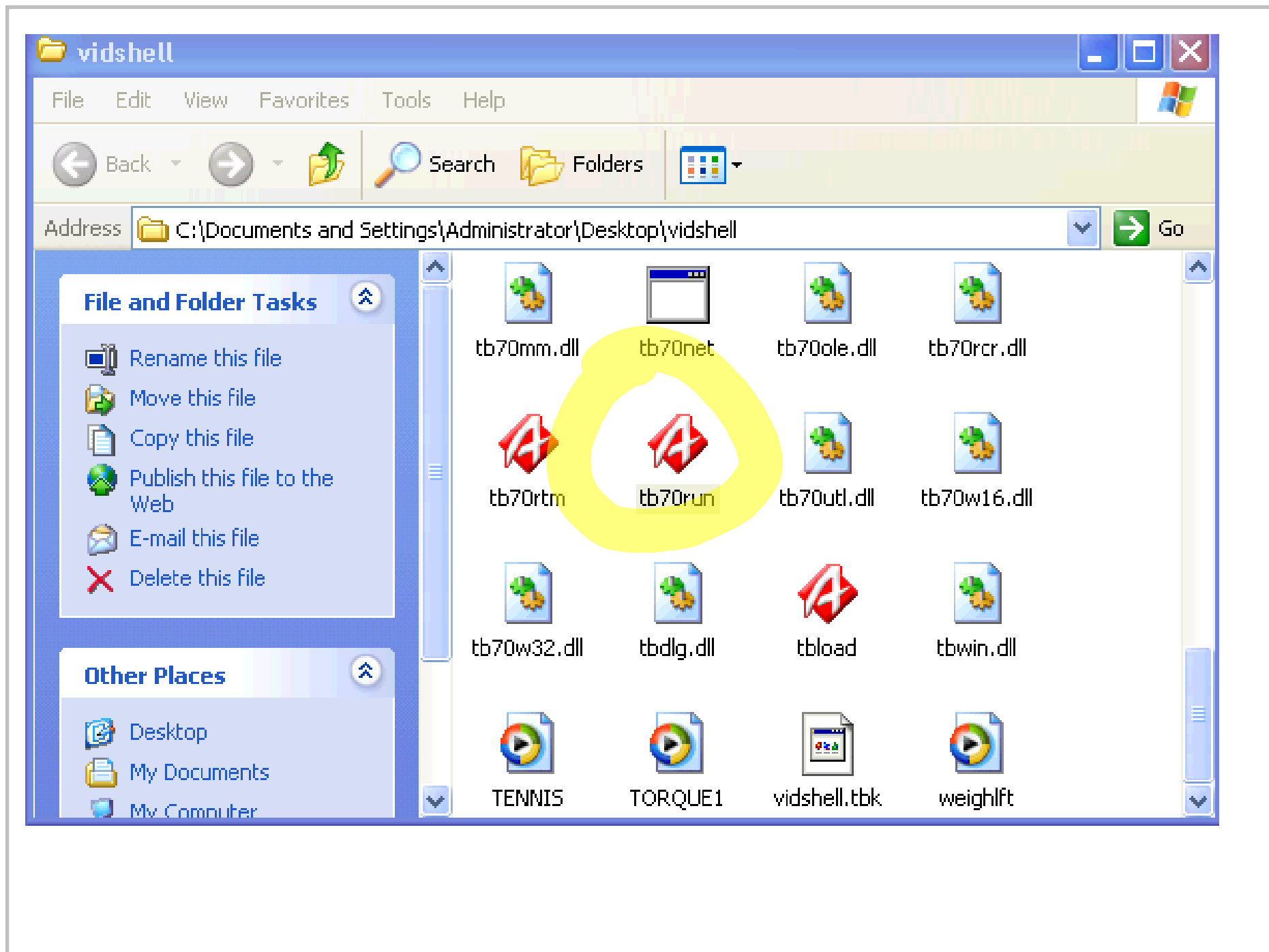


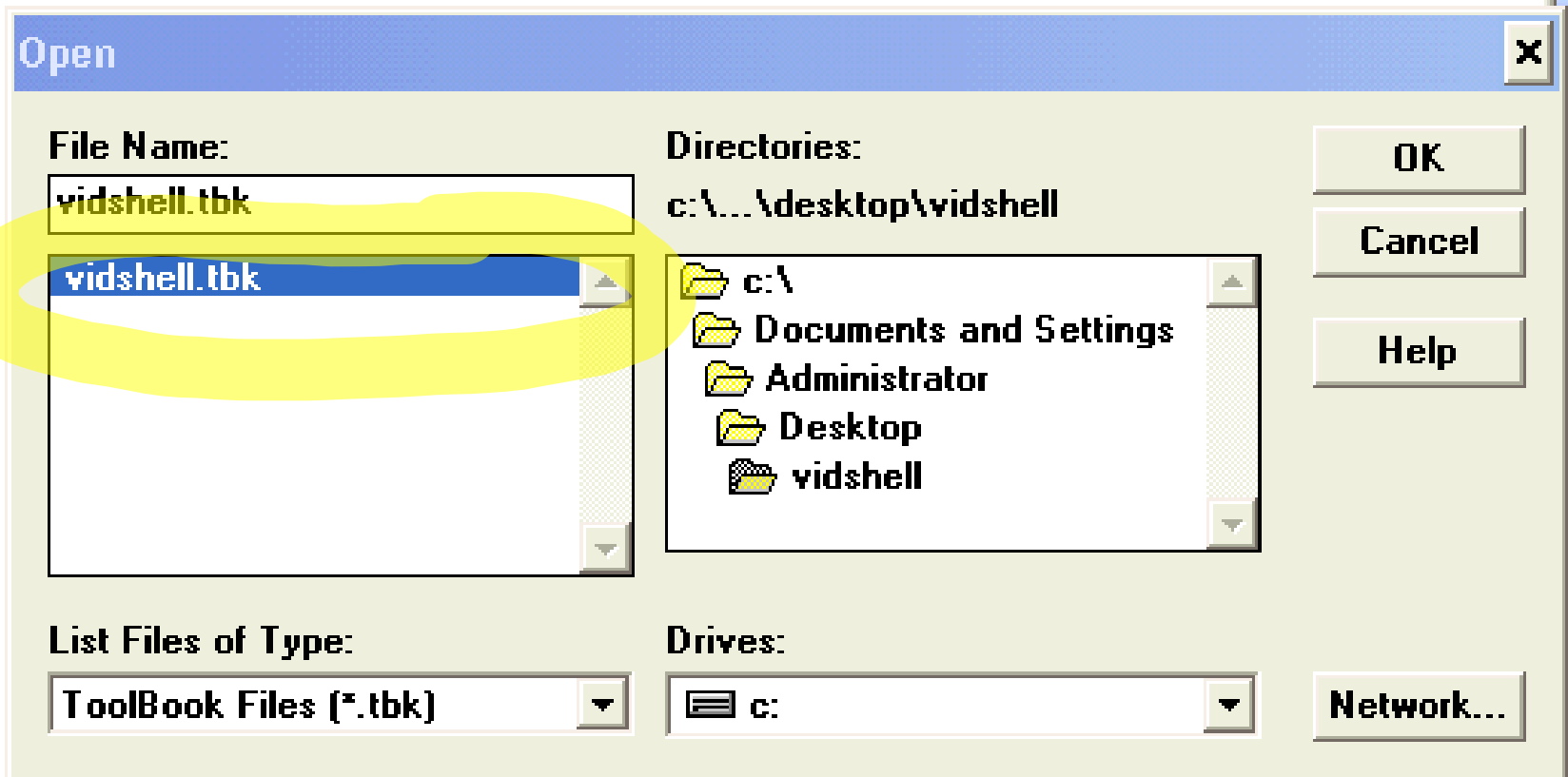
# Vidshell Demo

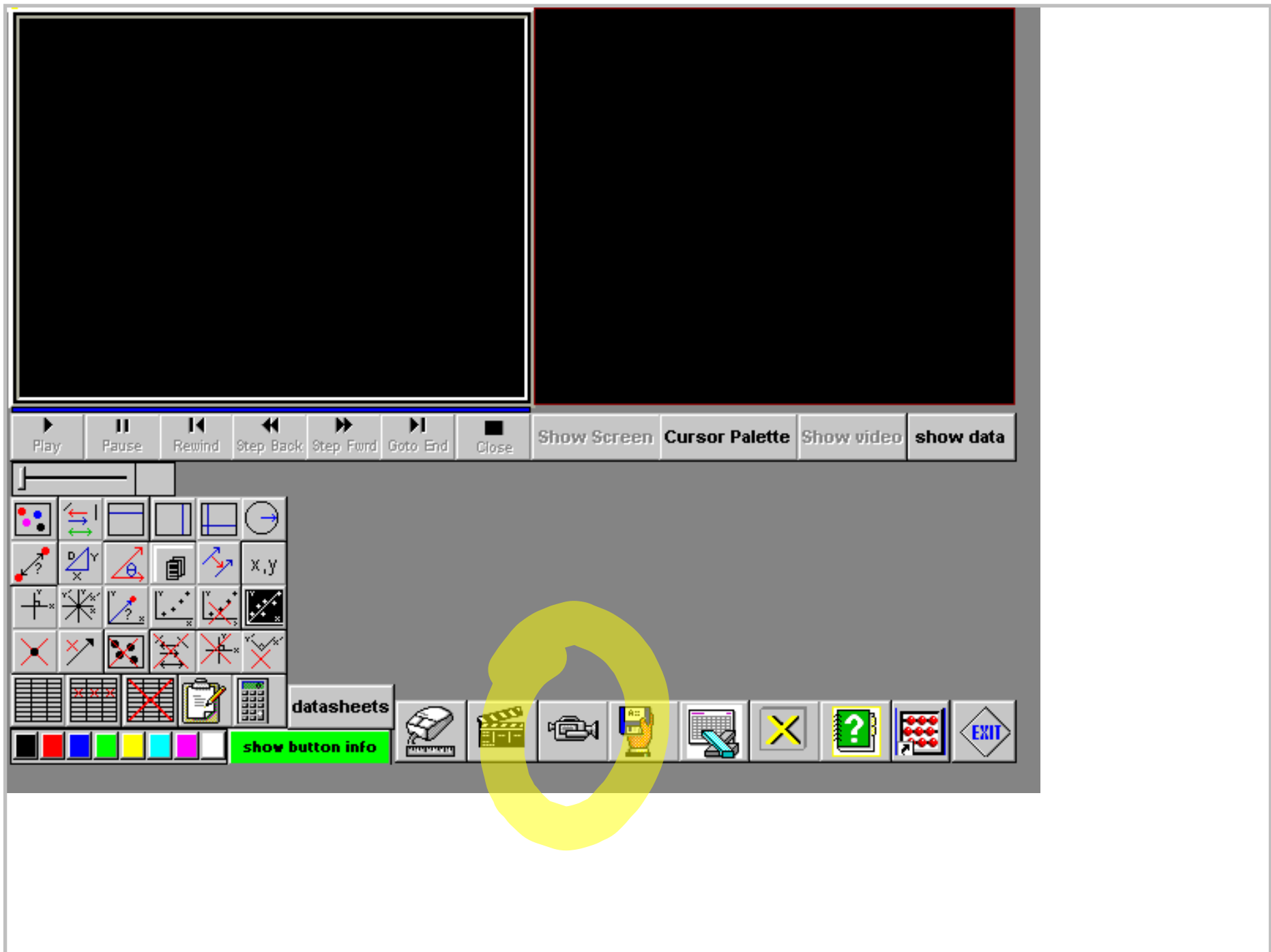
by Tom Reardon

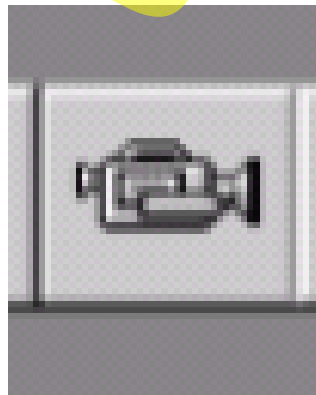
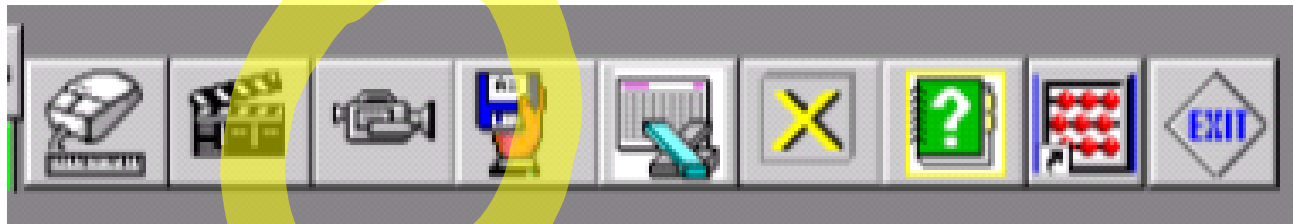
© 2005 Reardon Helpful Gifts, Inc.

(It is assumed that you already installed Vidshell on your computer.)





