



The mass (in kg) at birth of forty newborns is recorded. The ordered results are:

2.2	2.2	2.3	2.5	2.5	2.5	2.6	2.6	2.7	2.8
2.8	2.9	2.9	3.0	3.0	3.0	3.1	3.1	3.1	3.1
3.2	3.2	3.3	3.3	3.3	3.4	3.4	3.5	3.5	3.6
3.6	3.7	3.7	3.8	3.9	3.9	3.9	3.9	4.1	4.3

Determine

a) the 1st quartile. 2.8    b) the median. 3.15    c) the 3rd quartile. 3.6

$Q_1$                        $Q_2$                        $Q_3$

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Range: The maximum value - the minimum value

Interquartile range:  $Q_3 - Q_1$

**BOX-AND-WHISKER PLOTS**

- The box-and-whisker plot illustrates:
  - the minimum, the maximum and therefore the range of a distribution;
  - the first quartile, the third quartile and therefore the interquartile range;
  - the median of the distribution.

Ex.: We recorded the heights  $X$  (in cm) of a college basketball team's players. We got:  $X_{\min} = 178$  cm;  $X_{\max} = 202$  cm;  $Q_1 = 184$  cm;  $Q_2 = 188$  cm;  $Q_3 = 191$  cm.

The box-and-whisker plot illustrating the distribution of the players' heights is:

The box-and-whisker plot gives us information on the dispersion or concentration of the data. However, we can draw no conclusions with regards to the values, the mean or the mode.

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The following box-and-whisker plots represent the results of three groups of students who wrote the same mathematics exam.

Determine

- the group with the highest failure rate if 60 is the passing mark. C
- the group that seems to be the most homogeneous. B
- the group where it is most likely to have a mark greater than 80. A

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