# Guesstimation

Guesstimation is defined as estimation without complete information, or as the name suggests estimation based on guess work. Guesstimates are very common interview questions which are asked to test the following capabilities of the candidate:

- Problem solving
- Creativity
- Thinking process

Guesstimates are performed mainly for two purposes:

1. Estimation: Determining a near real number of any entity or product. For example number of flights taking off from an airport, number of sales in a day etc
2. Market sizing: Determination of size of a market for any product which has to be launched.

Here are some important points to keep in mind while solving a guesstimate in an interview

1. The interviewer is taking your interview to test your problem solving skills. So ensure that you **converse with the interviewer regularly while solving any guesstimate**, ask him/her questions, raise doubts related to the given case if you need some information. Do not sit with the problem alone and wait for the final answer to begin the conversation. Conversing will leave a positive impression on the interviewer as you will be showcasing your skills directly.

2. In most of the interviews, **the interviewer is looking out for the approach you use to solve the guesstimate.** So if a case is presented to you, do not jump to the first strategy/approach that comes into your mind, it is always suggested to think for 1-2 minutes and develop 2-3 strategies/approaches, then implement the best possible strategy.

3. **SCOPING**: If a case is presented to you, **firstly define the scope of the problem. You need to determine the limits of the problem.** For example, if asked to determine market size for a product, ask the interviewer regarding the target market, is the product for the whole world, or Asia or South east asia, or India or any state of India.

4. **Identify the constraints/bottlenecks**: Identify the constraints/bottlenecks in the case, they will help you determine the most effective strategy. For example, if

you are asked to determine the number of flights taking off from an airport, the constraint could be number of runways, number of passengers etc.

5. Take realistic assumptions

**Strategies for Guesstimation**

1. **Supply vs Demand strategy**: For any product/entity the guesstimate can be performed either from supply side or demand side. For example if you had to guess the revenue of a restaurant, there could be two approaches, the first could be from supply side: The number of burners which can cook particular number of dishes that can be served by restaurant can help us determine the revenue from supply perspective. The second approach could be to determining revenue from demand side i.e, revenue paid by the customers.

2. **Time/unit analysis**: After comprehending the case, determine the time for which you need to guess, either it is per hour, per day, per week, per month or per year. Also determine the what number of units you have to guess. For example if you had to determine the sales of cigarettes in India, ask the interviewer if the sales have to be determined per day or per month or per year basis. Also ask if consumption of individual cigarette has to be determined or pack of cigarettes. Time/unit analysis will help you narrow down the problem for effective and easy solving.

3. **Filters**: Apply filter like urban/rural, male/female, age, income based etc, to narrow down your problem.

4. **Peak Analysis**: This is a very common approach for estimation, you determine the peak value for the given case. After determination of peak value(which is 100%), you can determine middle value(50% of peak value) and lower value(25% of peak value). For example if you want to determine the revenue of a restaurant per day, determine the revenue for peak hours of the day, and then determine corresponding middle and lower value.

**Demonstration 1**:

Approximation of geographical area of India.

Solution: This is one of the easiest guesstimates to start with and asked in many interviews. So if you remember the map of India, it approximately resembles the shape of a rhombus. So if we determine the measure of the two diagonals(distance from Leh to Kanyakumari and distance from Kutch to Assam), we can approximate the area of India. For simplicity of the calculation, we can deduce from the map that the the length and breadth of of India to be approximately equal. But, how do we determine the distances if you do not know the real distances. We will use Indian railways to find out the distances we require to calculate the area of India. As you might know, it takes 24 hours to travel from Mumbai to New Delhi or vice versa, the average speed of Indian trains in 60 Kmph. Thus we get the distance to be 24 x 60 = 1440 ~ 1400 Km. If you look in the map, the distance between Mumbai and New Delhi is approximately half of the length of India, thus we have the length of our diagonals as 2800 Km. The area of rhombus is 0.5 x product of diagonals. Thus approximate area of India is 0.5 x 2800 x 2800 = 3920000 sq Km or 3.92 million square Km. If you Google the area of India, you get answer as 3,28,000 sq Km or 3.28 million square km, so our guesstimate is fairly near to the real value.

In interviews, you can be asked to approximate the area of your city or state too.

**Demonstration 2**: Approximate the number of pizza cooked by a Domino's outlet in a day.

Solution: To determine number of pizza being cooked in a day by a Dominos outlet, we will use the peak value strategy assuming that the outlet is open for 12 hours every day, from 11 am to 11 pm.
We can approach this problem either from demand side or supply side, demand side would involve approximating the number of customers visiting an outlet and how many pizza they demand, which will be a little complicated. The supply side would involve how many pizza can an outlet produce in 12 hours. This will depend on the number of ovens and time taken to cook a pizza. We will determine the number of pizza from supply side, thus considering that its a general Domino's store, we can assume that there will be 5 ovens to cook a pizza (if you are not able to determine the number of ovens, you can always ask the interviewer or take a realistic assumption on your own). Assuming a pizza takes 10 minutes to cook in an oven and you can prepare 2 pizza in an oven simultaneously. Assuming that at peak time, due to huge demand all 5 ovens work at full capacity, so in an hour the number of pizza cooked by 5 ovens is 5 x 6 x 2= 60( one oven takes 10 minute to cook a pizza, so you can cook 12 pizza per hour in one oven).

Now applying peak value strategy, assuming the peak sales hours for an dominos outlet are 5 hours, thus in peak hours total number of pizza cooked are 60 x 5 = 300. In middle sales hours which can be assumed as 4 hours, 5 ovens will cook 50% of their maximum capacity i.e, 30 pizza per per hour, which leads to 120 pizza being cooked in normal sales hours. In lower sales hours, ovens will work at 25% of their maximum capacity i.e, 5 ovens will cook 25% of their maximum capacity which leads to 15 pizza per hour. Assuming the lower sales occurs during 3 hours, the number of pizza cooked come out to be 45 pizza. So we get the total number of pizza cooked by Dominos outlet as:
Peak sale ( 5 hours) -300 Pizzas
Normal sale (4 hours) - 120 Pizzas
Lowest sale ( 3 hours) - 45 Pizzas
Total pizza cooked in a day- 465 Pizza's

You can follow the following links to learn more about guesstimates

1. Guesstimate approaches and example: http://mlncdu.ac.in/placementcell/Info/ExclusiveCaseInterviewFreebook-%20Cracking%20a%20Case%20or%20Two.pdf
2. Download pdf file of Guesstimate cases in Indian context: https://kupdf.com/download/guesstimate-in-the-indian-context_598edbcedc0d607112300d24_pdf
3. Market sizing and guesstimates: https://mconsultingprep.com/case-interview-market-sizing-guesstimate/
4. Youtube videos to learn about guesstimation:
    a. https://www.youtube.com/watch?v=t3BX-MqE5iI
    b. Guesstimate to determine number of trains in Delhi Metro: https://www.youtube.com/watch?v=7XFlVi6v4bU

**Assessment Guesstimates:**

1. Estimate the revenue of a normal college canteen in a day.
2. Determine approximate the area of your city.
3. Estimate the sales of smartphones in a day in your city.