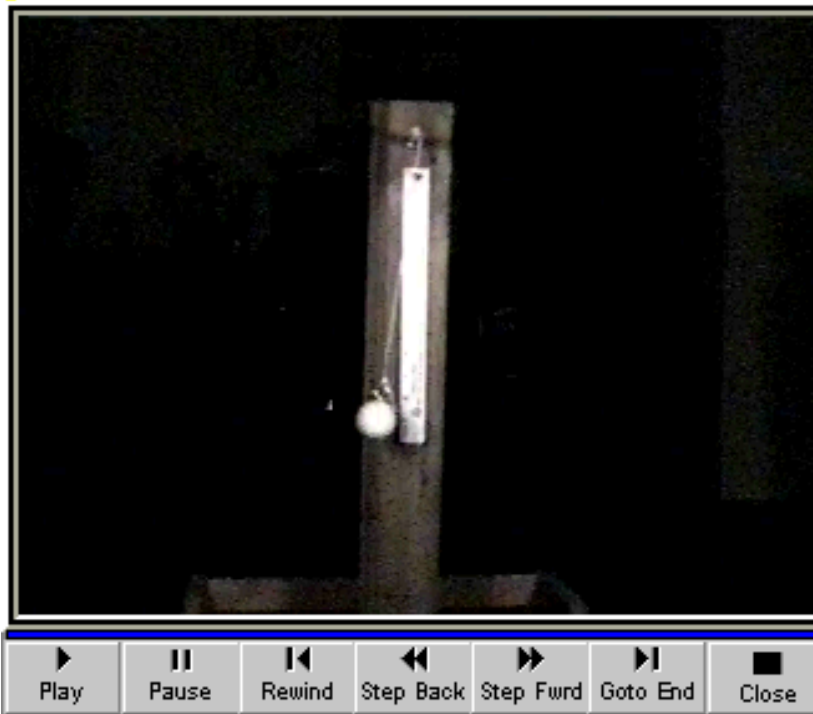




"VIDEO"



OPEN THE "PERIOD OF A PENDULUM" VIDEO



# "CALIBRATE"



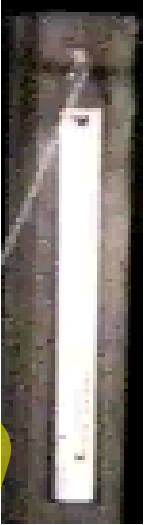
Position the cursor at one end of the scale in the video clip. Hold down the mouse button while dragging to the opposite end of the scale. Release the mouse.

