1. Given the letters JAPAN, how many ways are there to arrange the 5 letters if the two A's can not be next to each other?

2. We call a natural number "odd looking" if all its digits are odd. How many 4-digit odd looking numbers are there?

3. How many distinct words of any (nonzero) length can be formed using the letters of KEPLER at most once each?

   (Clarification: such a word can have two Es, but can't have duplicates of any other letter.) Words like "EREP", "REEL", "LEPER", "RE", are some examples:

4. David is the leader of the David Committee. He wants to appoint 3 people to be on the Head Council. He has to choose from 9 applicants, three of which are Tommy, Jack, and Michael. In how many ways can he choose the people to be on the Council, so that at least one of Tommy, Jack, and Michael is chosen?

5. Challenge: There is a class consisting of 20 students. In how many different ways can these 20 students be split into 10 pairs?

ANSWER:

1. 36

2. 625

3. 1010

4. 64

5. 654729075