\*\*General Question Set\*\*

**1. What is your current program of study/profession?**

I am working as a financial service representative at CIBC.

**2. How much experience do you have in this field of study/work?**

I have 5 years experiences in this field.

**3. Do you enjoy your studies/work? If yes, which part interests you the most? If no, what do you not like about it?**

Yeah. I enjoy my work. I am interested in the financial product.

**4. What tasks or jobs would you say you mostly do in your field of study/work?**

I introduce the financial products to the clients.

**5. Can you tell me some of your likes and dislikes and what you enjoy doing?**

I like listening to podcast, reading economic related books, travel and watching movies.

I don’t like sports.

**6. What are your values when it comes to your field of study?**

I help people increase their portfolio and minimize the risk in financial market.

**7. What occupation are you aiming towards, if you are not already employed?**

Not applicable

**8. What skills have you been developing which you feel will be the most important for this future career?**

I think the most thing is to get solid knowledge of the financial field.

**9. What are your current goals for yourself? If you have none, do you think you will have some in the future?**

I would like to pass the CFA test and bring my career to the next level and make more money in the stock market.

**10. Do you prefer to use to use the hand-held calculator or computer calculator?**

I prefer to use the hand-held calculator. However, I have no problem using a calculator on computer.

**11. Do you have experience using the command line of your computer? And using a calculator on your computer?**

No, I never used the command line.

Yes, occasionally.

**12. Are you comfortable enough to use a calculator without a Graphical Interface and just with the command line?**

I prefer to use a calculator with a Graphical Interface. But I’d like to try one with command line if the instruction of it is not hard to follow.

**13. Currently, my team and I are designing a scientific calculator and we are hoping to get your input to improve our design. How much experience do you have with a Scientific Calculator, and how often do you use one?**

I hardly use a scientific calculator.

**14. Are there any functions you feel should be included in a Scientific Calculator but aren’t?**

No.

**15. Does your operating system provide any calculator? if yes, Do you think its functions are enough for you?**

Yes. Those functions are enough for me.

**16. What function/ functions do you usually need from a Scientific Calculator most?**

What I need from a calculator is simply addition, subtraction, multiplication and division.

**17. Do you think you will use a scientific calculator in your field of study and in your future career. If yes, what will some of your uses for it, if no, do you think you would use for personal use?**

No, I don’t think I need a scientific calculator for personal use neither.

**18. Do you use Scientific Calculator during your work or your exams or your course projects or anything else?**

Yes, I use it in my work and CFA exams

**19. Our calculator will include the functions for exponential functions, arccos, log, Gamma, Mean Absolute Deviation, Standard Deviation, sinh and a special exponential function which allows variables and expressions for the base instead of natural numbers. Can you tell us which function you would find most usable for yourself? Why?**

I think standard deviation is most usable. It can tell me about the fluctuation in the financial market.

**20. If no, is it because you don’t see yourself using any of the functions mentioned, or some other reason?**

Not applicable

**21. How familiar are you with these functions and how they work?**

Most familiar with the basic functions like addition, subtraction, division and multiplication.

**22. Do you think it is necessary that a Scientific Calculator should take a function as input?**

It is not necessary. I think use numbers as input is enough for me.

**23. Are there any features you would like to see included in this calculator that you think would make the design better?**

It will be better if there’s a button can get the results from a few steps back.

**24. What should the precision for a Scientific Calculator be?**

Two decimal places are enough for me.

**25. When using a calculator do you prefer to receive a step-by-step solution or simply a final answer?**

I think a step-by-step solution would be better.

**26. Do you think a history is essential for a calculator? If yes, how big should the history be?**

Yes, I’d prefer a calculator with history to keep a record of the last 10 calculations (at least).

**27. Do you have any positive experiences with a Scientific Calculator, if yes please elaborate?**

No, I hardly used one.

**28. Do you have any negative experiences with a Scientific Calculator, if yes please elaborate?**

No, I hardly used one.

**29. In your opinion, what would improve your experience when using a Scientific Calculator on a computer? What features would improve its usage for you?**

A calculator with step-by-step history memory is good enough for me.

**Persona Description**

Ying Li is a 30-year-old girl. She holds a master’s degree in finance, and she likes reading book related to the economic and financial market. She works as a financial service representative in CIBC for 5 years. Although she has a good job now, she would like to take her career to the next level by preparing for CFA test. She uses the calculator on mobile occasionally to calculate the profit of her investment portfolio.

|  |  |
| --- | --- |
| Name | Ying Li |
| Gender | Female |
| Age | 30 |
| Disabilities and restrictions | None |
| Education | Master’s degree in finance |
| Profession | Financial service representative |
| Goals | * Maximize the profit in stock market * Help her client build a good investment portfolio |
| Frustrations | Some calculators she used doesn’t store step-by-step solution makes it harder to retrieve the numbers in previous steps |
| Hobbies | * Listening to podcast * Reading economic related books * Travel * Watching movies |
| Needs | She wants to have a function showing the result of a few steps back |
| Location of use | At work and personal use |
| Computer literacy | Medium |
| Mathematical proficiency | high |
|  |  |

Summary of Interview

This interview questions designed by using funnel model which start with general questions towards more specific questions during the course of interview. The questions are planned ahead and agreed by all the members of the team. We can get the personal information from interviewee through the general questions to build the persona. The specific questions are more about the experience and frustration interviewee get when using the calculator.

Analysis of Interview

* Interviewee prefer simple calculator. Physical or computer application, she can accept both of them.
* Interviewee hardly use the transcendental function.
* Interviewee care about the precision of the result.
* Interviewee want to have function to retrieve the solutions from previous steps.

Definition of function and glossary

**Logarithm [1]:**

In mathematics, the logarithm is the ***inverse function*** [2] to ***exponentiation*** [3]**.** That means the logarithm of a given number *x* is the [exponent](https://en.wikipedia.org/wiki/Exponent) to which another fixed number, the ***base*** [4] *b*, must be raised, to produce that number *x*. In the simplest case, the logarithm counts the number of occurrences of the same factor in repeated multiplication

The logarithm of *x* to *base* *b* is denoted as log*b*(*x*), for any two positive ***real numbers*** [5] *b* and *x*, where *b* is not equal to 1, is always a unique real number *y*.

**Glossary**

**Inverse function:**

a function that "reverses" another function: if the function *f* applied to an input *x* gives a result of *y*, then applying its inverse function *g* to *y* gives the result *x*, i.e., *g*(*y*) = *x* if and only if *f*(*x*) = *y*.[[](https://en.wikipedia.org/wiki/Inverse_function#cite_note-Keisler-2)

**Exponentiation:**

a mathematical operation, written as bn, involving two numbers, the base b and the exponent or power n, and pronounced as "b raised to the power of n". When n is a positive integer, exponentiation corresponds to repeated multiplication of the base: that is, bn is the product of multiplying n bases.

**Base:**

the **base** is the number *b* in an expression of the form *bn*.

**Real numbers:**

Real numbers can be defined as the union of both the rational and irrational numbers. They can be both positive or negative and are denoted by the symbol “R”. All the natural numbers, decimals and fractions come under this category.

**Figure [1]:**

Chart

Description automatically generated

**Reference**

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