OK Cancel

How long was this line? (Do not include units.)

12

OK Cancel

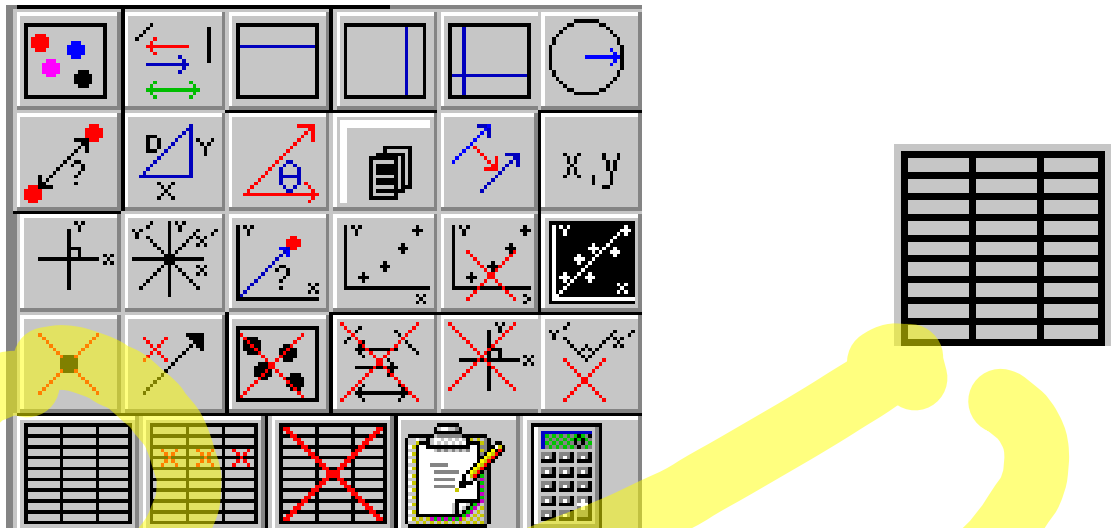


The image shows a software interface for video analysis. At the top is a toolbar with various icons for selection, measurement, and analysis. A yellow circle highlights a specific icon in the toolbar, and a yellow arrow points from it to a dialog box below. The dialog box contains the following text:

**IMPORTANT !** Make sure you rewind the clip and position it to the frame where you wish to define  $t=0$ . If this has not yet been done, press **CANCEL**. and position the clip. Once this is done, position the cross hairs over the point in the frame where you wish to define the origin of the coordinate system and click the left mouse button.

Below the dialog box is a video frame showing a pendulum. A red arrow points to the origin of the coordinate system, which is marked by a yellow crosshair. The word "ORIGIN" is written in red above the crosshair.

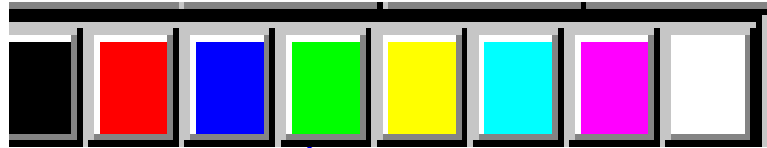




What is the time difference between frames in seconds for the data points you are collecting

OK Cancel

CHOOSE THE COLOR



CLICK WITH THE MOUSE...

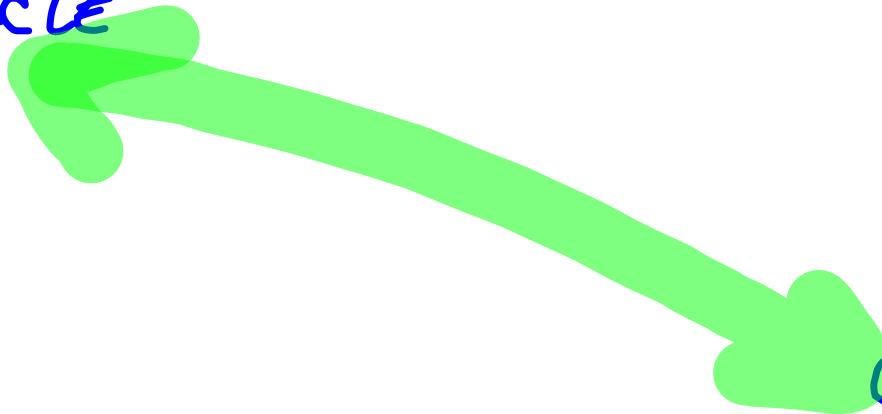
NICE!

The screenshot shows a software interface for video analysis. On the left is a video frame with a green cursor pointing to a small object. On the right is a data table with the following content:

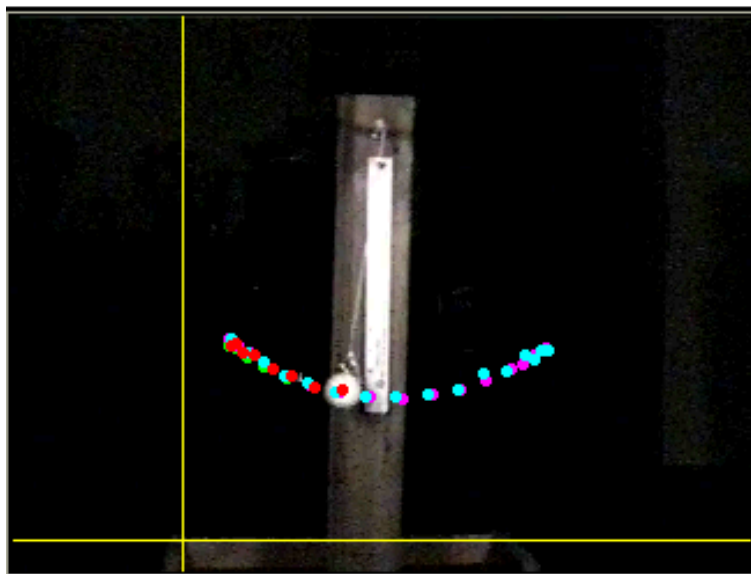
n	pos#	x	y	t
1	0	4.86	7.57	0

Below the video frame is a control bar with buttons: Play, Pause, Rewind, Step Back, Step Fwrd, Goto End, and Close. Below the data table are buttons: Hide Screen, Cursor Palette, Hide video, and show data.

