

# Processing Statistics

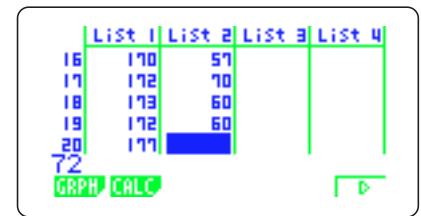
## Application: Processing statistics

**Objective:** Development of a class to show how to determine the relationship between two variables by using actual data and to produce statistics about everyday phenomena.

### Example of Classroom Session

- (1) The table shown below contains measurements of the height (cm) and weight (kg) of 20 high school seniors. Analyze the data to determine if there is a relationship between height and weight.

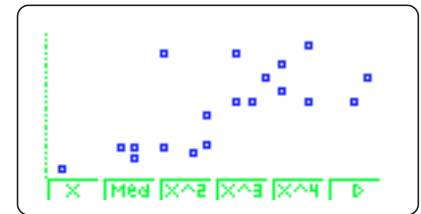
Height	Weight	Height	Weight	Height	Weight
175.0	62.0	164.0	50.0	181.0	65.0
174.0	65.0	169.0	49.0	170.0	57.0
160.0	46.0	175.0	68.0	172.0	70.0
165.0	50.0	165.0	48.0	173.0	60.0
170.0	51.0	177.0	60.0	172.0	60.0
167.0	50.0	180.0	60.0	177.0	72.0
165.0	50.0	167.0	70.0		



(Figure 1)

Select the STATISTIC Mode from the MENU, and input the paired data.

- Input height values in List 1 and weight values in List 2. (Figure 1)
- Press **[F1]** (GRPH) **[F1]** (GRPH1) to draw the graph.  
Horizontal axis: Weight Vertical axis: Height  
(Figure 2 - Correlation Diagram)
- Determine the correlation of height and weight, if any, from the correlation diagram.



(Figure 2)

- (2) Use a regression curve to make projections.

The following table shows the number of ninth-grade students by year.

Year	Number of Ninth-Grade Students	Year	Number of Ninth-Grade Students
1985	8,660	1992	9,200
1986	8,650	1993	8,950
1987	8,600	1994	8,900
1988	9,450	1995	8,700
1989	9,400	1996	8,550
1990	9,595	1997	8,290
1991	9,350	1998	8,300

Input the paired data items as before.

(1) Input the years (last two digits) into List 1 and the number of students into List 2. (Figure 3)

(2) Press **F1** (GRPH) **F1** (GRPH1) to draw the graph.  
Horizontal axis: Year Vertical axis: Number of students  
(Figure 4 - Correlation Diagram)

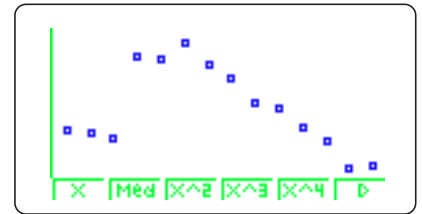
(3) Determine the correlation between the year and the number of students, if any, from the correlation diagram.

(4) Consider the proper regression type to use in order to make a projection of future values (number of students).

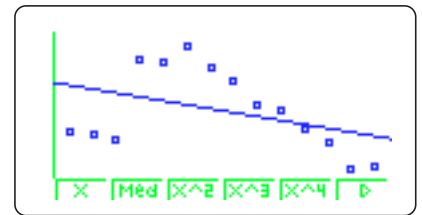
	List 1	List 2	List 3	List 4
11	95	8700		
12	96	8550		
13	97	8290		
14	98	8300		
15				

GRPH CALC

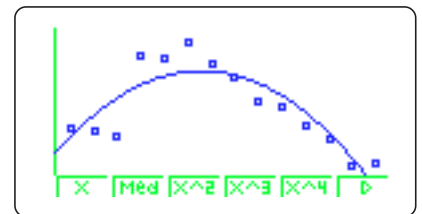
(Figure 3)



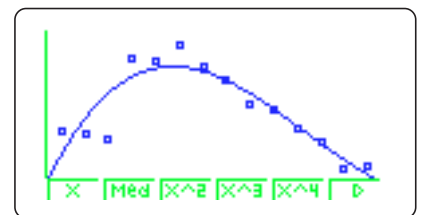
(Figure 4)



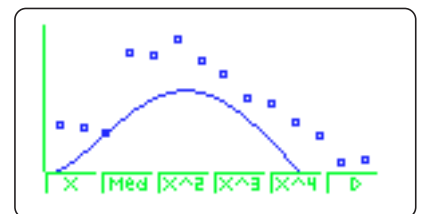
(Figure 5)



(Figure 6)



(Figure 7)



(Figure 8)

- Figure 5 - Linear Regression
- Figure 6 - Quadratic Regression
- Figure 7 - Cubic Regression
- Figure 8 - Quartic Regression