

Collecting, Displaying, Demonstrating, and Storing HP Calculators

Richard J. Nelson

Introduction

What is a collectable? People collect just about anything from buttons to motor cars. The reasons will vary from having a special interest in the collected item to inheriting a collection. Collectables are interesting, and are a great conversation topic for friends to talk about.

My mother once received a small angel figurine as a gift from a casual friend. She displayed it on a shelf for all to see. Her other friends saw the angel and they also bought her angels for gifts. Before long - five years - she had become an angel “collector.” Fig. 1. shows a small corner used to display her collection. The angels range in size from 2 inches to over 20 inches. Some have fiber optic colored lighting and moving wings. Some represent various cultures and beliefs. They are made of a dozen different materials and each has a story.



Photo by Richard J. Nelson

Fig. 1 – Example of a collectable – 45 of hundreds of angels.

When the number of people who collect things increases, a market for buying and selling them develops. At this point the “collection” starts to increase in value. This often justifies the collection and its value grows over a life time.

The angel example illustrates that many collections do not start out as a formal activity. If forethought were put into the items to collect there would be several major considerations. Imagine hundreds or even thousands of the collectable. Where would they be kept? How long will they last? What about the accessories such as descriptive literature or owner’s manuals? Of course the most important part of deciding what you collect is cost and your own personal interest.

Collecting HP calculators

Calculators are attractive as a collectable to technical people because they have not been around for very long – about 43 years commercially – and the technology of calculators covers the same technology as computers. The very first calculators (4 bangers) were very expensive selling for hundreds of dollars⁽¹⁾.

The ability to make instant calculations of large numbers using a small electronic device was useful to just about every technical person in society. Their collectable size is “reasonable” because they don’t take up much space. Because millions and millions of calculators have been made by hundreds of manufacturers⁽²⁾ the calculator has become a low cost and very common tool.

Because so many different calculators have been made, most calculator collectors restrict the kinds or types of machines they collect. A few examples are:

1. LED display machines.
2. 1970s machines.
3. A specific manufacturer’s machines.
4. Mechanical calculators.

5. Programmable calculators.
6. Calculators from a specific country, esp. Russia.
7. Unusual machines, technology advances.
8. Machines with “collector’s” value
9. Machines of a style, function set, or type that appeal to the collector.

If you know a serious calculator collector – you have met some of them in the pages of *HP Solve* in the Customer Corner column – you will discover that no matter what kind of collection they have, they always have a few HP’s. If you are an HP user you can understand why.

What most collectors fail to immediately recognize is the magnitude of materials that soon become a part of collecting calculators. Fig. 2 shows a few examples of associated items. User Guides, books, sales literature, Ads, accessories, Limited Editions, Anniversary Editions, and Foreign Editions are just a few categories of associated HP calculator collectables.

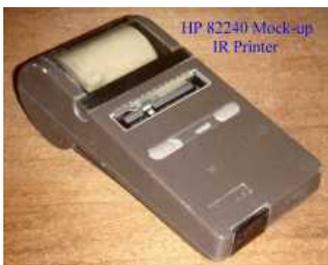


Photo by Richard J. Nelson

Fig. 2a – Prototypes.

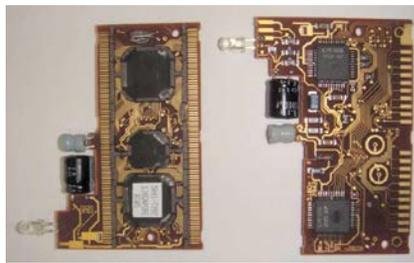


Photo by Richard J. Nelson

Fig. 2b – Assemblies.



Photo by Richard J. Nelson

Fig. 2c – AC Adapters.



Photo by Richard J. Nelson

Fig. 2d – 3rd Party.

Basically there are three types of HP calculator collectors.

1. The **casual collector**. This is usually a long time user of HP machines who has bought many of the new models as they are introduced.
2. The **user collector**. This is often the casual collector who has become more of a real collector because he buys and sells calculators in order to build his collection. His wife and family are the limiting factors in “how he operates.”
3. The **formal collector**. This is the person who is collecting just to collect and the challenge is growth and completion. Often these collectors have extra money to spend and these are the people who drive the prices up on eBay.