STEP FWRD  
CLICK ON CIRCLE  
REPEAT



CONTINUE  
UNTIL  
YOU  
HAVE  
ENOUGH  
DATA  
POINTS



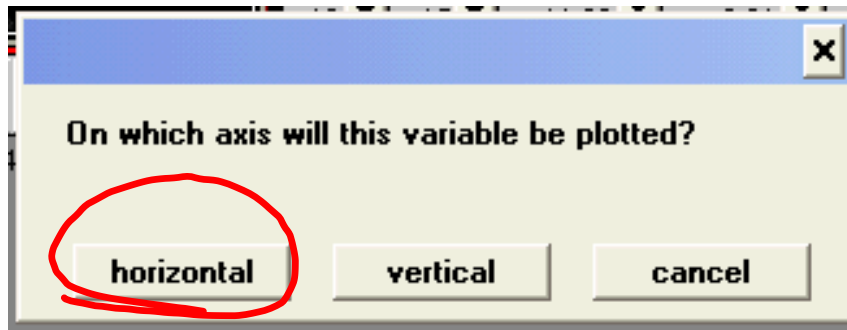
n	pos#	x	y	t
1	0	4.86	7.37	0
2	1	3.78	8.11	0.1
3	2	3.03	8.54	0.2
4	3	2.49	8.97	0.3
5	4	2.16	9.08	0.4
6	5	2.16	9.41	0.5
7	6	2.27	9.3	0.6
8	7	2.59	9.08	0.7
9	8	3.14	8.76	0.8
10	9	3.78	8.32	0.9
11	10	4.86	7.68	1
12	11	5.95	7.24	1.1
13	12	7.35	6.92	1.2
14	13	8.76	6.7	1.3
15	14	10.27	6.59	1.4
16	15	11.68	6.81	1.5



NEXT: PLOT THE DATA  
WITHIN VIDSHELL.

n	pos#	x	y	t
1	0	4.86	7.57	0
2	1	3.78	8.11	0.1
3	2	3.03	8.54	0.2
4	3	2.49	8.97	0.3
5	4	2.16	9.08	0.4
6	5	2.16	9.41	0.5
7	6	2.27	9.3	0.6
8	7	2.59	9.08	0.7
9	8	3.14	8.76	0.8
10	9	3.78	8.32	0.9
11	10	4.86	7.68	1
12	11	5.95	7.24	1.1
13	12	7.35	6.92	1.2
14	13	8.76	6.7	1.3
15	14	10.27	6.59	1.4
16	15	11.68	6.81	1.5

CLICK ON t

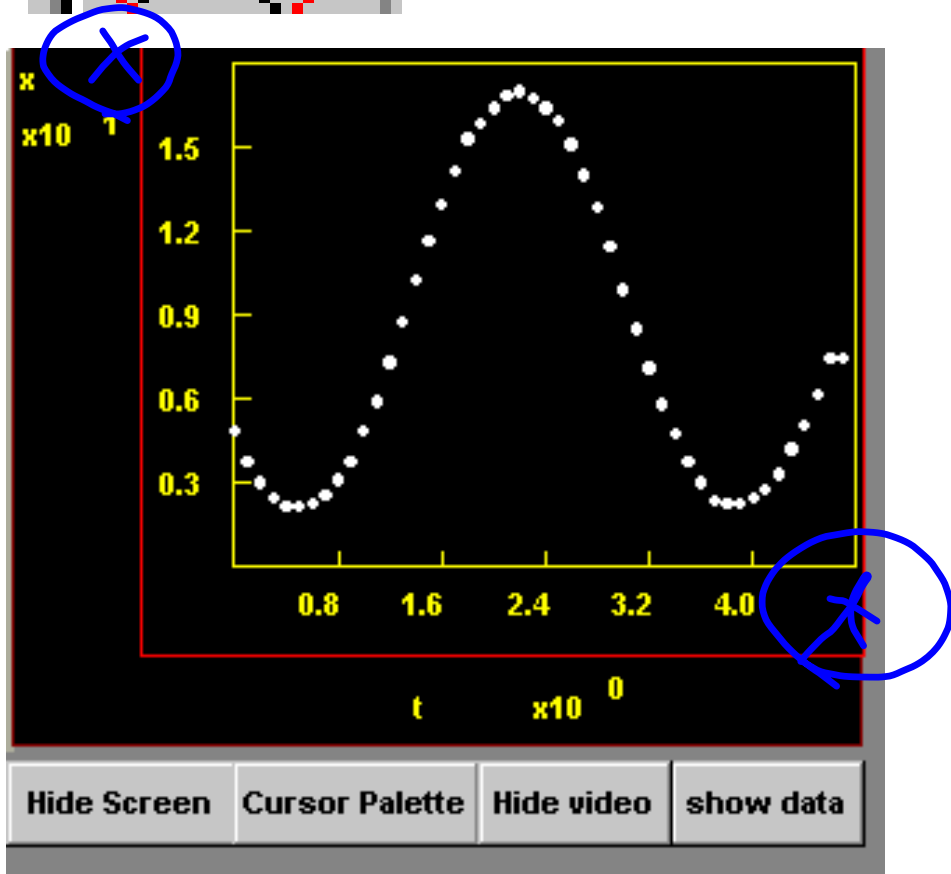
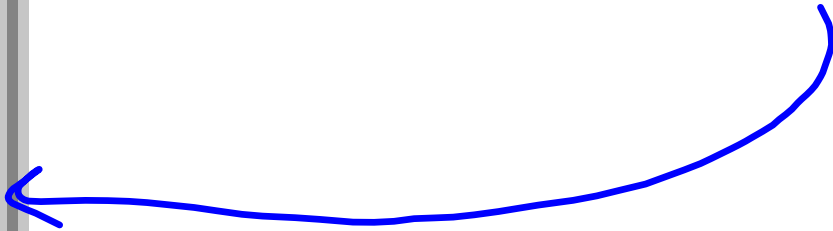
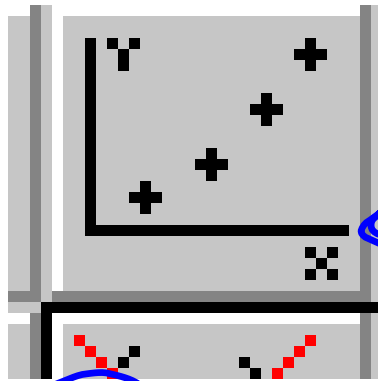


CLICK ON X

n	pos#	x	y	t
1	0	4.86	7.57	0
2	1	3.78	8.11	0.1
3	2	3.03	8.54	0.2
4	3	2.49	8.97	0.3
5	4	2.16	9.08	0.4
6	5	2.16	9.41	0.5
7	6	2.27	9.3	0.6
8	7	2.59	9.08	0.7
9	8	3.14	8.76	0.8
10	9	3.78	8.32	0.9
11	10	4.86	7.68	1
12	11	5.95	7.24	1.1
13	12	7.35	6.92	1.2
14	13	8.76	6.7	1.3
15	14	10.27	6.59	1.4
16	15	11.68	6.81	1.5

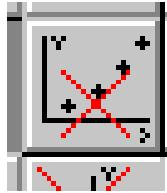
On which axis will this variable be plotted?

To OBTAIN GRAPH, CLICK ON



ooh!  
A SINE WAVE!

To CLEAR THE GRAPH

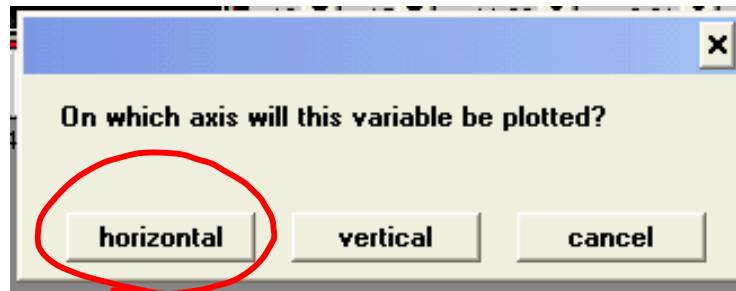




TO PLOT THE HEIGHTS (y) VERSUS  
TIME:

