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i2t2 2003

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TI83 Stats

TI83+ Activities

Scatter plot  "Fish in the Finger Lakes"
One Variable Data  "Histograms and Box-n-Whisker"
**FISH IN THE FINGER LAKES**

Fishermen in the Finger Lakes Region have been recording the dead fish they encounter while fishing in the region. The DEC monitor the pollution index for the Finger Lakes Region. The data table below show this information for the past ten years.

<table>
<thead>
<tr>
<th>Year</th>
<th>Pollution Index</th>
<th>Deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990</td>
<td>2.5</td>
<td>147</td>
</tr>
<tr>
<td>1991</td>
<td>2.6</td>
<td>130</td>
</tr>
<tr>
<td>1992</td>
<td>8.3</td>
<td>210</td>
</tr>
<tr>
<td>1993</td>
<td>3.4</td>
<td>130</td>
</tr>
<tr>
<td>1994</td>
<td>1.3</td>
<td>114</td>
</tr>
<tr>
<td>1995</td>
<td>3.8</td>
<td>162</td>
</tr>
<tr>
<td>1996</td>
<td>11.6</td>
<td>208</td>
</tr>
<tr>
<td>1997</td>
<td>6.4</td>
<td>178</td>
</tr>
<tr>
<td>1998</td>
<td>7.7</td>
<td>213</td>
</tr>
<tr>
<td>1999</td>
<td>4.6</td>
<td>189</td>
</tr>
</tbody>
</table>

1) a) Enter the data and produce a scatter plot. Use the Index as the x-variable and the deaths as the y-variable.

b) What is the meaning of slope in this model?

c) Determine the equation of the line of best fit.

d) Predict the number of dead fish for a pollution index of 15.

e) What pollution index would result in the death of 150 fish?

* using the **STAT, EDIT** feature of the TI83+, the Index will be placed in L1 and the Deaths in L2.
* using the window shown **STAT PLOT 1 (2nd Y=)** is turned on and following the directions in (a) L1 contains the Index (x) and L2 contains the number of deaths (y).
* using the **WINDOW**, set the xmin/Max and ymin/Max appropriately.
* using the **GRAPH**, show the scatter plot.

2) Discussing which mathematical model best fits this data can be a very rich classroom conversation. When working with paper and pencil, this can be demonstrated using a piece of "linguine." In this model the slope of the line of best fit is:
Deaths
Pollution

Deaths per unit of pollution.

* To determine the line of best fit using the calculator the STAT CALC feature is used and #4 LinReg is selected. By entering the arguments L1, L2, (2nd #1, 2nd #2) we are assured of the correct data sets being used in the calculation. Then we have to tell the calculator where to place the regression line VARS ; Y-VARS 1 (Function), Y 1 ENTER.

* In order to graph the Linear Regression Line just found we select the Y= menu and place our cursor at the function location of our choice.

* using the GRAPH, the scatter plot gives us a mathematical model with which to make predictions. Using this model you can answer parts (d) and (e).

**FISH IN THE FINGER LAKES**

1. Enter Data
2. Stat Plot
3. Zoom Stat
4. Graph
5. Guess
6. Spaghetti
7. Linear Reg
8. ax + b
9. Vars
10. Line Place
11. Y2 placed
12. Y2 Enter
13. Lin Reg
14. Y1 & Y2 On
15. Graph
16. Y2 only
17. Answer d
18. 2nd Calc
19. x = 15
20. Delete outlier
21. Guess
22. Spaghetti
23. 2nd 0
24. Down to D
25. Diag. on
### TI83+ Activities

**26. TI83+ Line**

```
Y1=12X+100
Y2=10.109802741
945X+115.3268296
8757
Y3=11X+115
Y4=

```

**27. ax + b**

```
b=115.3268297

```

**28. Line place**

```
DiagnosticOn
LinReg(ax+b) L1,

```

**29. Y4 place**

```
Y4 only

```

**30. Correlate**

```
a=10.10980274
b=115.3268297

```

**31. Y3 & Y4 only**

```
Y1=12X+100
Y2=10.109802741
945X+115.3268296
8757
Y3=11X+115
Y4=

```

**32. Graph**

```
x = 15

```

**33. Y4 only**

```
y = 307.94

```

**34. Answer d**

```
x = 15

```

```
y = 307.94

```
DESCRIBING ONE-VARIABLE DATA

*Topic 1  Histograms and Frequency Tables from Raw Data
(Explorations: pgs. 11 - 13)  a) set up the plot  b) set up the window


c) Why does City Hall appear to be taller after you change the
   Xscl = 20 ? ______

*Topic 6  Box Plots and Five-Number Summary
(Explorations: pg. 21)
a) What is the Five-Number Summary ?

min#________ Q1_________med_________ Q3________ max#________