DNA Replication

Name: _____ **Per**: _____

Instructions: Print out this worksheet and answer the questions as you watch the videos located at the websites below. If you do not have a printer, you can write out the questions and answers on a separate sheet of paper.

Mr. Anderson http://www.youtube.com/watch?v=FBmO_rmXxIw

1. Why is it important for DNA replication to be accurate (no errors)?

2. When is DNA copied? During what part of the cell cycle?

3. What were the three original theories for how DNA copies itself?

4. Which theory turned out to be correct? How did they figure this out?

5. Why is DNA replication said to be "semiconservative"?

6. Explain what it means, "the strands of a DNA molecule are antiparralel."

7. What is the job of the enzyme helicase?

8. What is the job of single strand binding proteins (SSBP)?

9. What is the job of enzyme DNA polymerase?

10. What is the difference between the leading strand and the lagging strand? Why do we have to replicate DNA in this way?

11. What is the job of the enzyme **RNA primase**?

12. Why do we need DNA ligase?

13. What are Okazaki fragments?

14. What is a replication fork? Why are there two on each DNA being copied?

DNA Replication Animation http://www.johnkyrk.com/DNAreplication.html

Visit the site above and click through the presentation.

15. What molecule do the pink squares represent in the DNA model?

16. What molecule do the orange pentagons represent in the DNA model?

17. What two molecules do the light and dark teal shapes represent in the DNA model?
(Hint: they are the bases that form three hydrogen bonds with one another)

18. What two molecules do the green hexagons represent in the DNA model?
(Hint: they are the bases that form two hydrogen bonds with one another)

19. Errors in DNA replication are called _____.

20. What is the first step of DNA replication?

21. What is the second step of DNA replication?

22. What is the "initiation point"?

23. What is the third step of DNA replication on the leading strand?

24. What is the third step of DNA on the lagging strand (the one with Okazaki fragments)?

25. How does the speed of DNA replication differ in prokaryotes and eukaryotes?

26. How are the Okazaki fragments of the lagging strand connected together in order to create one continuous DNA backbone for each of the two daughter DNA molecules?