  - How many chromosomes are in each daughter cell compared to the parent cell?
  
  - Genetically, are the daughter cells identical to or different from the parent cell?
  
5. What is the benefit to meiosis to a species? Why bother?

6. What is transcription? What is translation? Where do these each occur? Your answer should include references to DNA, mRNA, tRNA, amino acids, and codons.

7. A man with phenotype A blood is married to a woman with phenotype type O blood. What are the possible genotypes for the man and the woman? What are of the possible blood types of their children? Show punnett squares and list the outcomes.

8. What is codominance? Give an example. What is a sex-linked trait? Give an example.

9. Eye color in fruit flies is sex linked, with the recessive allele causing white eyes. Show the cross for a white eyed female and a red-eyed male. How many offspring will have white eyes and what is their sex?

### **EXTRA CREDIT**

On the imaginary planet Storng, there are Grift trees. These plants can have either smooth trunks (T) or rough trunks (t). They may have flowers that are blue (Ff), red (ff), or purple (Ff). Given the two parent trees, find the ratio of the types of children they would have. Show the punnett square.

Tree 1: Homozygous smooth trunk with purple flowers

Tree 2: Rough trunk with red flowers