Displaying HP Calculators

One of the biggest issues every HP calculator collector has is being able to display their machines. If you have a dozen or less, they may be placed on any convenient book shelf or small display case. If you want to display your machines - most collectors don’t because of the obvious reasons of space - you will consider shelves, display cases, and stands. If you just have a couple hundred machines the problem is manageable, but what if you have over a thousand calculators? In terms of HP’s machines the number of the basic models is about 120, but if you also include the many variations on these models, and the models that were never produced, etc. the number is multiplied by five or more.

A calculator stand is useful for displaying your HP calculators because it puts the machine at a nice angle for viewing. Most stands are designed and made for using the calculator (rather than displaying) and

several examples will be shown. Let's first list a few objectives for a calculator stand.

Calculator Stand Objectives

- a. To put the display at a more normal angle for easier reading.
- b. To reduce display glare from various lighting sources – sunlight from a window or strong glare from overhead lights.
- c. To provide stability.
- d. To provide a wireless interface or external power supply (larger batteries).

What makes a good calculator stand?

1. Portable, easily carried with the calculator.
2. Sturdy, pressing any key should not cause tilting.
3. Easily adjustable angle.
4. Won't slide or move.
5. Is attractive.
6. Is reasonable in cost.

The various attributes of calculator stands are best illustrated with photos. Fig. 3 shows four basic mid 70's designs of calculator stands.

- A. Low cost plastic folding stand, 3-1/4" wide, 6-1/8" high, and sold under the brand names CalConverter and Countdown. The Countdown brand by Bibi was made in Hong Kong, and sold for 99¢ at *Thrifty*. The stand has 16 adjustable positions, folds flat, and fits most calculators. It has a desk top gripping rubber base and is of sturdy construction. It weighs 2.91 oz. and the 16 calculator angles range from 21 degrees to 57 degrees.
- B. Rubber coated steel rod is used for this simple low cost nonadjustable stand. The HWD dimensions are: 2-7/16" x 2-1/2", x 5-9/16." At 1.29 oz. the calculator angle is 26 degrees.

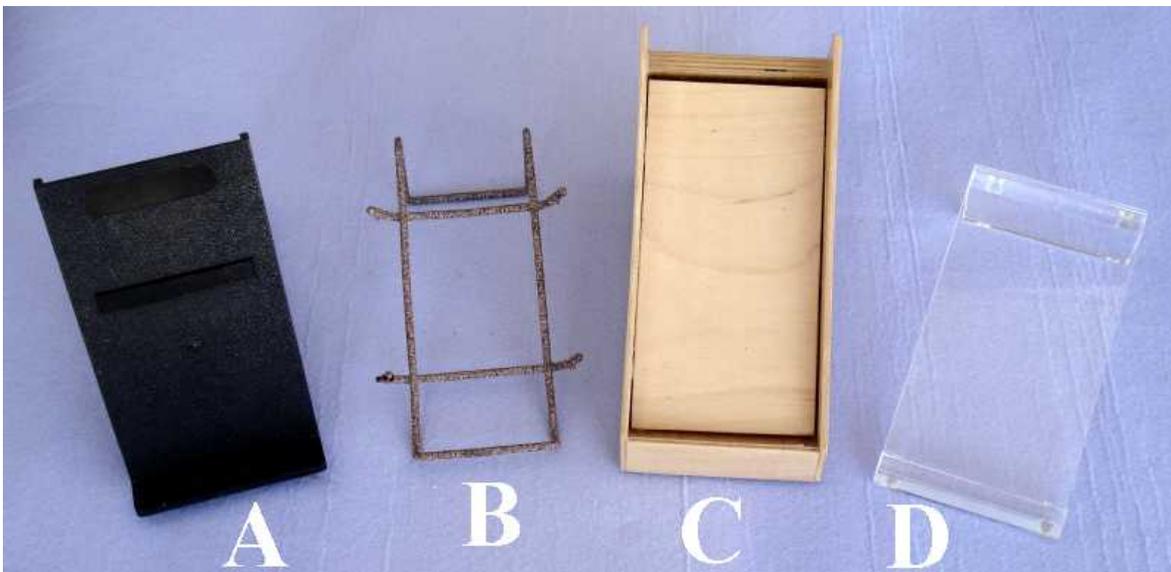


Fig. 3a – Four basic designs of vertical format calculator stands front view. See text for details.