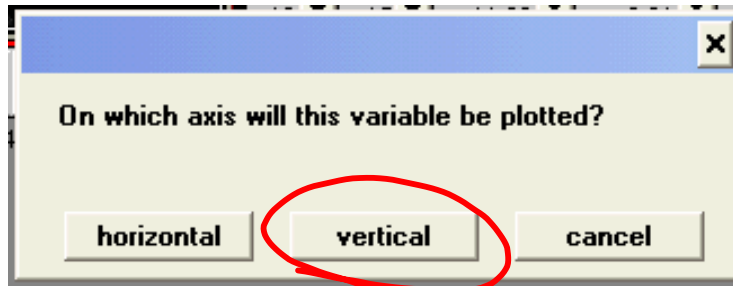
CLICK ON t

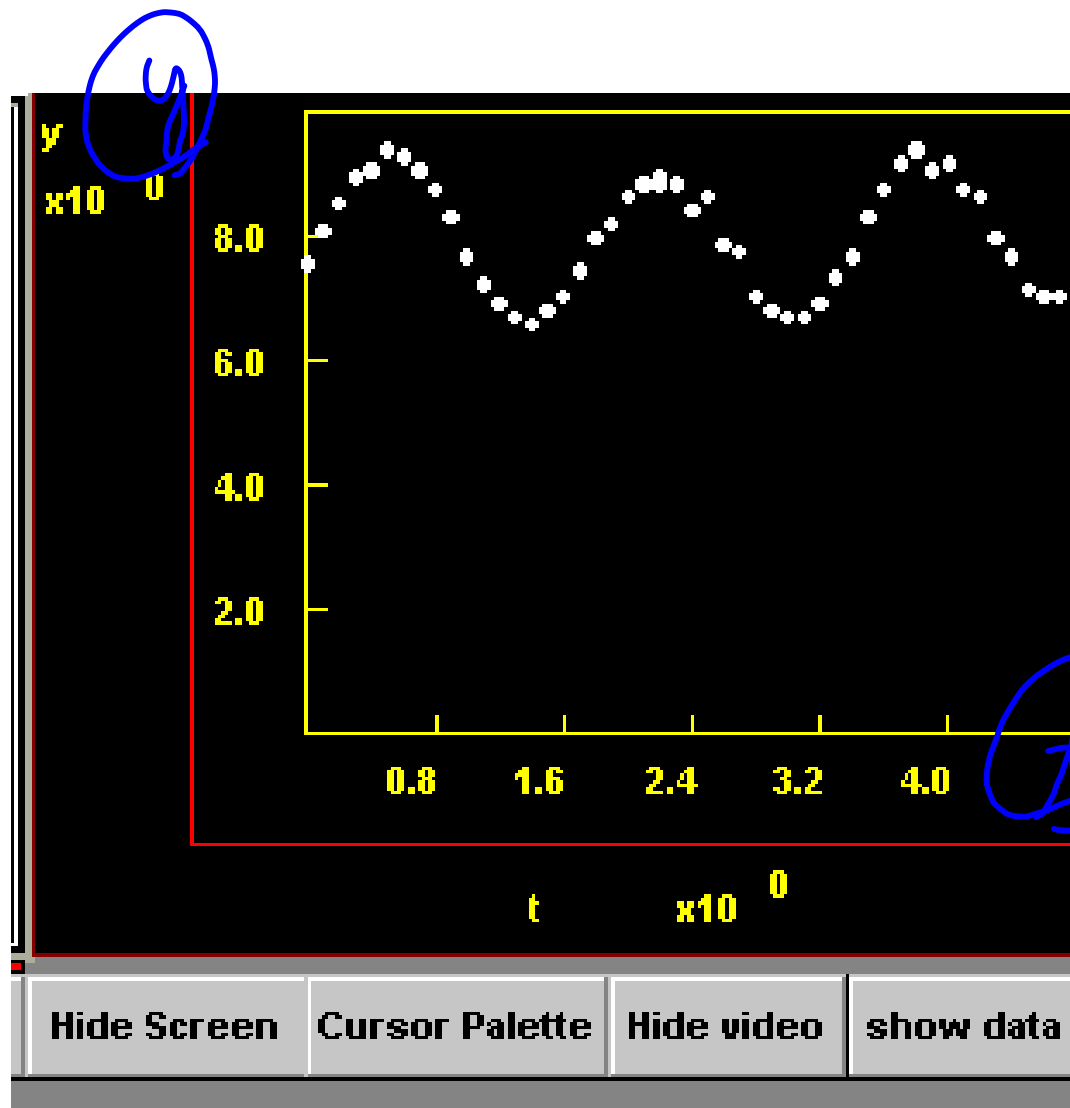
n	pos#	x	y	t
1	0	4.86	7.57	0
2	1	3.78	8.11	0.1
3	2	3.03	8.54	0.2
4	3	2.49	8.97	0.3
5	4	2.16	9.08	0.4
6	5	2.16	9.41	0.5
7	6	2.27	9.3	0.6
8	7	2.59	9.08	0.7
9	8	3.14	8.76	0.8
10	9	3.78	8.32	0.9
11	10	4.86	7.68	1
12	11	5.95	7.24	1.1
13	12	7.35	6.92	1.2
14	13	8.76	6.7	1.3
15	14	10.27	6.59	1.4
16	15	11.68	6.81	1.5



n	pos#	x	y	t
1	0	4.86	7.57	0
2	1	3.78	8.11	0.1
3	2	3.03	8.54	0.2
4	3	2.49	8.97	0.3
5	4	2.16	9.08	0.4
6	5	2.16	9.41	0.5
7	6	2.27	9.3	0.6
8	7	2.59	9.08	0.7
9	8	3.14	8.76	0.8
10	9	3.78	8.32	0.9
11	10	4.86	7.68	1
12	11	5.95	7.24	1.1
13	12	7.35	6.92	1.2
14	13	8.76	6.7	1.3
15	14	10.27	6.59	1.4
16	15	11.68	6.91	1.5

CLICK ON y





ANOTHER  
SINUSOID

HERE IS THE DATA ...

n	pos#	x	y	t
1	0	4.86	7.57	0
2	1	3.78	8.11	0.1
3	2	3.03	8.54	0.2
4	3	2.49	8.97	0.3
5	4	2.16	9.08	0.4
6	5	2.16	9.41	0.5
7	6	2.27	9.3	0.6
8	7	2.59	9.08	0.7
9	8	3.14	8.76	0.8
10	9	3.78	8.32	0.9
11	10	4.86	7.68	1
12	11	5.95	7.24	1.1
13	12	7.35	6.92	1.2
14	13	8.76	6.7	1.3
15	14	10.27	6.59	1.4
16	15	11.68	6.81	1.5

n	pos#	x	y	t
32	30	9.95	6.7	3
33	31	8.54	6.7	3.1
34	32	7.14	6.92	3.2
35	33	5.84	7.35	3.3
36	34	4.76	7.68	3.4
37	35	3.78	8.32	3.5
38	36	3.03	8.76	3.6
39	37	2.38	9.19	3.7
40	38	2.27	9.41	3.8
41	39	2.27	9.08	3.9
42	40	2.49	9.19	4
43	41	2.81	8.76	4.1
44	42	3.35	8.65	4.2
45	43	4.22	8	4.3
46	44	5.08	7.68	4.4
47	45	6.16	7.14	4.5

n	pos#	x	y	t
16	15	11.68	6.81	1.5
17	16	12.97	7.03	1.6
18	17	14.16	7.46	1.7
19	18	15.35	8	1.8
20	19	15.89	8.22	1.9
21	20	16.43	8.65	2
22	21	16.86	8.86	2.1
23	22	16.97	8.97	2.2
24	22	17.08	8.86	2.2
25	23	16.76	8.86	2.3
26	24	16.43	8.43	2.4
27	25	16	8.65	2.5
28	26	15.14	7.89	2.6
29	27	14.05	7.78	2.7
30	28	12.86	7.03	2.8
31	29	11.46	6.81	2.9

