

Bootcamp Week 9



4/11/22

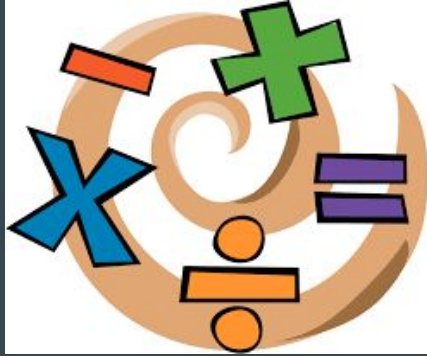
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Brain teasers

Brain teasers

- Common in Superdays, but could happen in first rounds
- Boutiques are more likely to ask them, but don't count the BB's out
- The interviewer is trying to see how you solve seemingly impossible problems and how you think under pressure
- Could happen in the beginning to throw you off, in the middle to interrupt a groove, or at the end to make you think you're about to crash
- Not everyone gets these, but just be aware they can happen and have a gameplan if it does

Different Types



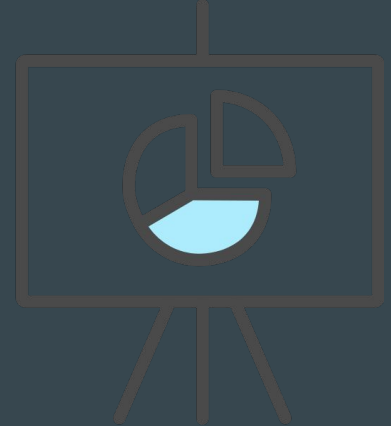
Math



Statistics



Random



Market Sizing

Math Questions

- Take percentages: What is 22% of 50?
 - Same as 50% of 22 so the answer is 11.
- Square roots: What is the square root of 4694?
 - Start with what you know.
 - 2×2 is 4. So 20×20 is 400.
 - 30×30 is 900. Let's speed it up.
 - 60×60 is 3600. 70×70 is 4900. Oh it's between 60 and 70!
 - 4694 is closer to 4900 than it is to 3600 so I'll estimate 68. Answer: 68.512
- What is the angle of the clock hands at 3:16?
 - Know that each minute is 6 degrees.
 - Know that the **hour hand moves too!** 6 degrees every 12 min off of the hour.
 - At 3:15, minute hand is on the 3 exactly, but the hour hand is $\frac{1}{4}$ the way between 3 and 4. So $\frac{1}{4}$ of 30 is 7.5.

Statistics

- Know how to calculate expected values. You'll need these for "fair bet" questions.
 - $EV = (\text{probability})(\text{outcome})$
 - 30% chance of winning \$100... $EV = 30\$$
- Know how to calculate joint probability. For example, bag of 10 rocks. 6 red, 4 blue. Chance of pulling 2 blue with replacement.
 - Multiply the two together. $(4/10)*(4/10) = .16$
- Know replacement rules. For example, bag of 10 rocks. 6 red, 4 blue. Chance of pulling 2 blue without replacement?
 - Multiply the two together but be aware of the changing denominators. $(4/10)*(3/9) = .13$
- Monty Hall Problem

Example: Monty Hall Problem

In this game, you must choose among three closed doors. One has a surprise car behind it, and two of them have goats behind them.

Do you pick door A, B, or C?

Example: Monty Hall Problem

I open door [one door that you have not chosen], which has a goat behind it. Would you like to switch your door choice to the door which you have neither chosen nor I have opened, or would you like to stay with your door?

Answer: Monty Hall Problem

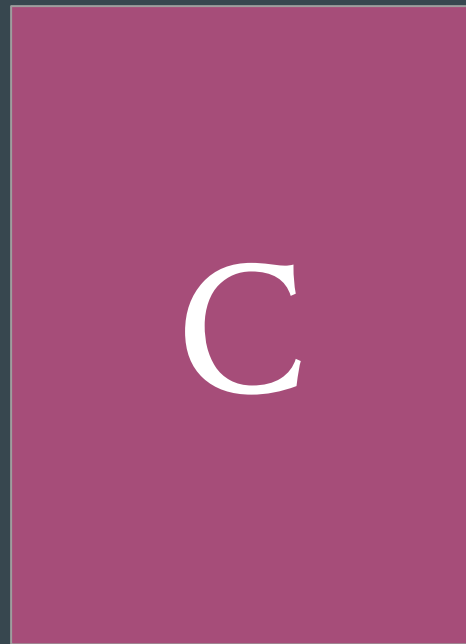
Working through the problem:

