Mutations Worksheet **Name** _____ **Per.**

There are four main types of mutations: **substitution** (point), **deletion** (framshift), **insertion** (frameshift), **duplication.** In each of the following DNA sequences, you will use the mRNA and amino acid sequences to identify the mutation that occurred and the effects of each on, if any. Look and analyze carefully!

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:

SUBSTITUTION: 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? _____

Will there likely be effects? _____

What kind of mutation is this?

SUBSTITUTION: Mutated DNA Sequence #2: **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? _____

Will there likely be effects? _____

What kind of mutation is this?

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

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

What will be the amino acid sequence? _____

Will there likely be effects? _____

What kind of mutation is this?

INSERTION: Mutated DNA Sequence #4: **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? _____

Will there likely be effects? _____

What kind of mutation is this?

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

What will be the corresponding mRNA sequence? _____

What will be the amino acid sequence? _____

Will there likely be effects? _____

What kind of mutation is this?

Look at the table on page 346. Identify and define the 6 different types of gene mutations (NORMAL is not one of them ☺)

What gene mutations do you think would have the greatest effect, explain your answer.

What causes mutations? (pg. 348)

What is the difference between a body-cell and a sex-cell mutation? (pg. 349)

In the space below, draw, label and define the process of transcription and translation. Make sure to include the place where these processes happen and their purpose. The following vocabulary should be labeled and defined: double helix, transcription, helicase, RNA polymerase, mRNA, intron, exon, splicing, tRNA, amino acid, translation, codon, anticodon, and protein.