PUT THIS DATA  
INTO LISTS:  
 $x \rightarrow L_1$   
 $x \rightarrow L_2$   
 $y \rightarrow L_3$

**L1** ~~X~~ **L2** ~~X~~ **L3** **t**

--	--	--	--

L3 = 7.57, 8.11, 8.54, 8.97, 9.08, 9.41, 9.3, 9.3, 8.76, 8.32, 7.35, 6.92, 6.7, 10.27, 6.59, 11.68, 6.81

n	pos#	x	y	t
1	0	4.86	7.57	0
2	1	3.78	8.11	0.1
3	2	3.03	8.54	0.2
4	3	2.49	8.97	0.3
5	4	2.16	9.08	0.4
6	5	2.16	9.41	0.5
7	6	2.27	9.3	0.6
8	7	2.38	9.3	0.7
9	8	3.14	8.76	0.8
10	9	3.78	8.32	0.9
11	10	4.86	7.57	1
12	11	5.95	7.24	1.1
13	12	7.35	6.92	1.2
14	13	8.76	6.7	1.3
15	14	10.27	6.59	1.4
16	15	11.68	6.81	1.5

**L1** ~~X~~ **L2** ~~X~~ **L3** **t**

--	--	--	--










L3(4) =

n	pos#	x	y	t
32	30	9.95	6.7	3
33	31	8.54	6.7	3.1
34	32	7.14	6.92	3.2
35	33	5.84	7.35	3.3
36	34	4.76	7.68	3.4
37	35	3.78	8.32	3.5
38	36	3.03	8.76	3.6
39	37	2.38	9.19	3.7
40	38	2.27	9.41	3.8
41	39	2.27	9.08	3.9
42	40	2.49	9.19	4
43	41	2.81	8.76	4.1
44	42	3.35	8.65	4.2
45	43	4.22	8	4.3
46	44	5.08	7.68	4.4
47	45	6.16	7.14	4.5

NOW: PLOT THE DATA ON YOUR  
CALCULATOR.

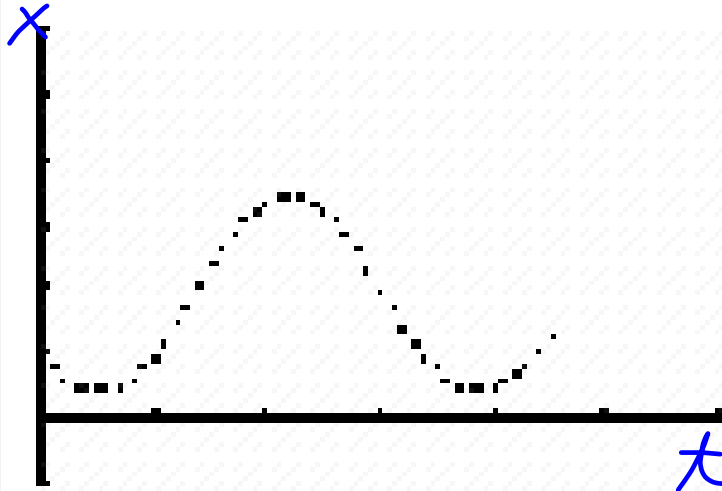
THEN GENERATE AN EQUATION  
TO MODEL IT.

# SET UP A STAT PLOT & WINDOW

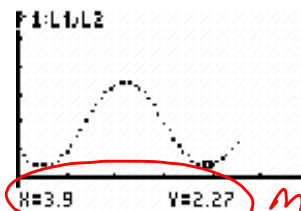
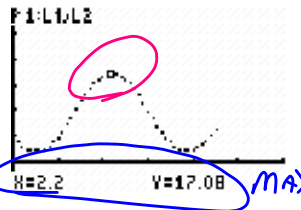
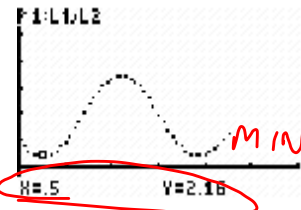
Plot1 Plot2 Plot3  
Off  
Type:     
    
Xlist:L1  
Ylist:L2  
Mark:   

WINDOW  
Xmin=0  
Xmax=6  
Xscl=1  
Ymin=-5  
Ymax=30  
Yscl=5  
Xres=1

GRAPH:



NOW TRY TO MODEL THE DATA  
WITH A SIN OR COS EQUATION.



