EXPLORATIONS

Appendix

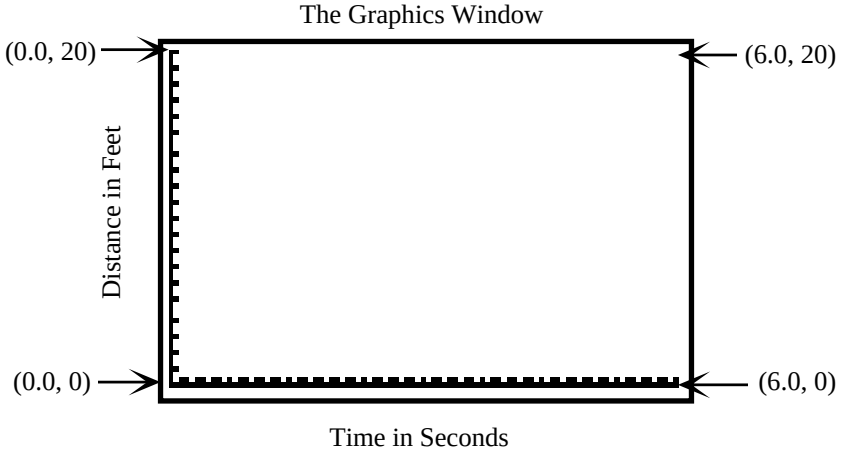
Masters for Teachers

This section includes duplication masters and transparency masters.

Contents

Guidelines for Working with the CBL™ and Motion Sensor

- Make certain you have a clear walkway 15 to 20 feet in length as measured from the motion sensor. The motion sensor should be placed approximately 3 to 4 feet off the floor at one end of the walkway facing the opposite end. The walkway should be wide enough to ensure that no objects other than the walker are detected by the sensor.
- The walker should stay in front of the motion sensor as he or she is moving. Other group members should stay clear of the walkway.
- When walking, come no closer than 1.5 feet away from the sensor since it can not accurately measure distances smaller than this.
- The motion sensor is collecting data whenever the small red light on its front is on. If the room is quiet, you can also hear the sensor making a soft clicking sound as it collects data.
- Once started, the sensor will measure a walker's distance every 0.1 seconds for a period of 6 seconds. Each (time, distance) measurement will be sent to the calculator and plotted on a graphing screen. For example, if a walker were 5.36 feet from the sensor 3.7 seconds after starting, the ordered pair (3.7, 5.36) would be plotted somewhere on the graphing screen.
- All graphing windows have the same dimensions. The program operating the CBL has set the graphing windows so that the horizontal axis (x-axis) starts at a time of 0 seconds and ends at a time of 6 seconds with a scale of 0.1 (distance between tick marks). The vertical axis (y-axis) starts at a distance of 0 feet and ends at a distance of 20 with a scale of 1.0.



The HIKER Program for the TI-82

The **HIKER** program listed in two columns below is best downloaded into a calculator using a TI-Graph Link™. If you must enter the program by hand, consult the calculator manual for help in locating various commands. Once the program is entered into one calculator it can be downloaded to others using the Linking features available on the TI-82 and TI-83 calculators.

```
GridOff
AxesOff
LabelOff
PlotsOff
FnOff
ClrDraw
Text(1,16,"TEXAS  INSTRUMENTS")
Text(8,30,"CBL   SYSTEM")
Text(15,10,"EXPERIMENT   WORKBOOK")
Text(29,28,"HIKER   V1.2")
Text(36,18,"(EXPERIMENT   M1)")
Text(50,6,"PRESS   [ENTER]   ON   TI-82"
Pause
Disp "TURN ON THE CBL."
Output(4,10,"[ENTER]")
Pause
FullScreen
ClrHome
Disp "NOW CHECKING THE"
Disp "CALCULATOR-CBL"
Disp "LINK CONNECTION."
Disp "PLEASE WAIT...."
{6,0}→L1
Send(L1)
{1,0}→L1
Send(L1)
{0}→L2
Lbl M
{7}→L1
Send(L1)
Get(L2)
If dim L2=1 and L2(1)=0
Then
ClrHome
Disp "***LINK ERROR***"
Disp "PUSH IN THE LINK"
Disp "CORD CONNECTORS"
Disp "FIRMLY THEN HIT"
Disp "[ENTER]."
Pause
Goto M
End
```

