

QUANTITATIVE METHODS

Martin Huard

February 28, 2005

Excel Mid-term Review

Answer each question on a separate spreadsheet, labeling the sheet with “Question #_”. Make sure that your results are properly labeled, with appropriate rounding and relevant units.

Question 1

In a survey on Canadian education, a random sample of 500 students rated their teacher. The results were as follows: 123 rated their teacher as Excellent, 225 as Very Good, 133 as Good and 19 as Not Good.

- With these results, construct a relative frequency distribution table.
- Sketch a Pie Chart

Question 2

A snack size bag of peanut M&M candies contains 21 candies of different colors.

- Open the results of the color count in the file “Data - Mid-Term Review”.
- Copy the results in your spreadsheet.
- Construct a relative frequency table, letting Excel do the counting.
- Sketch a Pareto diagram

Question 3

Sketch a time plot on the monthly amount of sunshine in Quebec City. The data can be found in the file “Data - Mid-Term Review”.

Question 4

The test scores on a 100-point test were recorded for a class of 20 students.

61	93	91	55	63	86	82	76	57	76
94	89	67	62	72	87	68	65	75	84

- Enter the data in a column.
- Find the mean, median and mode.
- Find the range, variance and the standard deviation.
- Find the 1st and 3rd quartiles.
- The 90th percentile

Question 5

For her geography project, Sara collected the average wind speeds (in kilometer per hour) for 45 selected cities in Canada.

- Open the results for her project in the file “Data-Mid-Term Review” and copy it on your spreadsheet.
- Compile the results in the form of a relative frequency distribution table, letting Excel do the counting.
- Sketch a histogram from the table obtained in (b)

Question 6

If you try to rent an apartment or buy a house, you find that many real estate representatives establish apartment rents and house prices on the basis of square footage of heated floor space. The data in the table give the square footages and sales prices for a number of randomly selected houses from those sold in a small city.

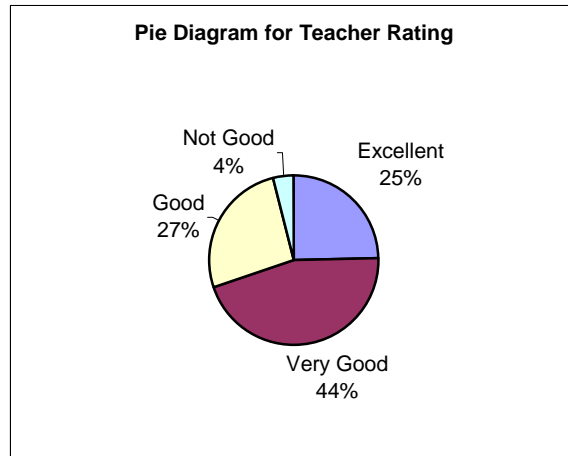
- a) Open the table in the file “Data - Mid-Term Review” and copy it on your spreadsheet.
- b) Find the equation of the least-squares line.
- c) Find the coefficient of correlation and the coefficient of determination.
- d) If a house has an area of 1550 square feet, what is the forecasted price?
- e) Sketch a scatter diagram containing the least-squares line.

Answers

Note: The shaded numbers were found using formulas.

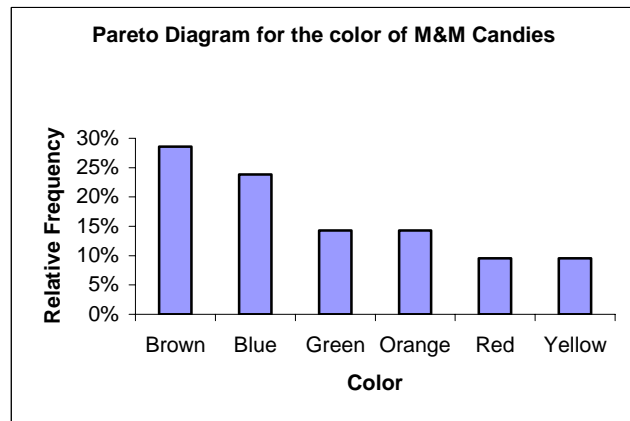
Question 1

Rating	Frequency	Relative Frequency
Excellent	123	25%
Very Good	225	45%
Good	133	27%
Not Good	19	4%
	500	100%

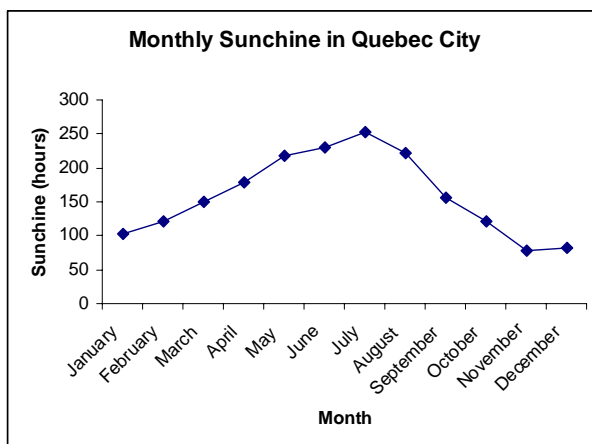


Question 2

Color	Frequency	Relative Frequency
Brown	6	29%
Green	3	14%
Blue	5	24%
Red	2	10%
Yellow	2	10%
Orange	3	14%
	21	100%



Question 3



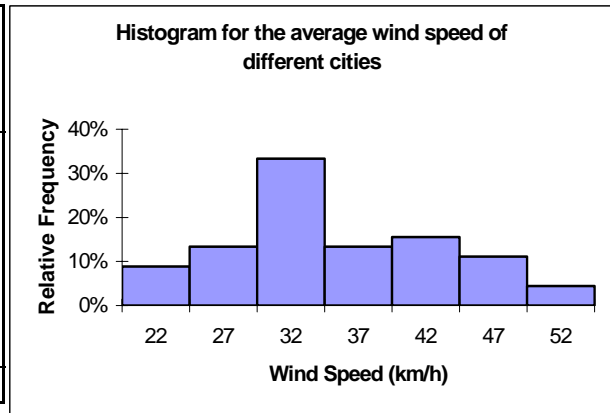
Question 4

Measures for the test-scores in a class

Mean	75.15
Median	75.5
Mode	76
Range	39
Variance	149.4
Standard Deviation	12.22
Q ₁	64.5
Q ₂	86.25
P ₉₀	91.2

Question 5

<i>Frequency Distribution for the average wind speed of different cities</i>			
Wind Speed (km/h)	Frequency	Relative Frequency	Midpoint
20 to 24	4	9%	22
25 to 29	6	13%	27
30 to 34	15	33%	32
35 to 39	6	13%	37
40 to 44	7	16%	42
45 to 49	5	11%	47
50 to 54	2	4%	52
<i>Total</i>	45	100%	



Question 6

Regression and Correlation for Area vs Price of housing

Equation of least-squares line $y = 51\,206 + 27.41x$

Coefficient of correlation $r = 0.978$

Coefficient of determination $r^2 = 0.9574$

Forecast price for an area of \$ 93 685

1550 square feet