Period = 3.4

T	.5	2.2	3.9
X	2.16	17.08	2.27
	MIN	MAX	MIN

$$AVG = \frac{2.27 + 2.16}{2} = \frac{4.43}{2} = 2.215$$

$m/n = 2.21$

$$A = \frac{MAX - MIN}{2}$$

$$\frac{(17.08 - 2.21)}{2} + A$$

$$= \frac{14.87}{2} + 2.215$$

$$= 7.435 + 2.215 = 9.65$$

$$D = \frac{MAX + MIN}{2}$$

$$C = -2.2$$

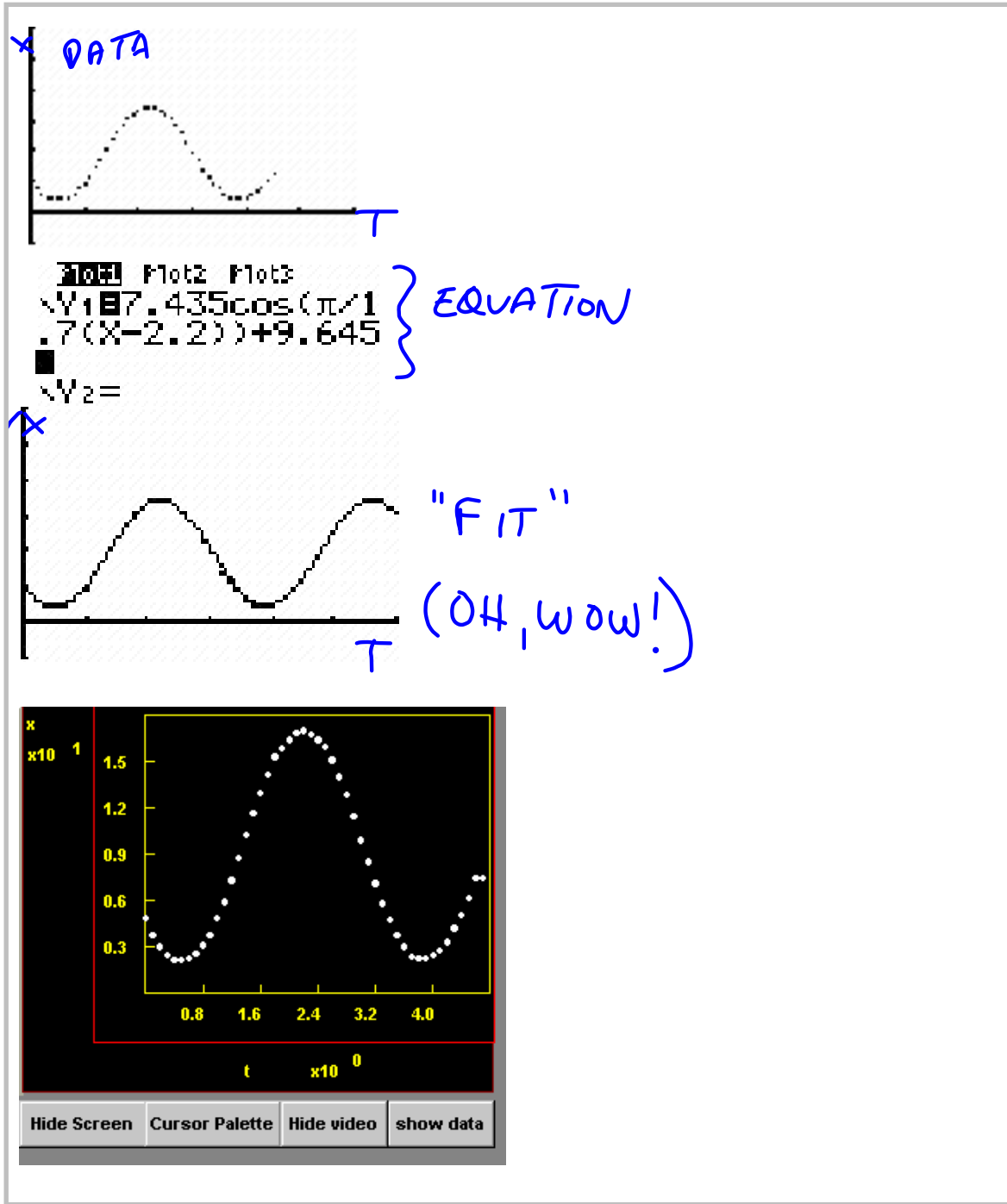
$$Period = \frac{2\pi}{B} = 3.4$$

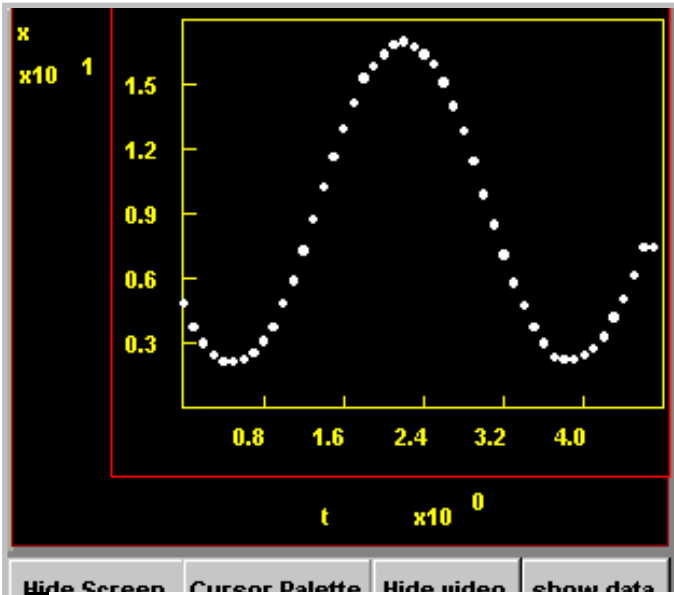
$$3.4B = 2\pi$$

$$B = \frac{2\pi}{3.4} = \frac{\pi}{1.7}$$

$$y = 7.435 \cos\left(\frac{\pi}{1.7}(x - 2.2)\right) + 9.645$$

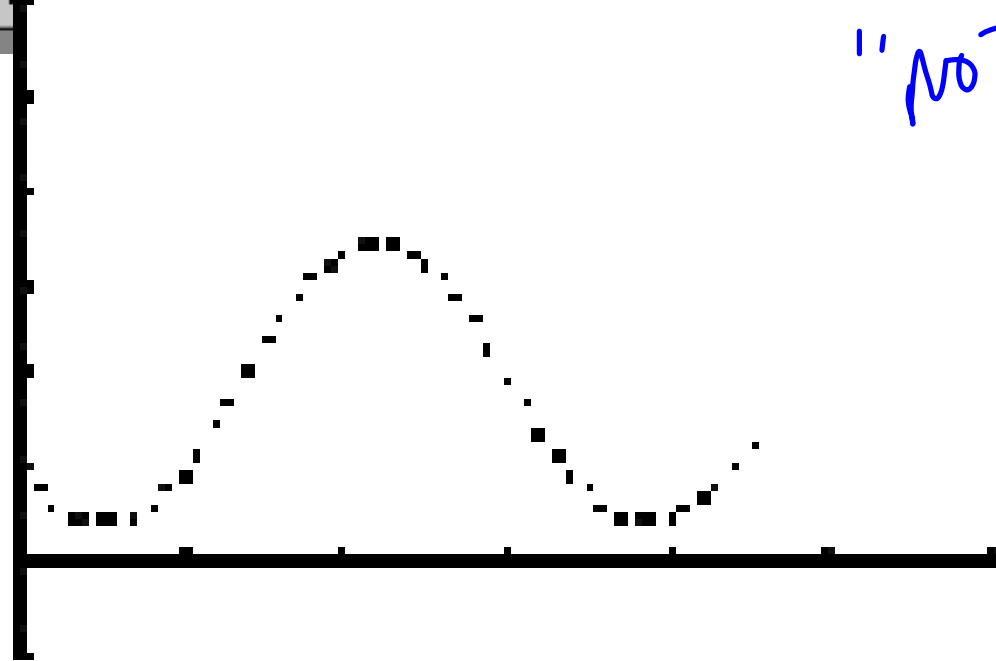




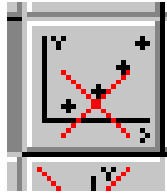


Hide Screen Cursor Palette Hide window show data

"NOT BAD"



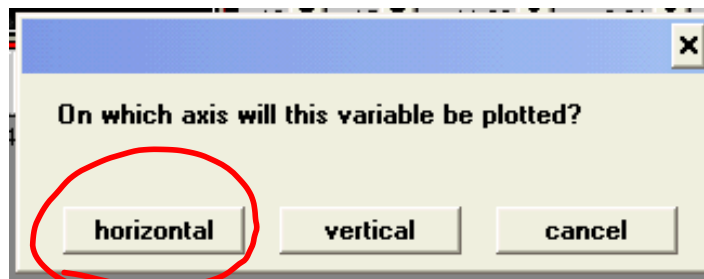
To CLEAR THE GRAPH



NOW PLOT VERTICAL DISTANCE ( $y$ )  
VERSUS TIME ( $t$ ).

n	pos#	x	y	t
1	0	4.86	7.57	0
2	1	3.78	8.11	0.1
3	2	3.03	8.54	0.2
4	3	2.49	8.97	0.3
5	4	2.16	9.08	0.4
6	5	2.16	9.41	0.5
7	6	2.27	9.3	0.6
8	7	2.59	9.08	0.7
9	8	3.14	8.76	0.8
10	9	3.78	8.32	0.9
11	10	4.86	7.68	1
12	11	5.95	7.24	1.1
13	12	7.35	6.92	1.2
14	13	8.76	6.7	1.3
15	14	10.27	6.59	1.4
16	15	11.68	6.81	1.5

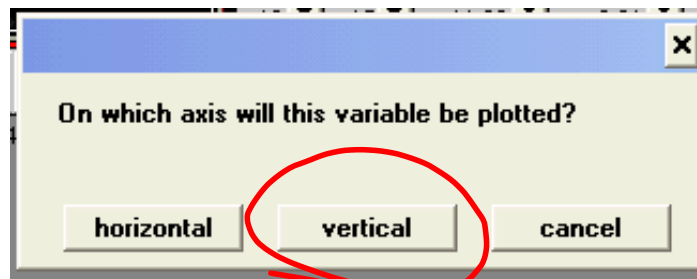
CLICK ON  $t$



NOW PLOT VERTICAL DISTANCE ( $y$ )  
VERSUS TIME ( $t$ ).

