DNA Replication Worksheet

DIRECTIONS. Answer the following questions about DNA replication in complete sentences.

1. Why does DNA replicate?

2. Is DNA replication describe as conservative or semi-conservative? Why?

3. What 2 enzymes are used during DNA replication? Describe what each does during replication.

4. When does DNA replication occur in a cell?

5. Where does DNA replication occur in a cell?

True/False – If the statement is false, correct the statement.

T or F - Cytosine, guanine, thymine and adenine are referred to as phosphates.

T or F – DNA is in the shape of a helix.

T or F – A nucleotide is made up of a sugar, phosphate and two nitrogen bases.

T or F – Replication is performed prior to cell division.

T or F – Adenine always pairs with guanine.

T or F – Complementary base pairing matches up complementary sugars.

T or F – The sides of the DNA molecule are made up of repeating nitrogen bases and sugars.

T or F – The letters that make up the DNA molecule code for genes.

T or F – Replication results in two strands of DNA, each of which has half of the original strand.

T or F – Covalent bonds hold nitrogen bases together, forming the rings of the DNA ladder.

Sentence Arrange – Put the steps of DNA replication in order by writing a number in the space before each statement.

_____ Two new molecules of DNA are created.
_____ DNA polymerase attach the free-floating nucleotides to the exposed nitrogen bases.
_____ Helicase begins to break the hydrogen bonds between nitrogen bases.
_____ Cell starts into the mitosis phase of the cell cycle.
_____ Free floating nucleotides pair up with exposed nitrogen bases.

Complete the statement

_____, guanine, cytosine, and thymine are the four nitrogen bases.
In DNA, _____ always forms hydrogen bonds with guanine.
The sequence of _____ carries the genetic information of an organism
The process of _____ produces a new copy of an organism's genetic information.
The double coiled shape of DNA is called a _____.

DNA Replication

1. Number the steps of DNA replication in the correct order (1, 2, 3):

_____ Daughter strands are formed using complementary base pairing.
_____ DNA unwinds
_____ The DNA of the daughter strands winds with together with its parent strand.

2. Why is DNA replication called "semi-conservative"? _____

3. What enzyme unwinds or unzips the parent strand? _____

4. What enzyme connects the new bases to the old bases in the DNA template?
_____

5. What enzyme connects the new nucleotides together and proofreads them?
_____

6. Show the complimentary base pairing that would occur in the replication of the short DNA molecule below. Use two different colored pencils (or different pens, markers, etc.) to show which strands are the original and which are newly synthesized.

Original DNA Strand 1	Original DNA Strand 2	→	Original DNA Strand 1 (copy from left)	New DNA Strand	+	New DNA Strand	Original DNA Strand 2 (copy from left)
A -	T	→			+		
C -	G	→			+		
T -	A	→			+		
T -	A	→			+		
A -	T	→			+		
C -	G	→			+		
G -	C	→			+		
C -	G	→			+		
C -	G	→			+		
G -	C	→			+		
A -	T	→			+		
T -	A	→			+		