HP Calculator Quiz Answers

Richard Nelson

Here are the answers to the quiz. Do not read them until you have tried the quiz !

Question	Answer	Question	Answer	Question	Answer
1.	D	8.	C	15.	F
2.	E	9.	E	16.	C
3.	B, see below.	10.	HP-16C	17.	E
4.	F	11.	HP-21S	18.	D
5.	A	12.	G	19.	Pioneer
6.	K	13.	E	20.	HP-32SII
7.	D, see below.	14	D		

Answer Explanations and Justifications

1. I had heard that 31 digits were "hard coded" in the HP48 software and I asked Jim Donnlley to check it out. He didn't believe me but when he searched the tangent code he found that π to 31 digits was in the ROM.

2. This is speculation, of course, but based on my ten years at EduCALC, and from other estimates, I have heard the number approached one million. That is 100,000 per year or 8,333 per month, or about 1,937 per week or 387 per work day. These numbers would be ten year averages. *Additional remarks from Włodek: HP do not release sales figures, so all this is to some extent speculation, as Richard says. Nevertheless, in the early days of the HP-41 family, before Richard began to work for EduCALC, I heard unofficial reports of much higher sales, up to 50,000 units a month for a few months. Even averaging 20,000 a month in the first four years, that would have meant sales of almost a million. At 100,000 a year for the subsequent six years, the total sold would have been closer to one and a half million. So, answers E and F are both acceptable.*

3. If you answered C you may take credit for being an optimist. After nearly four years in an R&D environment watching new graduates and old timers alike, I don't see the calculator used very much by engineers. I see Excel and the MS four function calculator on a computer on everyone's desk being used. The only calculators I see are those "left over" from college.

4. Checking Wlodek's *A Guide to HP Handheld Calculator and Computers* you will find that the model numbers listed have been used at least three times. 10A, 10B, 10C; 32E, 32S, 32SII; 41C, 41CV, 41CX; 85A, 85B, 85F; 94D, 94E, 94F.

5. The HP-10A with printer, HP-10B Pioneer, HP-10BII Pioneer, HP-10C Slim line "10 Series". If you answered B: take credit.

6. I believe that it is a traditional requirement for HP to produce quality machines not cheap machines. The feature/qualities listed are in approximate order of importance. **A:** A key per function thinking defines a calculator, (Bill Wickes) **B:** Handheld defines its size (and vertical format?), **C:** Convenience is why we buy the machine, **D:** Reliable defines an HP machine, **E:** Accurate is what makes HP machines superior, **F:** Fast is NOT an HP quality but required if **C:** is to work. I can pull my HP48 out of its case, press the keys for a problem and turn off the machine and return it to its case faster than it takes to just turn on. You may argue with me on the importance of this requirement. My HP48GX tends to be full. Time is everything. **G:** Programmable, this requirement is always reviewed by HP for each model and it usually just barely "passes" because so few of their customers actually seriously program their machines. Programmability ensures that the next generation will happen. **H:** Customizable is a quality unique to HP's machines. Why not allow the user to make his or her own machine the way it works best? **I:** Expandable doesn't require that HP provide all kinds of accessories. It does allow the machine to be used for many other purposes as long as HP provides the technical assistance for those who need it. **J:** I/O, in the days of the Internet, is a no brainer.

7. In the early days of computers, with short word sizes, the numerical accuracy of calculations involving the conversion from decimal to binary and back were inaccurate. The IEEE sponsored a standard that had not passed when the HP-71 was introduced, but the designers decided to use the standard for this Saturn processor machine. Certain changes (for programmability?) were made on the models that followed, but the HP-71 was the first. If you answered E, take credit.

8. All who use it praises the Computer Scientist HP-16C. Once again HP designed a machine that provided exceptional performance in addressing the needs of the Computer Scientist. The market was small, however, and this model soon disappeared. It is still treasured by those who continue to use it. Jake Schwartz programmed the complete HP-16C functionality into the HP48 including some of the Owner's Manual applications. This is one of the best "emulations" ever done.

