All except the last question are about Pascal’s triangle.

1. The triangle was studied before him in
   (a) India
   (b) Persia
   (c) China
   (d) All of the above

2. True/False: Every positive integer appears at least twice in the triangle.

3. True/False: The 3rd diagonal contains the triangular numbers.

4. True/False: The hockey-stick identity says that if you add up the first so-many entries in an NW-SE diagonal, the answer to the sum is the value immediately to the SW of the last entry.

5. True/False: Assuming we number the rows from the 0th row, the middle entry in row 2020 (that is, the binomial coefficient 2020 choose 1010), is even.

6. The "shallow" diagonals correspond to what would be the NE-SW diagonals if the rows were left-justified. The shallow diagonals sum to
   (a) Powers of 2
   (b) Consecutive squares
   (c) Fibonacci numbers
   (d) Catalan numbers

7. Peeta and Katniss go out for dinner with four other married couples. Each person shakes hands with everyone they don’t know. Later Katniss does a survey and finds that every one of the nine other people shook hands with a different number of people. How many people did Peeta shake hands with?