Mutations Worksheet **Name** _____ Date: _____ **Per.** _____

During replication, transcription and translation there can be a mistake made in the bonding of complementary bases. These mistakes will lead to mutations. There are three main types of mutations: point mutations, insertion, and deletion mutations (the latter two are both frameshift mutations). In each of the following DNA sequences, you will use the mRNA and amino acid sequences to identify the mutation that occurred. Amino acid chains will become proteins. Remember back to the function of enzymes, which are proteins, and how a change in the shape of proteins will change their ability to work. Now add to this thought, changing the sequence of amino acids in a chain can change how the protein is folded and shaped, therefore changing its function. Use these sections of DNA to see what impact on the amino acid sequence is achieved by the different mutations! 10 points

Original DNA Sequence: T A C A C C T T G G C G A C G A C T

mRNA Sequence: _____

Amino Acid Sequence:

Mutated DNA Sequence #1: **T A C A T C T T G G C G A C G A C T**

What's the mRNA sequence?_____(Circle the change)

What will be the amino acid sequence? _____

How many amino acids are different? _____ What kind of mutation is this?

Mutated DNA Sequence #2: **T A C G A C C T T G G C G A C G A C T**

What's the mRNA sequence?_____(Circle the change)

What will be the amino acid sequence? _____

How many amino acids are different? _____ What kind of mutation is this?

Mutated DNA Sequence #3: **T A C A C C T T A G C G A C G A C T**

What's the mRNA sequence?_____(Circle the change)

What will be the amino acid sequence? _____

How many amino acids are different? _____ What kind of mutation is this?

Mutated DNA Sequence #4: **T A C A C C T T G G C G A C T A C T**

What's the mRNA sequence?_____(Circle the change)

What will be the amino acid sequence? _____

How many amino acids are different? _____ What kind of mutation is this?

Mutated DNA Sequence #5: **T A C A C C T T G G G A C G A C T**

What will be the corresponding mRNA sequence? _____

What will be the amino acid sequence? _____

How many amino acids are different? _____ What kind of mutation is this?