9. The Statistic student has to struggle with lots of odd tables in the back of the book when taking a "Stat" course. The HP-21S eliminated those tables and provided greater accuracy. This was another "limited market" machine that once again demonstrated the extraordinary thought and planning that has made HP "the best".

10. The horizontal format of the HP-16C and those of the other slim line models "violated" the rules of a vertical handheld calculator. It was their total dimensions that allowed this. It was a really great shape and size and the non-vertical format worked because it was a "slim line."

11. The vertically higher but still thin format of the Pioneer series machines was a major step forward for the very slow slim line "10 Series" machines.

12. The Topcat series (91, 92, 97) were designed to allow HP to better sell to the US Government. It seems that the then very expensive calculators left on the desks of government workers disappeared easily. The idea was to have a machine low enough to easily slip into and locked in the center desk drawer. Today calculators are so cheap that they are left on desks with no fear of their "growing legs" and "walking away" at night.

13. HP is very famous for using RPN. In the early days of the "Calculator wars" TI used to have to defend their use of Algebraic Logic. What most people seldom realize that HP has always used the appropriate logic system for the class of problems the machine was designed to solve. A very disappointing situation is the fact that if someone wants to buy a book that explains RPN (Post fix logic) it would have to be a used, out of print, book. I don't believe that an HP person working on calculators ***today*** could properly defend the use of RPN. Of course the ideal is to apply the concepts of the HP28/48/49 (object oriented) that allow the use of both - the best of both worlds. Do you remember question 6 H? I do not support the dumbing down of the customer as TI does with AOS. A quality company dedicates a small part of its resources making the customer a smarter better person. Is this concept implied in quality? No, but quality (with its price) justifies customer education.

14. Lucky 13 is a model number reserved for last. While few engineers are superstitious, no market savvy person would use 13 in a model number. We humans (even technical ones) are strange indeed.

15. I remember going to Chicago for a WCES show (the last in Chicago) during a very bad snowstorm and it was extremely cold. HP invited me to a special sales presentation of new machines at a downtown hotel. I was told the HP-95C was the first machine that the HP "lab" designed to meet sales people requirements. It was a partitioned memory machine with user keys. I never heard why the machine was discontinued. I have a real copy of the Owner's manual. A*dditional remarks from W*ł*odek: the best explanation I have heard is that it was decided the HP-95C was too similar to the HP-97 to merit putting both on the market. As the HP-97 had the advantage of storage on magnetic cards, it was the HP-95C that was cancelled.*

16. Code names are used primarily for confidentiality when working with people outside the company. They have all kinds of other "human" qualities but their use is a legal one. While the other "answers" may be true they are not the *"reason"* for code name use.

17. The HP-92 is a Topcat model highly prized by collectors. It did not have a magnetic card reader.

18. The HP-20C doesn't exist.

19. The Pioneer series once again demonstrates what the charter of the Advanced Products Division spelled out when the HP-35A started the Scientific Calculator business. Manufacturers seem to follow a familiar path. They introduce a wonderfully small machine and as future models "improve" the machine keeps getting bigger and bigger.

20. The HP-32SII – its "story" is told on two wall posters that Richard showed at the conference – the HP32S was redesigned to show more functions on the keyboard; it was also given extra features including a fraction mode that was found to have a bug. Lesson to be learned. Always get agreements in writing. Of course it doesn't matter now that everything and everyone is "gone". Collectors, however, may look for machines with the fraction (and others) bug.

How Did You Do?

Number of questions missed	**Score**	**Rating**
0 to 2	90 - 100%	Expert/Collector.
3 to 4	80 - 89%	Serious User/Club member.
5 to 6	70 - 79%	Casual User/old timer.
7 to 8	60 - 69%	Single machine user.
9 to 10	50 - 59%	Manager
> 10	—	TI, Casio or Sharp User; or maybe you've had too much Christmas spirit.

Now try to find some more Christmas pudding!