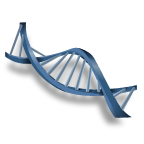
C:\Documents and Settings\gill_narinder\Local Settings\Temporary Internet Files\Content.IE5\TK0CW3WN\MC900278848[1].wmfMutations

**Answer the following questions**

1. Given the normal DNA sequence ACTGGTACTGTTA, identify each of the following as a substitution, loss, or addition of a base.
   1. ACTGCTACTGTTA
   2. ACTGGTACTGTT
   3. ACTGGGTACTGTTA
2. What are the three different effects a mutation can have on an individual?
3. Give an example of a positive mutation.
4. What is the effect on the mutation in sickle cell anemia?
5. What can happen when a mutated gene makes a protein that doesn’t function properly? Provide an example?
6. What is the purpose of gene therapy?
7. Mutations to DNA cause changes in organisms. Explain why this might be important to the survival of a species.
8. Predict whether a mutation in a human skin cell that results in cancer can be passed on to offspring. Explain.
9. Why is it important to be protected with a lead shield when you are getting dental X rays?
10. What must happen inside the cell for gene therapy treatment to be successful?
11. Why should you always use proper precautions when handling chemicals?
12. Why can sun tanning be dangerous for a skin cell?
13. How can viruses cause mutations?