Name: _____ Date: _____ Period: _____

Mutations – Changes in DNA – Notes

We will be using a sentence as an analogy representing a strand of DNA.

Our DNA analogy sentence is: **The fat cat ate the wee rat.**

If this sentence represents a strand of DNA, what does each word represent? _____

What does each letter represent? _____

Substitution mutation:

The fat cat ate the wee rat.

The fat cat ate the wet rat.

1. What changed? _____ Circle the change (the mutation)
2. What does this represent? _____
3. How would this type of change affect the protein? _____

Deletion mutation:

The fat cat ate the wee rat.

The fat cat att hew eer at.

4. What changed? _____ Circle the change (the mutation)
5. What does this represent? _____
6. How would this type of change affect the protein? _____

Insertion mutation:

The fat cat ate the wee rat.

The fab tca tat eth ewe era t.

7. What changed? _____ Circle the change (the mutation)
8. What does this represent? _____
9. How would this type of change affect the protein? _____

Point Mutations vs. Frameshift Mutations:

10. The _____ mutation is an example of a point mutation.
11. _____ and _____ are frameshift mutations.
12. **Explain** the difference between a point mutation and a frameshift mutation.

    _____

    _____

13. Which type has the most significant impact on the protein? _____ Why?

Synonymous ("Silent") Point Mutations:

14. These are point mutations that seem to have no effect on organisms.
    a. Do not cause a change in the _____ sequence
    b. Generally, do not cause a change in the protein—however, can _____ the amount of a specific _____ the cell makes or cause the structure of the protein to be changed in a manner that disrupts its functioning in the body
15. Example:
    a. TAT changed to TAC—both still code for _____
    b. CTC changed to CTA—both still code for _____

Mutation Impact:

16. The impact of a mutation also depends on _____ and _____ it occurs.
17. If there was a mutation in the DNA of a zygote, how would that impact the individual?

    _____
18. How might a mutation in a skin cell affect an individual? _____

    _____