

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, 10, 1, 20, 1, 30, ...?

3. Consider the following mathematical illusion: A regular deck of 52 playing cards is shuffled several times by an audience member until everyone agrees that the cards are completely shuffled. Then, without looking at the cards themselves, the magician divides the deck into two equal piles of 26 cards. The magician taps both piles of face-down cards three times. Then, one by one, the magician reveals the cards of both piles. Magically, the magician is able to have the cards arrange themselves so that the number of cards showing black suits in the first pile is identical to the number of cards showing red suits in the second pile. Your challenge is to figure out the secret to this illusion. Explain how this illusion works every time, regardless of the number of red cards in the first pile.

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