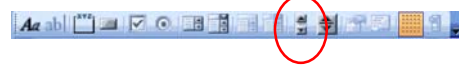


Using Excel “sliders” in Physics worksheets

MIAAPT Spring 2008
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Which kind of slider?

- “Forms” slider – easy to use – recommended!



- “ActiveX” slider – more powerful – more complicated



Why use sliders in Excel?

- Need to adjust variable values?
- Don't want to keep plugging in numbers?
- Want to illustrate effect of changing a variable in an equation/graph?
- Can tie a slider (plus some “scaling” equations) to a graph
 - Use with modeling/matching lab data to mathematical/physics equations

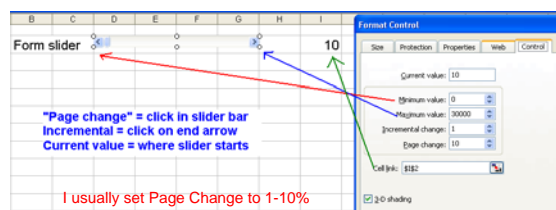
Adding simple Forms “slider”

- Display the Forms menu bar
- Add slider to excel worksheet
- Right click to change features



Changing features of simple slider

- Set Min/Max and Cell Link
- Incremental = “click on arrow” change
- Page change = “click in slider” change



Add equations for “advanced” slider

- Output the slider value to cell “RAW”
- Add cells to mirror slider max/min
- Add user-changeable cells for Min Max
- Add equation to “scale” slider output

More advanced use of slider - allow user-selected Max/Min values

Value	Min	Max	Raw	SlideMin	SlideMax
0.018	-4	3	5740	0	10000

$$+15 + (J5 - I5) * ((K5 - L5) / (M5 - L5))$$

$$+15 + (J5 - I5) * \left(\frac{K5 - L5}{M5 - L5} \right) = +Min + (Max - Min) * \left(\frac{SlidePos - SlideMin}{SlideMax - SlideMin} \right)$$

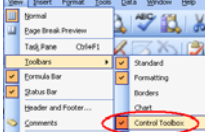


Connect slider output to graphs

- Used in early “modeling” lab experiment
 - Data taken from Logger Pro
 - Matched to “math” equation with excel
 - Students need to connect values to physics equations
- Damped Harmonic Motion
 - Data taken by DataStudio
 - Match to general equation
 - Multiple tunable variables – sliders = EASY!!
 - Can watch effects of changes on graphs

Why use ActiveX controls instead?

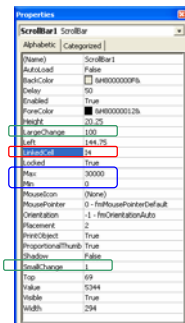
- If you want a graphically large slider bar
 - Resizes better than Form slider
- If you need to “trap events”
 - Advanced error trapping – not for faint of heart!
- Slightly different way to modify settings
 - Can’t just right-click to format – toolbar needed
- Warning** – easy to trigger “macro protection” messages
 - But – we can fix that! (Unless you are trapping events!)

ActiveX control slider


- Show CONTROL toolbar
 
- Click on slider add to worksheet
 
- Click on “Design” icon - then on slider - then “Properties” icon
 

Changing Properties - ActiveX

- Linked Cell
- Max/Min
- Large/Small Change
- Otherwise – same operation as forms slider
- But, we might have just triggered an empty macro!*



Removing empty Macro code

- To avoid getting the “macro warning” messages – click the SHOW CODE icon
 
- Double-click through pages – delete any empty macro code – close editor – save file



Seems like any time you modify the slider – triggers the empty macro – must clean up!

Questions?