- C. This is a homemade wood stand that looks like it should open to store accessories inside. Instead the space is about half filled with plaster(?) which make it quite heavy – 4 pounds. It is 4-1/2” high, 3-3/8” wide, and 6-3/4” deep with an angle of 30 degrees.
- D. One of the most popular calculator stand styles is the acrylic stand. It always looks modern, and it is still popular today. This stand is 1-3/4” high, 3-3/16” wide, and 6-9/16” deep, it weighs 4.75 oz. and the calculator angle is 15 degrees.

Stands for larger (office and BASIC) machines would be wider and, if necessary higher. Fig. 5 shows a smoky acrylic stand made specifically for the HP-71B calculator.

Individual stands would add to the space required for a calculator display and perhaps a wider stand would be better. Fig. 6 shows a smoky acrylic stand that is suitable to display multiple machines.

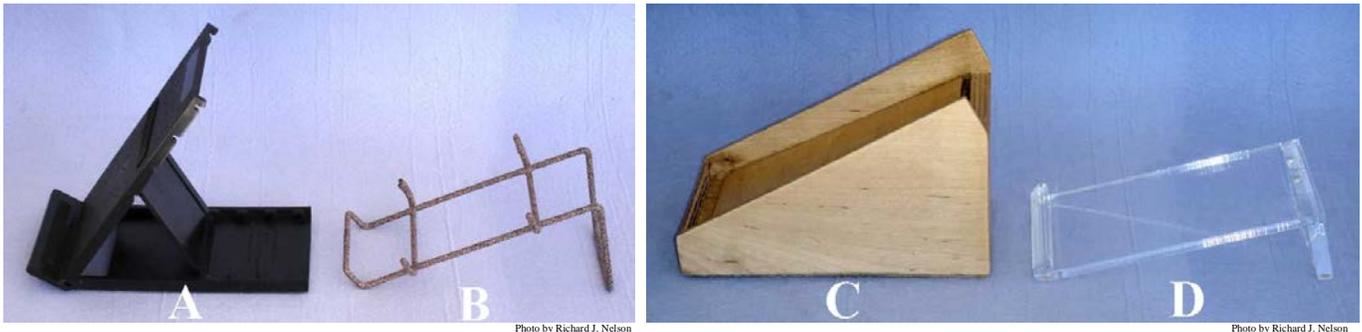


Fig. 3b – Two designs of calculator stands side view. Fig. 3c – Side views of calculator stands. See text for details.

If a sloping (45° - 60°) shelf book shelf were built to display calculators a strip of 1 inch quarter round should be added to the bottom to support the machines.



Fig. 4 – Four basic designs of Fig. 3 with calculators in place.



Photo by Richard J. Nelson

Fig. 5a – Two prototype examples of a dark smoky acrylic stand showing two densities.



Photo by Richard J. Nelson

Fig. 5b – HP-71B calculator on a dark smoky acrylic stand.

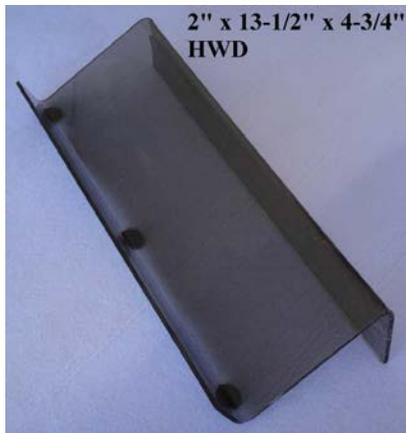


Photo by Richard J. Nelson



Photo by Richard J. Nelson

Fig. 6 – 8 oz. wide stand example. Fig. 7 – Four Pioneer series machines on one 29 degree calculator stand.

Many old time HP calculator users, especially collectors and authors, have many of the machines that HP has made during the last 41 years. Figs. 8 and 9 show a large HP calculator stand that puts 30 machines at a convenient location to be easily found. This stand is easily moved and it allows items to “pile” up

around it on the desk top. This space is nice for User's Guides. It is a much more convenient solution to having the machines piled up in a drawer.

The calculator stand shown in Figs. 8 & 9 has proven to be very useful to keep a large number of calculators within easy reach. The front of the stand is 8-3/4" above the desk top. It is 20" wide, 4-9/16" deep, and the shelf is 7-1/8" high. It is made of gray painted 7/16" plywood.

