Frequencies and Descriptives
(Note that some aspects of this output have been rearranged for the sake of presentation!)

"N" provides the sample size for the entire data set. "Missing" refers to the number of entries that are blank, whereas "Valid" is the number of entries that are not blank.

Descriptive Statistics

	score
Valid	8
Missing	0
Mean	4.000
Std. Deviation	3.117
Variance	9.714
25th percentile	2.250
50th percentile	4.000
75th percentile	5.500

The "Mean", "Standard Deviation", and "Variance" are all calculated as unbiased estimates of the respective population parameter. Here, the mean is determined as the average of the scores weighted by their frequencies:

$$M = \frac{\sum(fY)}{N} = \frac{(2 \times 0) + (1 \times 3) + (2 \times 4) + (1 \times 5) + (1 \times 7) + (1 \times 8)}{8} = 4$$

The "Variance" and "Std. Deviation" are both functions of the Sum of Squares (not shown in the output) of the scores in the frequency distribution:

$$SS = \sum f(Y - M)$$
$$SS = 2(0 - 4)^2 + 1(3 - 4)^2 + 2(4 - 4)^2 + 1(5 - 4)^2 + 1(7 - 4)^2 + 1(8 - 4)^2 = 68$$

Then, the "Variance" (also known as Mean Squares) is calculated as:

$$MMS = \frac{SS}{(N - 1)} = \frac{68}{7} = 9.714$$

Finally, the "Std. Deviation" is determined by:

$$SD = \sqrt{MS} = \sqrt{9.71} = 3.117$$

Frequencies for Outcome

	Frequency	Percent	Valid Percent	Cumulative Percent
0	2	25.000	25.000	25.000
3	1	12.500	12.500	37.500
4	2	25.000	25.000	62.500
5	1	12.500	12.500	75.000
7	1	12.500	12.500	87.500
9	1	12.500	12.500	100.00
Missing	0	0.000		
Total	8	100.000		

"Percentiles" provide the scores associated with particular percentile ranks. For example, the 50th percentile is the score in the following position:

$$Position = PR(N + 1) = .50(8 + 1) = 4.5$$

Thus, the score at the 50th percentile is the 4.5th score in the frequency distribution – a score of 4.

The first column lists all of the actual scores in the entire data set. "Frequency" indicates the number of times that score exists. For example, the score 4 was listed 2 times.

The "Percent" column provides the percentage of cases for each possible score. For example, of the 8 scores in the entire data set, the score of 4 was listed 2 times and 2/8 is 25.0%.

The "Valid Percent" column provides the percentage of cases for each possible score divided by the total number of cases. Here, there were no missing scores, so the percent columns are equal.

"Cumulative Percent" is the sum of all percentages up to and including the row in question. For example, 62.5% of scores were a 4 or smaller. Similarly, 37.5% were a 3 or smaller.