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Consulting math practice pdf

Crack interview Sep. 04, 2020 Case interview training programs. Join now. At IGotAnOffer we have helped more than 30,000 candidates prepare for their consultation. Students who go through our full training program are a happy bunch: more than 80% of them receive an offer at McKinsey, BCG or Bain. Developing fast and accurate math skills is a big part of success in the case of interviews. In the following guide we have listed a number of free tools, formulas and tips that you can use to become much faster in math and radically improve your chances of getting a suggestion. Part 1: The Case of Mathematics Applications and Mental Muscle Mathematics Tools. But if you're like us, you probably haven't exercised that muscle much since you left high school. As a result, preparation for the interview should include some training in mathematics. If you don't remember how to calculate basic add-ons, subsections, separations and multiplications without a calculator, this is what you should focus on first. Our interview programs for McKinsey and BCG and Bain include retraining on this topic. In addition, Khan Academy has also gathered useful resources. Here are the ones we recommend looking at if you need in-depth arithmetic retraining: Once you feel comfortable with the basics you need to regularly exercise your mental math muscles to become as fast and accurate as possible. Our McKinsey and BCG and Bain interview programs include a PDF workbook with mathematical exercises. We recommend doing a few each day so that you get more and more comfortable over time. You can also use the following resources: We haven't checked all of them, but some of the candidates we've worked with have used them in the past and found them useful. Mathematical tool Preplounge. This web tool is very useful for the practice of add-ons, subtraction, multiplication, division and percentages. You can both sharpen your accurate and math scores with it. Victor Cheng's mathematics tool. This tool is similar to the Preplounge one, but the user experience is less smooth in our opinion. Magoosh mental math app (iOS and Android). If you want to practice your mental maths on the go this free mobile app is great. This allows you to work on different types of computing using psychic flash cards math. You can also track your progress while you're studying. Psychic Mathematical Maps Challenge App (iOS). This mobile app allows you to work on your mental math in the same way as the previous one. Don't let old school graphics deter you from using it. The app itself is actually very good. Mental Games (Android). If you are an Android user this one is a good substitute for a mental math card call one on iOS. Part 2: The case of math formula references we listed above have a long way to go in helping you bring your math skills to a good level. In addition, you will also need to be for basic business and financial concepts you will find in your interviews. We have put together a list of important mathematical formulas for you with concepts that you should really master for your interviews and concepts that are optional in our experience. 2.1. Must Know Mathematical Income Formulas - Volume x Cost Cost - Variable Expenses Profit - Profit - Profit Profit (aka Profitability) - Profit/Income Return on Investment (ROI) - Annual Earnings /Initial Investment Breakeven (aka Payback Period) - Initial Investment/Annual Profit If You Have Any Issues About Formulas Above, you can ask them at the bottom also, you can also read our in-depth articles on financial concepts for the interview and for McKinsey PST or watch this video where we explain these concepts in great detail. 2.2. Additional mathematical formulas with an in-depth knowledge of the business terms below and their respective formulas are not required to get offers from McKinsey, BCG, Bain and other firms in our experience. But having an approximate idea of what they might be at hand. EBITDA - EBITDA Amortization and Depreciation Earnings are, in fact, earnings with interest, taxes, depreciation and amortization. It is useful to compare companies in different industries because it brings out the accounting effects of debt and taxes, which vary greatly between, say, Facebook (virtually debt-free) and ExxonMobil (tons of debt to finance infrastructure projects). Read more here. NPV - Net current value Let's say you invest \$1,000 in Project A and \$1,000 in Project B. You expect to receive an initial investment of \$500 from A within one week. And you expect to get your initial investment of \$500 from B in 5 years. Intuitively you probably find that more valuable than B as you get the same amount of money, but faster. NPV aims to adjust future cash flows so that different investments such as A and B can be easily compared. Equity Yield - Earnings/Share yield (ROE) is an indicator of financial performance similar to ROI. Roi is commonly used for offline projects, while ROE is used for companies. Read more here. Return on Assets - Profit/Total Asset Yield (ROA) is an alternative measure for ROE and a good indicator of how profitable the company is compared to its total assets. Read more here. Part 3: Fast Math Tips and Techniques Standard Long Dividing and Multiplying Approaches are great because they are common and you can use them for any calculation. But they are also very slow. In our experience, you can become much faster in math using non-standard approaches that we Below. All of these approaches have one thing in common: they aim to reshuffle and simplify calculations to find the easiest way to the outcome. Let's go through each and every them one by one. 3.1. Rounding the numbers The first step to becoming faster is to round up the numbers when you can. 365 days becomes 350. The US population of 326m becomes 300m. Etc. Etc. You will understand the idea. The tricky thing about rounding numbers is that if you're around them (too much you risk a) distorting the end result/search, and b) your interviewer is telling you to round up the numbers less. Rounding rooms are more art than science, but in our experience the following two tips tend to work well: We usually recommend no round numbers of more than 10%. This is a rough rule, but gives good results based on conversations with past candidates. You also have to alternate between rounding and rounding down to allow the effects to undo. For example, if you calculate A x B, we recommend rounding A UP and rounding up B DOWN to compensate each other. Please note that you can't always round up the numbers. Also, even after the county numbers calculations can still be difficult. So let's look at some tips that can help in these situations. 3.2. Handling a large number of large numbers of people is difficult to handle because of all the 0s. To be faster, you need to use notations that allow you to get rid of these annoying 0s. We recommend you use labels and scientific notation if you don't yet. Labels (k, m, b) Use tags for thousands (k), a million (m) and a billion (b). You will write numbers faster and this will make you simplify the calculations. Let's use 20,000 x 6,000,000 as an example. No label: 20,000 x 60,000,000 ??? ... Labels: 20k x 6m and 120k x 120b This approach also works for units. Let's try 480,000,000,000, divided into 240,000,000. No label: 480,000,000,000 / 240,000,000 ??? ... Laboratories: 480b / 240m and 480k / 240 th 2k Scientific notation When you can not use labels, scientific notation is a good alternative. If you're not sure what it is, you're really missing out. But fortunately, Khan Academy has put together a good ground on the subject here. Sample multiplication: 600 x 500 x 6 x 5 x 102 x 102 - 30 x 104 - 300,000 - 300k Division Example: (720,000 / 1200) / 30 x (72 / (12 x 3)x x (104)x x x 104) / (102 x 10) - (72/36) x (10) 20 When you're comfortable with labels and scientific notations you can even start mixing them: 200k x 600k 2 x 6 x 104 x x 2 x 6 x 10 x 10 x 10 x 120 3.3. Factoring To be fast in math, you should avoid recording long divisions and multiplications because they take a long time. In our experience, doing a few simple calculations is faster and leading to fewer errors than doing one big long calculation. A great way to achieve this is to factor in and expand expressions to create simpler calculations. If you're not sure what the basics of factoring and expanding, can use Khan Academy again here and here. Let's start with factoring. Simple numbers: 5, 15, 25, 25. In the case of interviews and tests like McKinsey PST or BCG Potential test some numbers come very often and it is useful to know the shortcuts to handle them. Here are some of these figures: 5, 15, 25, 50, 75, etc. For example, consider 36 x 25. It is unclear what the result