

# Quant Self-diagnostic Quiz

## Instructions

The following are sample problems and calculations that are representative of the types calculations required in management consulting case interviews. To use this tool effectively, you should not look at or review the problems before you take the dedicated 1 hour to solve them. Furthermore, reviewing the **Solution Guide** before solving the problems renders the **Self-diagnostic Quiz** completely useless, so I discourage that.

Solve the problems as if you were in a consulting interview, without using a calculator or a spreadsheet - pen and paper calculations are permitted. I recommend that you print the problems when you solve them, so you are not distracted by your computer. You can also use the printout for any pen and paper calculations and/or a separate sheet of scratch paper.

In interviews, reaching a correct answer for quantitative problems is more important than speed. This means you should take as much time as you need to get the right answer - you won't receive much credit for reaching the wrong answer quickly.

Use a stopwatch (or a smartphone) and measure how much time you spend on solving these problems in minutes (and seconds). Try to complete all the problems (except the Extra Credit Problem) in **1 hour**. If you need more time, that's OK, but be aware of the overall time you take for the **Self-diagnostic Quiz**. Once you are done, review the **Solutions & Evaluation Guidelines** to score yourself and interpret your score.

## Resources

To improve your quant skills, take the **FastMath Ace the Case [Online Course](#)**, which is designed specifically to teach the quant skills you need to succeed in Case Interviews. The first half of the course teaches techniques to perform numerical calculations quickly and efficiently without using a calculator or spreadsheet (as required in case interviews). The second half of the course reviews the most common types of quantitative problems given in case interviews. More information on the course and **Solutions** to this **Self-diagnostic Quiz** are available on the course page (see above link).

## Assessment Questions

1. What is  $5,000 \times 17,000$  ? (4 Pts)
2. A major automobile manufacturer is launching a luxury electric sedan. They expect their average selling price to be \$75,000, and to sell 28,000 cars next year. What will their expected revenue be from this car next year? (8 Pts)

3. What is  $570 \div 15$  ? (4 Pts)

Give the following three answers as percentages to **three significant digits**. Example:  
 $4 \div 16 = 25.0\%$

4. What is  $1,200 \div 1,800$  ? (4 Pts)
5. What is  $400 \div 2,400$  ? (6 Pts)
6. What is  $340 \div 120$  ? (6 Pts)



7. A firm had revenue of \$500 *Million* in 2013. Their revenue is expected to grow by 5% for the foreseeable future. What will their approximate revenue be in 2017 if these forecasts hold? (4 Pts)
  
8. Your client manufactures a product which costs \$50 per unit to produce. They want to have 20% margin on all sales. What should their sales price be? (8 Pts)
  
9. Your client sells 1.5 *Million* cases of canned food per year at \$30 per case. If they lower their prices by 10% which increases their sales volume by 20%, what is their percentage change in annual revenue? (14 Pts)
  
10. Your client sells a product at \$30 per unit and sells 140,000 units per year. If they drop their price by 20%, what percentage increase in units sold do they need to break-even on revenue? (18 Pts)
  
11. Estimate the number of gas stations in the United States? (12 Pts)



12. Your client manufactures and sells a consumer product. Each unit sells for \$75. Their factory has monthly rent of \$80,000, utility costs of \$50,000, and equipment maintenance costs of \$70,000. The materials cost is \$35 per unit, and the labor cost is \$15 per unit.

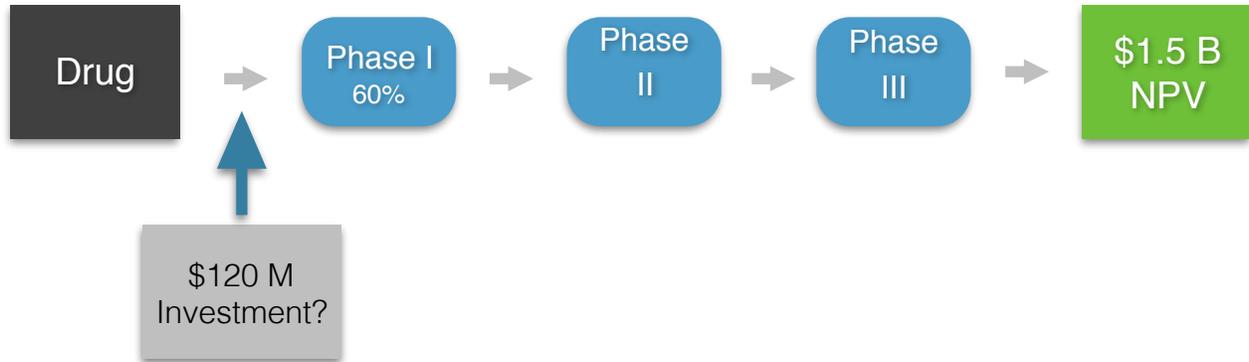
A) How many units do they need to sell each month to break-even? (6 Pts)

B) How many units do they need to sell to have a profit of \$1 *Million* per month? (6 Pts)

**Total Time:** \_\_\_\_\_

### Extra Credit Problem

13. Your client is a pharmaceutical manufacturer who is about to begin FDA clinical trials on a new drug. If the new drug successfully passes all three phases of clinical trials, your client will gain a profit stream which has a **Present Value** of \$1.5 Billion. The historical success rates for each phase of the clinical trial are 60%, 40%, and 80% for Phase I, Phase II, and Phase III respectively. The drug must pass all three phases in order to generate revenue.



Your client is considering making a \$120 Million investment which would increase the number of participants in the Phase II trials which they believe will boost the success rate of the Phase II trials. This investment must be made prior to entering Phase I. What percentage increase in the Phase II success rate would your client need to achieve in order to justify this investment?