

You have 30 minutes to complete the following problems. This quiz does not count for a grade; it is simply a diagnostic. If you have problems completing all four problems in 30 minutes, you do not have suitable prerequisites for the class.

1. Prove by induction that the sum of the first n positive odd numbers is n^2 .
2. Explain the primary difference between a stack and a queue. A sentence or two is fine.
3. How many nodes does a complete binary tree on n levels have? How many leaves? Recall that in a complete binary tree, all leaf nodes have the same depth.
4. You flip a (fair) coin 10 times. What is the probability that 4 of the flips are heads, and the other 6 are tails?