n	pos#	x	y	t
1	0	4.86	7.57	0
2	1	3.78	8.11	0.1
3	2	3.03	8.54	0.2
4	3	2.49	8.97	0.3
5	4	2.16	9.08	0.4
6	5	2.16	9.41	0.5
7	6	2.27	9.3	0.6
8	7	2.59	9.08	0.7
9	8	3.14	8.76	0.8
10	9	3.78	8.32	0.9
11	10	4.86	7.68	1
12	11	5.95	7.24	1.1
13	12	7.35	6.92	1.2
14	13	8.76	6.7	1.3
15	14	10.27	6.59	1.4
16	15	11.68	6.81	1.5

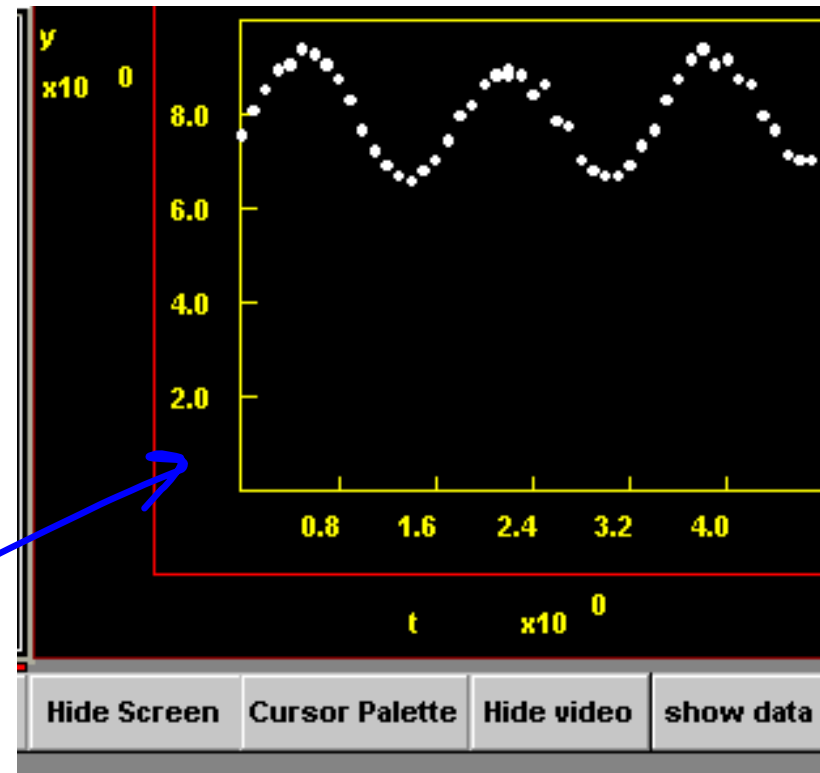
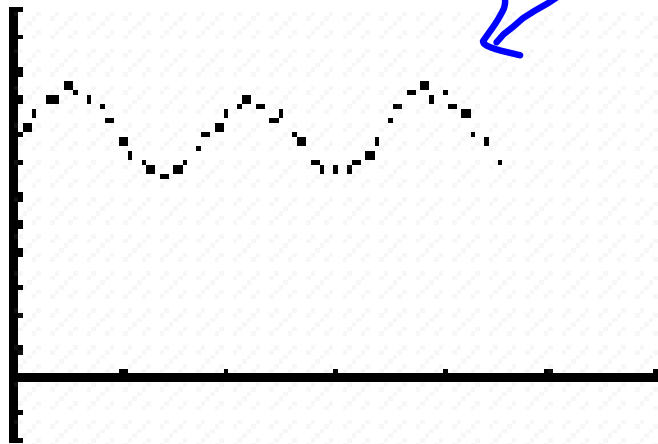
CLICK ON  $y$



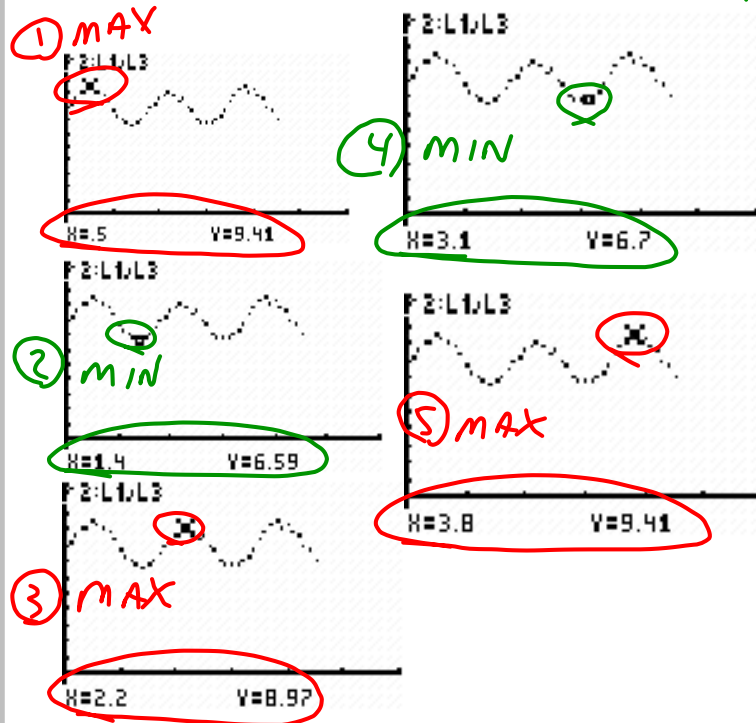
# SET UP A STAT PLOT & WINDOW

```
Plot1 Plot2 Plot3
Off
Type: [ ] [ ] [ ]
      [ ] [ ] [ ]
Xlist:L1
Ylist:L3
Mark: [ ] + [ ]

WINDOW
Xmin=0
Xmax=6
Xscl=1
Ymin=-2
Ymax=12
Yscl=1
Xres=1
```



GENERATE AN EQUATION TO MODEL THIS DATA



T	.5	1.4	2.2	3.1	3.8
y	9.41	6.59	8.97	6.7	9.41

Period = 1.7

T	.5	1.4	2.2	3.1	3.8
y	9.41	6.59	8.97	6.7	9.41

USE 6.65 FOR MIN

USE 9.41 FOR MAX

Period =  $\frac{2\pi}{B} = 1.7$

$1.7B = 2\pi$

$B = \frac{2\pi}{1.7}$

$A = \frac{\text{MAX} - \text{MIN}}{2} = \frac{9.41 - 6.65}{2} = 1.38$

$D = \frac{\text{MAX} + \text{MIN}}{2} = \frac{9.41 + 6.65}{2} = 8.03$

$D = \frac{\text{MAX} + \text{MIN}}{2}$

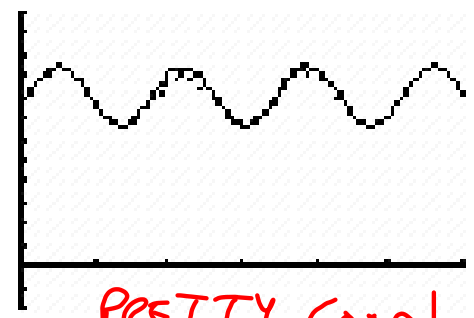
$C = -.5$

$y = 1.38 \cos\left(\frac{2\pi}{1.7}(x - .5)\right) + 8.03$

```

Plot1 Plot3
V1=.435cos(pi/1.7(x-2.2))+9.645
V2=1.38cos(2pi/1.7(x-.5))+8.03
V3=
V4=

```



PRETTY GOOD!



I hope you enjoyed this.

Please contact me with questions.

[www.TomReardon.com](http://www.TomReardon.com)

e-mail: [aust\\_tr@access-k12.org](mailto:aust_tr@access-k12.org)