DNA Model Directions

Name: _____

Standard: Student develops and uses a model to describe the structure and function of DNA.

Directions: Create a 3D model of a DNA strand with all the main pieces of the genetic molecule represented in a scientifically correct way! Your model should show your understanding of the key vocabulary surrounding DNA, and your knowledge of how DNA is "set up!"

 ### The Three Level DNA must meet the following requirements:
- ❏ The backbone must be correctly modeled (containing phosphate and sugar)
- ❏ Each base must be represented (ATCG) by a different color or shape.
- ❏ The bases are paired correctly.
- ❏ Our strand is at least 6 "rungs" long (12 base pairs!)
- ❏ The DNA models the correct double helix shape.
- ❏ The DNA contains one "mutation," the mutation is labeled and explanation
- ❏ The following vocabulary words are defined and represented (shown) on the model: **backbone, base, gene, DNA, mutation**
- ❏ We answered the follow-up questions and turned them in!

	4	**3**	**2**	**1**
Quality/Effort	Model represents the student's best effort, use of time and quality.	Model is a sufficient representation of the student's time and effort.	Some evidence that time was not used wisely, some quality is lacking.	Model does not represent student's effort and participation in class.
Content	------------------	All the three level components are represented correctly (see above)	One major error in the representation of the requirements above (see circled item!)	Two or more major errors from the requirement list.

DNA Model Directions

Four Level DNA Model Directions   Name: _____

Standard: Student develops and uses a model to describe the structure and function of DNA.

Directions: Create a 3D model of a DNA model with all the main pieces of the genetic molecule represented in a scientifically correct way! Your model should show your understanding of the key vocabulary surrounding DNA, and your knowledge of how DNA is "set up!"

The Four Level DNA must meet the following requirements:
- ❏ The backbone must be correctly modeled (containing phosphate and sugar)
- ❏ Each base must be represented (ATCG) by a different color or shape.
- ❏ The bases are paired correctly.
- ❏ Our strand is at least 6 "rungs" long (12 base pairs!)
- ❏ The DNA models the correct double helix shape.
- ❏ The DNA contains one "mutation," the mutation is labeled, an explanation is included describing how the mutation is a deletion, insertion, or frameshift mutation.
- ❏ The following vocabulary words are defined on the model: **sugar, phosphate, base, gene, DNA, mutation**
- ❏ The project correctly models the hydrogen bonds holding the two strands together, and includes a written explanation of the "chemistry" behind these chemical bonds. The explanation includes why hydrogen bonds are so important to living organisms!

	4	**3**	**2**	**1**
Quality/Effort	Model represents the student's best effort, use of time and quality.	Model is a sufficient representation of the student's time and effort. explained.	Some evidence that time was not used wisely, some quality is lacking.	Model does not represent student's effort and participation in class.
Content	The hydrogen bonding is fully explained using detailed chemistry. The mutation selected is represented and described fully.	All the three level components are represented correctly (see above). Pieces of the four level attempts are not fully or correctly described.	One major error in the representation of the requirements above (see circled item!)	Two or more major errors from the requirement list.