

Name: \_\_\_\_\_

## DNA Replication Worksheet

DNA replication results in two DNA molecules, \_\_\_\_\_

- A. each with two new strands
- B. one with two new strands and one with 2 original strands
- C. each with two original strands
- D. each with one new strand and one original strand

DNA replication is said to be semiconservative because:

- A. both RNA and DNA synthesis are involved in the process.
- B. part of the telomere is lost during each round of replication.
- C. a new double helix contains one old and one new strand.
- D. each new strand is complementary, not identical, to its template.

In DNA, guanine always forms hydrogen bonds with \_\_\_\_\_.

The process of \_\_\_\_\_ produces a new copy of an organism's genetic information, which is passed on to a new cell.

What is the first step in the process of DNA replication? \_\_\_\_\_

Which enzyme is responsible for "unzipping" the DNA double helix? \_\_\_\_\_

Which enzyme is responsible for assembling the DNA during replication? \_\_\_\_\_

Why is DNA replication important to the growth and development of a multi-cellular organism?

Write the complementary bases of the strand below according to the base-pair rule.

A T C C A G T A G G A C

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### Writing a Full Strand:

1. A. Original DNA: CCT ATA TCT CTC TAT ATC TCT CAT ACT GTG TGT CTC TAT

Complementary DNA: \_\_\_\_\_

### B. *Make identical strands of DNA*

CCT ATA TCT CTC TAT ATC TCT CAT ACT GTG TGT CTC TAT (original)

\_\_\_\_\_ (new)

\_\_\_\_\_ (new)

\_\_\_\_\_ (complementary from 1A)

2. A. Original DNA: CCG GAT TTT AAT TAG CTA CTA TCG TAC TAC GTT GGT GCT

Complementary DNA: \_\_\_\_\_

### B. *Make identical strands of DNA*

CCG GAT TTT AAT TAG CTA CTA TCG TAC TAC GTT GGT GCT (original)

\_\_\_\_\_ (new)

\_\_\_\_\_ (new)

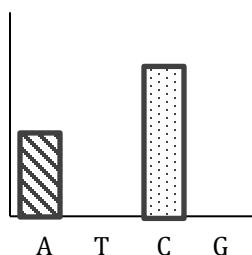
\_\_\_\_\_ (complementary from 2A)

The proportions of the bases are consistent within a species; however they do vary between species. Using the base-pair rules, complete the following table to show the percentage of each type of base in the five different organisms.

Organism	Percentage of each type of base			
	Adenine	Guanine	Cytosine	Thymine
Human	31		19	
Cow	28	22		
Salmon			21	29
Wheat	27			
Yeast	31	19		

Based on your results, write a general rule that explains the amount of A, T, C, and G bases in a DNA molecule.

The graph below shows the relative amount of bases (A and C) that are found in a particular segment of DNA. Draw bars that would represent the relative amounts of the remaining bases, T and G.



If 15% of a DNA sample is made up of thymine, T, what percentage of the sample is made up of adenine, A? \_\_\_\_\_  
 Explain your answer below:

In DNA replication:

- each new single helix is composed of 50 percent protein and 50 percent DNA protein.
- each new triple helix is composed of one old DNA strand and two new DNA strands.
- each new double helix is composed of one old protein strand and one new protein strand.
- each new double helix is composed of one old DNA strand and one new DNA strand.

Which of the following statements about DNA replication is Not correct?

- Unwinding of the DNA molecule occurs as hydrogen bonds break.
- Replication occurs as each base is paired with another exactly like it.
- The process is known as semiconservative replication because one old strand is conserved in the new molecule.
- The enzyme that catalyzes DNA replication is DNA polymerase.
- Complementary base pairs are held together with hydrogen bonds.

What do you understand about DNA replication?

What confuses you about DNA replication?

Thank you for answering these questions honestly. ☺