The calculator compartment is tilted back 60 degrees. HP calculators are wedged shaped with the display end thicker than the keyboard end. As shown, there are 7 machines stacked one "on top" of each other. The wedge effect is to have the front (top) machine nearly vertical. It is desirable for them to lay back for better stability. For the 4-1/8" shelf depth the angle probably should be closer to 75 degrees. The best angle will depend on how many machines are stacked. The "wedge angle" ranges from $\approx 7^\circ$ for an HP-35A to $\approx 2^\circ$ for a HP 30b.

One of the nice features of the 30 calculator stand is that you may see the tops of the machines. When the higher models are at the rear the machines are more easily recognized and the desired machine may be easily selected, pulled out, and then replaced.



Photo by Richard J. Nelson

Fig. 8 – Calculator stand that will hold (store) up to 30 HP calculators depending on the models used.



Photo by Richard J. Nelson

Fig. 9 – Oblique view of the 30 calculator stand showing the steep angle to keep the machines handy.

This stand is easily moved around. If you move to another location to work you may just pick it up and move it. The weight as shown is 13.4 pounds.

There is one interesting calculator stand specification that never seems to be mentioned in any of the promotional literature or box information. The missing and most important specification is the angle⁽⁴⁾ of the stand. In all the literature I have seen the angle is described as “most desirable angle”, “upward angle”, “higher angle”, “natural angle”, “ideal angle”, “a better angle”, or “a suitable angle.” I have never seen the actual angle in degrees specified. It is clear from the various angles given for the few examples in Figs. 3 - 7 that there is not a “best angle.”

If you Google “calculator stand” you will get: “About 56,600,000 results.” Bing returns “48,900,000 results.”

Fig. 10 shows a formal display case of a few of Wlodek’s calculators in the UK. The Display case was provided by Imperial College for a conference and it is not optimum for calculator displaying.



Photo by Jake Schwartz.

Fig. 10 – Formal Display case.

Demonstrating HP Calculators

One of the issues that collectors have is the number of and variety of batteries that are used for them. Let's estimate the cost of batteries for the few calculators shown in the 30 calculator stand. At a conservative \$3 per calculator that is \$90 just for batteries. A casual HP collector will have at least 200 machines. Keeping all of these machines in batteries is a major cost issue.

To demonstrate a calculator means that it has to power up and work. If it is an HP classic machine the display will use battery hungry LED displays and an AC adapter would probably be used to demonstrate these seven machines. There are other LED display models and the space (and weight⁽³⁾) of the adapters adds to the issues of a well displayed working HP calculator collection. See Fig. 2d on page 2. AC adapters require AC outlets and wires. Some HP calculators cannot be AC adapter powered without their batteries and to do so will damage the machine. The Woodstock machines fall into this category. All of these are considerations for the calculator collector's display area(s). Yes, a full room is required for a moderate HP calculator collection. Don't forget all the related materials listed above that are associated with each machine.

One solution to the calculator power (battery) problem is to have a universal AC adapter that has an adjustable DC supply voltage that is set to the requirements of the machine. A proper set of leads with E-Z Hook⁽⁵⁾ type connectors on the end to allow clipping on to the battery terminals in the battery compartment is reasonable in terms of cost and convenience. A single AC adapter could power any calculator made.

Let's not forget about adequate table top space – with handy AC outlets.- to spread out the many machines being explored and demonstrated.

Storing HP Calculators

A small hand held calculator with all of its accessories and other associated materials such as user Guides etc. takes a considerable amount of storage space. The manuals will store on a book shelf. Other paper materials such as instruction sheets, photos and ads will store nicely in a filing cabinet. Storing the calculators, however, is an important challenge to be carefully considered.

An HP Calculator collection will often develop in stages as it grows. The collector I am writing about here is the User Collector as described above (page 2). The primary interest is the calculators and not the collection. The result of this approach is that nicely organized displaying and storing of the machines is a nice idea, but not the most important task to be worked on. The important task is acquiring and learning



Fig. 11 – Dresser is used to store calculators.



Fig. 12 – Another Dresser drawer.

about the next machine. I asked several collectors to take a photograph of the storage of their machines. I received one. For obvious reasons he didn't want to be identified.

I have had a lot of technical materials in storage which I unpacked after I retired. Unpacking a life time of materials is a long process, but at least I am organizing what I have. My calculator "collection" is slowly getting organized. Collection is in quotes because I do not fall into any of the three categories as defined above. I am a user type collector with the exception that I haven't sold my calculators.

