

# Module 2 – Activities & Problems

2.1 Ten students submitted their Design portfolios which were marked out of 40. The marks they obtained were

37 34 34 34 29 27 27 10 4 28

- For these marks find
  - the mode
  - the median
  - the mean.
- Comment on your results.
- An external moderator reduced all the marks by 3. Find the mode, median and mean of the moderated results.

2.2 A clerk entering salary data into a company spreadsheet accidentally put an extra “0” in the boss’s salary, listing it as €2,000,000 instead of €200,000. Explain how this error will affect these summary statistics for the company payroll:

- measures of center: median and mean.
- measures of spread: range, IQR, and standard deviation.

2.3 On the following pages are histograms that represent the distributions for different types of measurements. Your task is to look at the shape of each histogram and then sort the graphs into piles so that the graphs in each pile have a similar shape.

### TASK A

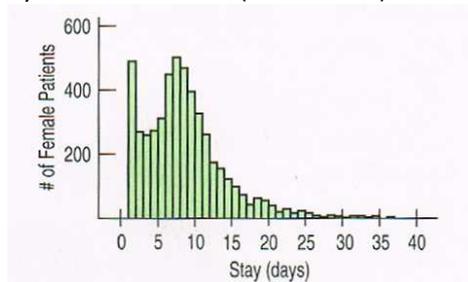
- Get into a group of 3 or 4 people.
- Separate out all of the graphs by cutting or tearing.
- Work with each other in the group to create piles of graphs that have the same shape.

### TASK B

Once you are satisfied, as groups, with the placement of the graphs into piles, do the following for each pile of graphs.

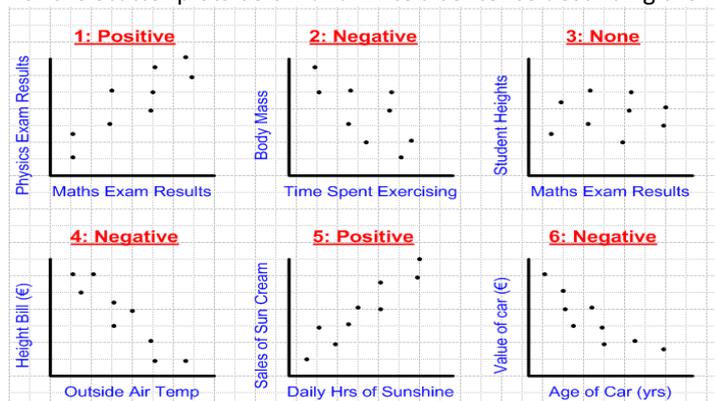
- Select one graph from each pile that you think is the most typical example of graphs in a pile.
- Decide on a word or phrase that can be used to label each pile. The name should try to capture some feature that is typical of all the graphs in a pile.
- Write a short description of two or three characteristics that define the graphs in each pile. See if you can come up with characteristics that help you distinguish the graphs in one pile from another pile. Once each group has finished with their descriptions, they will be asked to present their findings. We will see what each group has come up with and compare similarities and differences.

2.4 The histogram shows the lengths of hospital stays (in days) for all the female patients admitted to hospital in New York in 1993 with a primary diagnosis of acute myocardial infarction (heart attack)

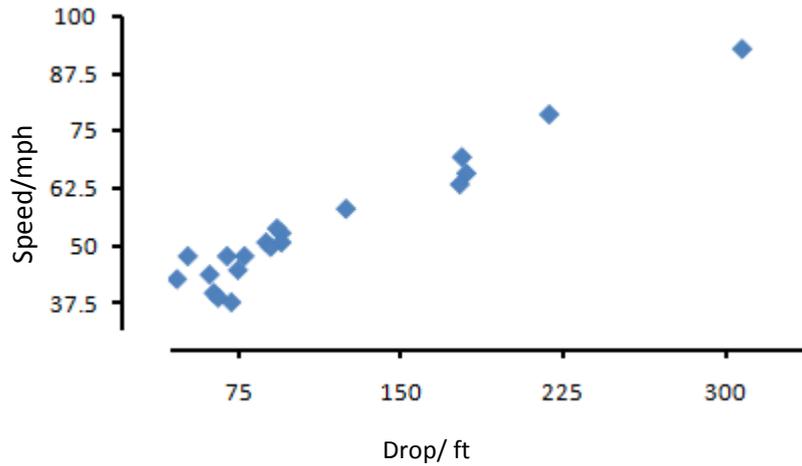


- From the histogram, would you expect the mean or median to be larger? Explain.
- Write a few sentences describing this distribution (shape, centre, spread, unusual features).

2.5 State the type of Correlation for the Scatter plots below and write a sentence describing the relationship in each case.



- 2.6** Roller coasters get all their speed by dropping down a steep initial incline, so it makes sense that the height of that drop might be related to the speed of the coaster. Here's a scatterplot of top Speed and largest Drop for 75 roller coasters around the world



- (a)** Does the scatterplot indicate that it is appropriate to calculate the correlation? Explain.
- (b)** In fact, the correlation of Speed and Drop is 0.91. Describe the association.
- 2.7** A candidate for office claims that “there is a correlation between television watching and crime” Criticize this statement in statistical terms.
- 2.8** Fast food is often considered unhealthy because much of it high in both fat and sodium. But are the two related? Here are the fat and sodium contents of several brands of burgers. Analyze the association between fat content and sodium.

Fat (g)	19	31	34	35	39	39	43
Sodium (mg)	920	1500	1310	860	1180	940	1260