PROGRAM CONTINUES IN SECOND COLUMN

```
Disp ""
Output(6,1,"  STATUS: O.K."
Output(8,10,"[ENTER]")
Pause
ClrDraw
ClrHome
Func
AxesOn
ClrList L2,L3
0→Xmin
6→Xmax
.1→Xscl
0→Ymin
20→Ymax
1→Yscl
60→dim L2
60→dim L3
seq(I,I,.1,6,.1)→L2
{6,0}→L1
Send(L1)
{1,0}→L1
Send(L1)
{1,11,3}→L1
Send(L1)
ClrHome
Disp "PRESS ENTER"
Disp "TO START"
Disp "GRAPH"
Pause
ClrDraw
Text(4,1,"DIST")
Text(51,78,"TIME")
{3,.1,-1,0}→L1
Send(L1)
For(I,1,60,1)
Get(L3(I))
Pt-On(L2(I),L3(I))
End
Plot1(Scatter,L2,L3,·)
Stop
```

The HIKER Program for the TI-83

The **HIKER** program listed in two columns below is best downloaded into a calculator using a TI-Graph Link™. If you must enter the program by hand, consult the calculator manual for help in locating various commands. Once the program is entered into one calculator it can be downloaded to others using the Linking features available on the TI-82 and TI-83 calculators.

```
GridOff
AxesOff
LabelOff
PlotsOff
FnOff
ClrDraw
Text(1,16,"TEXAS  INSTRUMENTS")
Text(8,30,"CBL   SYSTEM")
Text(15,10,"EXPERIMENT   WORKBOOK")
Text(29,28,"HIKER   V1.2")
Text(36,18,"(EXPERIMENT   M1)")
Text(50,6,"PRESS   [ENTER]   ON   TI-83"
Pause
ClrHome
Disp "TURN ON THE CBL."
Output(4,10,"[ENTER]")
Pause
Full
ClrHome
Disp "NOW CHECKING THE"
Disp "CALCULATOR-CBL"
Disp "LINK CONNECTION."
Disp "PLEASE WAIT...."
{1,0}→L1
Send(L1)
{0}→L2
Lbl M
{7}→L1
Send(L1)
Get(L2)
If dim L2=1 and L2(1)=0
Then
ClrHome
Disp "***LINK ERROR***"
Disp "PUSH IN THE LINK"
Disp "CORD CONNECTORS"
Disp "FIRMLY THEN HIT"
Disp "[ENTER]."
Pause
Goto M
End
```

PROGRAM CONTINUES IN SECOND COLUMN

```
Disp ""
Output(6,1,"  STATUS: O.K."
Output(8,10,"[ENTER]")
Pause
Func
ClrHome
ClrDraw
AxesOn
ClrList L2,L3
0→Xmin
6→Xmax
.1→Xscl
0→Ymin
20→Ymax
1→Yscl
60→dim( L2
60→dim( L3
seq(I,I,.1,6,.1)→L2
{6,0}→L1
Send(L1)
{1,0}→L1
Send(L1)
{1,11,3}→L1
Send(L1)
ClrHome
Disp "PRESS ENTER"
Disp "TO START"
Disp "GRAPH"
Pause
ClrDraw
Text(4,1,"DIST")
Text(51,78,"TIME")
{3,.1,-1,0}→L1
Send(L1)
For(I,1,60,1)
Get(L3(I))
Pt-On(L2(I),L3(I))
End
Plot1(Scatter,L2,L3,·)
Stop
```