In my case I dedicated a dining room sideboard into a cabinet for calculators. I built a shelf to put on top of the sideboard and the "calculator department" is shown in Fig. 13. This provides accessible storage for my few hundred machines.



Fig. 13 – RJN Calc. Department.



Fig. 14 – This is the top drawer of Fig. 13. The four sideboard drawers are lined with green felt and the machines are "stacked" only if they are of the same type or model number. This is an old photo. Many boxes of machines have been unpacked since this drawer was started.

The white boxes on top are used to store various "other" calculators, hard cases, and soft cases. The two shelves, now completely packed are used to store boxed machines. The left section of the sideboard is used for various items such as power supplies, and other related equipment. The filing cabinets and book shelves are in another room.

While tidying up after the last HHC Conference I noticed two card board boxes that were left from HP bringing calculators. They were designed for shipping calculators from China and they are made of double corrugated cardboard. Since I was driving from CA to back AZ I had the space, but I regret only taking one. See Fig. 15. One of the issues related to storing calculators is that they tend to get stacked and finding a particular model may require a bit of moving machines and looking.

The box eliminates the searching if each compartment is identified and an inventory is made. Having an inventory is very important for many reasons, and it becomes ever more important as your collection grows. Here are the specifications of the box. 10-3/8" x 21-3/8" x 10-5/5/8" HWD. It has 35 compartments approximately 3-1/2" wide and 1-1/8" high. I am not sure if the box was designed for a specific machine or to be a generic box. I put several larger machines into various compartments to illustrate. B2 is an HP-12C. There is lots of space. B4 is an HP 49g+, C7 is an HP-71B, D5 is an HP 40gs, and D2 is

an HP 30b in a bubble pack bag. The back (bottom) of the box is white foam to also protect the machines. I presume that there was a similar piece of foam for the top as well because there is space above the compartment dividers. Just about every handheld machine that HP has made will fit. Even the very wide OfficeCalc series will fit if put into a top or bottom compartment with a divider cut away. The Woodstock machines are 2-1/2" thick and are too heavy. The HP-75C/D machines are too wide to fit properly as well. This box, however, would make a great means to store HP calculators if they must be stacked up in a closet. Even the small compartments at the sides may be used for interface cables. The lettering columns however, should be "A" through "G" if they are used.



Photo by Richard J. Nelson

Fig. 15 – Corrugated calculator shipping box. The 35 compartments are suitable for most of HP's models.

I know one collector who has every HP Machine ever made in its original box. This is actually his second collection (the first complete set didn't have the "original box" requirement) that he intends to pass the collection on to his children. Obviously this collection is stored in the same manner as a large gold coin collection because of its very high value.

The value issue is one that begins to take importance as the collection and investment grows. One collector I talked to mentioned that he has his collection stored in three different locations. If someone were to break in and steal some machines the loss would be less.

The first task at storing a calculator is removing the cells (batteries.) ALL cells leak and the damage the electrolytic causes greatly diminishes the value of the machine – either for use or for future sale.

Observations and Conclusions

Each of the four topics of the title deserve its own a book or separate article so this single article cannot

delve into very much detail. HP calculator collectors expand their collections because of the tremendous depth and technology changes of the various models of the last 41 years of HP calculator production.

The three basic HP Calculator Collectors are: the Casual, the User, and the Formal collector. There are quite a few collectors who have every model HP has ever produced. Some even have multiple versions of the same model starting with the very first model, the HP-35A, which has at least five significant variations. If you include all of these variations the basic number of about 120 models easily extends to many hundreds of machines.

Displaying HP calculators is a natural for collectors, but space and cost are major considerations and very few collectors have a formal display of their machines. The use of calculator stands and appropriate display cases is briefly discussed. Demonstrating the machines requires batteries and the cost of keeping them all in batteries is not practical and an AC Adapter is proposed with a suitable connector for all machines.

Storage is space intensive and examples show that every imaginable space from under the bed, in a closet, to a dedicated room is used.

Collecting, Displaying, Demonstrating and Storing HP Calculators – Notes

- (1) One of the very first four banger machines was the Sharp QT-8 introduced in March of 1970 for \$495. See Fig. N1, Ball & Flamm. This machine would cost \$2,961.83 in today's dollars based on the CPI at: <http://www.minneapolisfed.org/>. \$3,000 in 1970 would buy you a new car!
- (2) There are many books and Internet pages dedicated to calculator collecting. The two "must have" references are shown below.