is. And many people will have to write down the multiplication on paper to find the answer. However, there is a much faster way based on that 25 and 100/4. Here's a quick way to get an answer: 36 x 25 (36/4) x 100 x 9 x 100 900 Here's another example: 68 x 25. Again, the answer is not immediately obvious. If you use a shortcut we just talked about; divide into 4 first, then multiply by 100: 68 x 25 (68/4) x 100 x 17 x 100 and 1700 factoring works for both multiplication and division. When divided into 25, you just need to divide by 100 and then multiply by 4. In many situations, this will save you time on a long division. Here are a few examples: 2600 / 25 y (2600 / 100) x 4 x 26 x 4 and 104 1625 / 2 5 (1,625 / 100) x 4 and 16.25 x 4 and 65 The big thing about this factoring approach is something that you can actually use it for other numbers than 25. Here's a list that we find helpful to get you started: 2.5 - 10 / 4 5 - 10 / 2 7.5 - 10 x 3 / 4 15 - 10 x 3 / 2 25 - 100 / 4 50 x 100 / 2 75 x 100 x 3 / 4 and T.D. Once you are comfortable using this approach you can also mix it with scientific notation on numbers such as 0.75, 0.5, 0.25 etc. Factor factor/denominator for units if there are no simple numbers (e.g. 5, 25, 50, etc.), the next best thing you can do is try the numerator factor and/or signage for simplification. Here are a few examples: Factoring Numerator: 300 / 4 x 3 x 100 / 4 x 3 x 25 75 Factoring Denominator: 432 / 12 (432 / 4) / 3 th 108 / 3 36 Looking for common factors: 90 / 42 th 6 x 15 / 6 x 7 x 15 / 7 3.4. Expanding Another easy way to avoid recording long divisions and multiplications is to expand computations into simple expressions. Expanding with Extension additions with add-ons is intuitive for most people. The idea is to break one of the terms into two simple numbers (e.g. 5, 10; 25; etc.) to make calculations easier. Here are a few examples: Multiply: 68 x 35 x 68 x (10 x 25) 105 / 15 (15 x 40) / 15 th 105 / 15 40 th 7 47 Notice of being that when expanding 35 we carefully chose to expand to 25 so we could use the helpful tips we learned in the factoring section. You should keep this in mind when expanding expressions. Expanding with subtractionMi Extension with subtraction is less intuitive for most people. But it's actually extremely effective, especially if one of the terms deal with ends with high digits like 7, 8 or 9. Here are a few examples: Multiply: 68 x 35 (70 - 2) x 35 x 70 x 35 - 70 x 70 x 100 / 4 700 - 70 1750 and 630 x 2380 Division: 570 / 30 (600 - 30) / 30 - 20 - 1 19 3.5. Growth Rates Finally, you also often have to deal with the rate of growth in the case of an interview. This can lead to extremely time-consuming calculations, so it's important that you learn how to deal with them effectively. Multiply the growth rate together let's imagine that your client's income is \$100 million. In this situation, revenues for two years will be equal: Revenue for two years - \$100 million x (1 and 20%) x (1 - 10%) - \$100 million x 1.2 x 1.1 x 100 x (1.2 x 0.12) - \$100 million x 1.32 and \$132 million Growth by 20% for one year followed by 10% for another year, \$1.32 million Thus, corresponds to growth of 32% overall. Note that this approach also works well with negative growth rates. Assessment of challenging growth rates by 20% and then a reduction of 20% does not equal flat growth (0%). It's: Exact growth rate: 1.07 x 1.07 x 1.07 x 1.07 - 1 ... ??? This calculation will take a long time to complete. : 7% x 5 years and 35% in reality, if you make an accurate calculation (1,075 - 1) you will find that the actual growth rate is 40%. Thus, the evaluation method gives a result that is actually quite close. In the case of an interview your interviewer will always be happy with you taking that shortcut as doing accurate calculations takes too long. If you want to fast track your interview preparations and maximize your chances of getting an offer from McKinsey, BCG or Bain, come and train with us. More than 80% of candidates enrolled in our programs end up being offered by their target firm. We know this because we give away half of our people who don't know it. McKinsey Case Interview BCG BCG Training Program Interview Curriculum If you have any questions about the math interview case, feel free to ask them below and we'll be more than happy to answer them. All questions are good questions, so go ahead! IGotAnOffer team

