

Grade 7 Maths Worksheet

Data handling

Questions:

1. Precious has written 15 math class tests this year. Her test scores are shown below as percentages.

91 98 84 94 78 86 88 81 89 100 89 82 96 91 100

- a) Draw a stem and leaf plot of this set of data. (Include a key)
- b) **Calculate** the mean, median and the mode of her mathematics test scores? Show your workings.
- c) What does each of your answers in (b) mean?
- d) After the 16th test, Precious has a mean score of 87%. What percentage did she obtain for the last test?
- e) If she wants to win a gold certificate for mathematics, she has to have above 90% average for mathematics for the year. There are two tests left for the year. Can she still make it? Explain.

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Solution

1. a)

Precious's Mathematics Marks

Stem	Leaf
7	8
8	1 2 4 6 8 9 9
9	1 1 4 6 8
10	0 0

Key: 9|1 is 91 marks

In this stem-and-leaf diagram the units are the “leaves” and the “tens” are the stems. We also order the “leaves”, as this will help us to determine the median.

b) Mean: $\bar{x} = \frac{\text{Sum of all values}}{\text{Number of values}} = \frac{1347}{15} = 89,8$

Median:

The numerical value that lies in the middle of the **ordered** data in position $\frac{n+1}{2}$ where n represents the number of values (since the number of data items are odd). The stem-and-leaf diagram can be used to find the median.

Position of the median: $\frac{15+1}{2} = 8$. Count from highest mark, reading from right to left or from lowest mark, reading from left to right.

Median = 89

Mode:

Mode = 89, 91 and 100

- c) The mean value of 89,8 is the average of all her tests.
 The median value of 89 is the middle most value of all her tests
 The modal values are the test marks that repeat themselves. The value that appears most frequently. There can be more than one mode, but if all values in the complete data set are equally represented there is no mode.
- d) To have a mean (average) of 87% after 16 tests, the total must be $16 \times 87 = 1392$. The previous total was 1347. Add $(1392 - 1347 =) 45$ to 1347 to get 1392, hence the last test must be 45%.

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- e) To have a mean (average) of 90% after 7 tests, the total must be $17 \times 90 = 1\,530$. The previous total was 1 347. Now $1\,530 - 1\,347 = 183$. $183 \div 2 = 91,5$. It is possible to get 91,5%. In fact as long as the total for the 2 remaining tests is 183, Precious will be successful in obtaining a gold medal.

Here the mean is asked as well as given. When it is given a conceptual idea of the mean is necessary to calculate the mean.

Appendix of Assignment Tools

Stem and Leaf Plots

Mean

Median

Mode

Fraction

Decimal