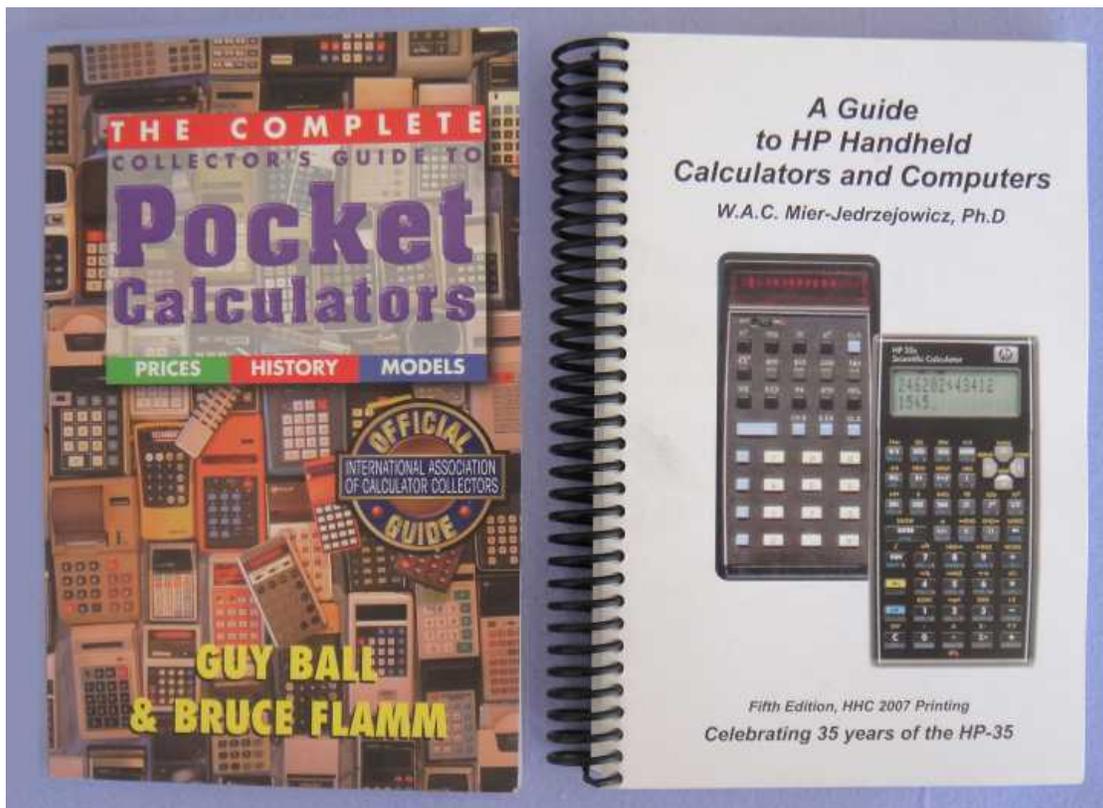


Fig. N1 – Two excellent reference books for calculator collectors to find information related to calculators.

- (3) Older calculators (especially 1970's models) that used AC adapters had heavy linear type adapters. Most modern cell phone or laptop AC adapters are switchers. These are much lighter than the old linear technology of the first dozen years of calculators.
- (4) The angle of the calculator stand is the angle between the support surface and the table top. A popular angle is 15 degrees for stands intended for formal desk top use. A very important consideration is lighting glare and there are many situations where the user doesn't have control of the lighting and an adjustable angle is more desirable. If you want to determine the approximate angle of the stand divide the display end height by the length of the stand that the calculator sits on and take the arcsine. For example, "Multipurpose Acrylic Riser/Stand, Nonskid Pads, 9 x 11 x 2 1/4". Arcsine of $2.25/11 = 11.8$ degrees.
- (5) An E-Z Hook connector is a popular engineer's clip-on connector for making electrical connections to circuit components. An example is shown greatly enlarged below. Red would be used for positive and black for negative. The user presses the end like a syringe to open a small hook (at the left end as shown below) to clip onto a small part of the battery terminal. Various sizes are available including a micro hook model. See: <http://catalog.e-z-hook.com/category/test-hooks?>

Perhaps a calculator stand with holes to allow the leads to protrude below the stand would be desirable. An additional set of connectors consisting of alligator clips would work better for the older and larger sized battery compartments.



Fig. N2 – E-Z Hook example to consider using to connect an AC adapter to calculator battery terminals.