Bob Hyland
Workbench Design Challenge

For this submission, I assumed that the table was being set up for someone beginning to explore electronics. (Starting from scratch with only $100 would drive a seasoned pro insane… although they would have more resources available to them—such as better scavenging skills).

For the additional resources, I also assumed the person had a computer with an Internet connection available. If not, then the first 2 items in the software category would not be applicable. However, virtual Oscilloscope and the web site could be accessed via a free Internet connection from the public library.

On top of the items listed in my entry, the user mostly requires ingenuity, persistence, desire and the ability to ask for help when they get stuck (hey, we ALL get stuck sometimes). I ended up sourcing parts from a bunch of different places. So, my spreadsheet has another tab with alternates. I considered substituting in a KIT for the power supply. However, not knowing the skill level of the user, I went the safe route and used a ready built PS. After some time, the user would likely want to acquire additional items, and upgrade some others. In order, (especially for the beginner), I would suggest the following items:

- An Oscilloscope – this tool is indispensable for "seeing" what is happening in a circuit. The value cannot be overstated as a learning tool.
- A better DMM – this is a tool you will use day in and day out. Having a second, better one around removes a lot of the guess work. (And, at times, it is good to keep a cheap one like this around as a "disposable unit" for probing unproven circuits. I would rather let the magic smoke out of an $8 unit than a $308 unit.)
- A better Power Supply – this really depends on the circuits one works on. But, for my money, a good power supply is essential. But, then again, I excel at scavenging. So, I have a bunch from other electronics that are no longer used.
- A better soldering iron – if you do a little soldering, then a better soldering iron will mean almost nothing. But, if you start doing quite a bit (or get into a tricky project), then a good, solid soldering iron can remove hours of frustration – and turn a chore into some fun.

Qua	Item	Vendor	Part #	Price
1	Digital Multi-Meter	All Electronics	DVM-810	$7.95
1	Soldering Iron	All Electronics	IR-30	$4.50
1	Power Supply	Circuit Specialists	PS-28	$19.95
1	Solderless Breadboard	All Electronics	PB-1680	$4.00
1	Jumper Wire	All Electronics	JW-140	$6.25
1	Magnifying Glass	All Electronics	HD-MAG	$4.95
1	Helping Hands	All Electronics	HELPH-M	$4.50
1	Solder	All Electronics	SOL-564	$12.00
1	Solder Braid	All Electronics	SWK	$1.00
1	Solder Stand	All Electronics	50B-205	$4.00
1	Wire	Radio Shack	278-1224	$5.99
1	Wire strippers/crimper	Circuit Specialists	IF-527	$11.90
1	Black Banana Plug Wire	Circuit Specialists	A-1087BLACK-50CM	$1.49
1	Red Banana Plug Wire	Circuit Specialists	A-1087RED-50CM	$1.49
1	Antistatic Wrist Strap	Circuit Specialists	08-611	$4.95
1	Copy of Nuts & Volts	Nuts & Volts	16718	$5.00
1	Spice Simulation Software	Linear.com	URL	$0.00
1	Software parallel port oscilloscope	MIT.edu	URL	$0.00
1	Oscilloscope simulation software	Freeware	URL	$0.00
1	Electronics help for the beginner and beyond	Yahoo Group	URL	$0.00
			Total:	$99.92

You know, if we are just building a layout for a beginner who wants to learn, then one could do worse than this simple configuration:

Item	Source	Model #	Cost
Electronics Learning Lab	Radio Shack	28-280	$71.49
2x 4 pack of AA batteries	Radio Shack	23-873	$7.98
9 Volt battery	Radio Shack	23-875	$3.99
		Total:	$83.46

After all, the RS Learning Lab comes with 2 Forrest Mims manuals, a bunch of integrated circuits, meters, LED's, resistors, capacitors, connecting wire, sensors, a photovoltaic cell and other miscellaneous components. But, I wouldn't really consider that to be a professional setup. But, it might suffice as an "entry level electronics workbench."

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