Describe the process of DNA replication in prokaryotes.

Helicase first breaks the hydrogen bonds between the bases to separate the double helix into two halves, forming a replication fork. **RNA primase** then adds RNA primers to both halves of the open helix. The primer for the leading strand is added furthest from the replication fork. The primer for the lagging strand is added closest to the replication fork. **DNA polymerase III** then adds deoxynucleotide triphosphates (following the base pairing rule of A matching with T and C matching with G), starting at the 3' end of each primer so that each newly synthesized strand grows in the 5' to 3' direction. The leading strand can continue to grow as the replication fork continues to be opened by helicase. The lagging strand must have additional primers added by primase as the fork opens up. **DNA polymerase I** will then remove the RNA primers on both the leading and lagging strand and replace them with deoxynucleotide triphosphates. The fragments left on the lagging strand are called Okazaki fragments. **Ligase** joins these fragments. The result of DNA replication is two double-stranded DNA molecules, both which contain one half of the molecule from the original "parent" molecule and one half of the molecule is newly synthesized.