- At first, you have a 1 in 3 chance of picking the correct door
- After I open one door among the remaining two doors, you have more information than the initial 1 in 3 choice
- You **SHOULD** switch doors. If you do not switch, you have 1/3rd chance of winning. You can improve your chances to be better than 1/3rd by switching doors

$1/3$



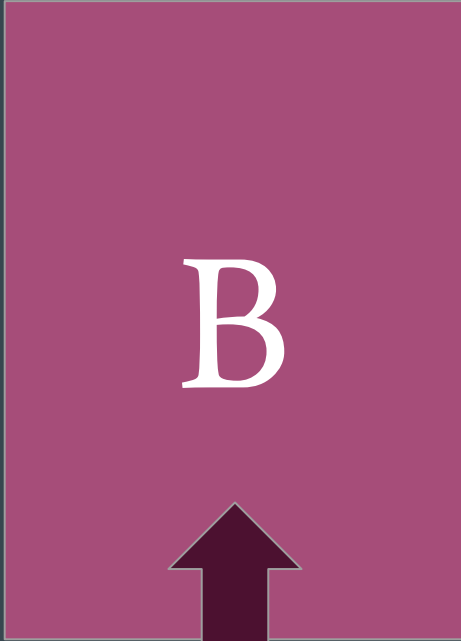
$2/3$



$1/3$



$2/3$



$2/3$



0

Example 2: 3 Switches, 1 Bulb

There is a lightbulb inside a closet. The door is closed, and you cannot see if the light is on or off through the door. However, you know the light is off to start.

Outside the closet, there are three light switches.

One of the door light switches controls the lightbulb in the closet. You can flip the switches however you want, but once you open the door, you can no longer touch the switches.

How do you figure out which of the three light switches controls the light?

Answer: 3 Switches, 1 Bulb

1. Flip switch number 1 and wait a few minutes. Flip switch number 1 back to its original position, and then immediately flip switch number 2.
2. Open the door.
3. If the light is on, then switch number 2 controls it
4. If the light is off, then go and feel the bulb with your hand.
 - a. If the bulb is hot, then switch number 1 controls it.
 - b. If the bulb is cold, then switch number 3, the one you did not touch, controls it.

Random

- Tell me a joke
- Why shouldn't I hire you?
 - Same as 3 weaknesses.
- Why are you here?
 - Same as tell me about yourself.
- Why didn't you go to a business school?
 - Same as why Middlebury?
- Where else are you interviewing? / Where are you in the process?
 - Be honest. It can only help you.
- If we gave you an offer right now, would you take it?
 - Again, be honest.
- Sell me this pen.
- Tell me how to make an omelet.
- What is a leader?
- Tell me something that's not on your resume.
- If you had to find a needle in a haystack, how would you do it

Market Sizing

Market Sizing Questions

- Example: “What is the size of the US mattress market, in revenue per year?”
- What are interviewers looking for? Your ability to:
 - Solve problems in a logical, structured way
 - Execute mathematical calculations with accuracy and speed
 - Communicate in a clear, concise, and confident way

Dimensional Analysis

Dimensional Analysis

How many seconds are in one day?

$$\frac{24 \cancel{\text{hr}}}{1 \text{ day}} \frac{60 \cancel{\text{min}}}{1 \cancel{\text{hr}}} \frac{60 \text{s}}{1 \cancel{\text{min}}} = \frac{\text{s}}{\text{day}}$$

86,400 s/day

How to Answer a Market Sizing Question

- 1. Ask clarifying questions
 - Make sure you fully understand what you are being asked to calculate or estimate. You should understand how market size is being defined and understand what types of products should be included and excluded in your calculations.
- 2. Where can we start: Usually want to begin with unit of consumption (i.e. households or people)
- 3. Clearly outline assumptions and make calculations using round numbers
- 4. Sense check your answer

Questions?