

## Question 1

For search network, users already express their intents through their queries. For display network, ads are shown in websites where users do not show their intentions, so advertisers do not know what users want. Therefore ads on display network are much risky and cheaper than ads on search network.

## Question 2

Sellers in VCG auction for items earn the money right after closing the deal. However, sellers in VCG auction for ads earn the money until users click the ads which win the slots. Hence, ad sellers need to consider not only the prices but also the quality of the ads.

## Question 3

Because few users produces most of the query data, models which predict users' behavior do well on those few users. On the other hand, models fail to predict most users' behavior due to the lack of most users' data. Therefore, advertisers do not know what most users actually want.

## Question 4

Because the long tail distribution of the queries shows that there is a long tail of rare queries, advertisers do not know how to set their keywords based on those rare queries. Therefore, Google ad sense manager expand advertisers' bid phrases to cover those rare queries.

## Question 5

24481,76584,5786  
0,3,5  
24481,76584,5786  
10,3,5  
24481,76584,5786  
10,3,5