

Complete the following problems. Show all work to receive full credit. You are not allowed to discuss these problems with anyone, or to look for solutions anywhere except in your own head. That means you are not allowed to look at other textbooks or online for solutions. Using any other resources will be considered cheating and will be subject to consequences as set forth in the syllabus.

1. What are the next 3 items in the pattern O, T, T, F, F, S, S, E, N, T, E, ...?
2. What are the next 3 numbers in the pattern

1, 5, 1, 10, 1, 15, ...?

3. Some number of coins are spread out on a table. They lie either heads up or tails up. Unfortunately you are blindfolded and thus both the coins and the table upon which they sit are hidden from view. Certainly you can feel your way across the table and count the total number of coins on the table's surface, but you cannot determine if any individual coin rests heads up or down (perhaps you are wearing gloves). You are informed of one fact (beyond the total number of coins on the table): Someone tells you the number of coins that are lying heads up. You can now rearrange the coins, turn any of them over, and move them in any way you wish, as long as the final configuration has all the coins resting (heads or tails up) on the table. Your challenge is to turn over whatever coins you wish and divide the coins into two collections so that one collection of coins contains the same number of heads up coins as the other collection contains. Explain how many coins to turn over, and why your solution is guaranteed to work no matter how many coins are on the table and how many start out heads up.

I certify that all work contained on this quiz is my own. Sign here: