



Concepts for teaching units

Environment	Descriptive Statistics Working with data from the students' everyday life in order to get to know and deepen the most important parameters and representation types of descriptive statistics
Age of students/grade	16 years / 10th grade (Austria) The age of the students depends on the lesson plan developed from this lesson. This mathematical subject can be taught at other school levels in other countries.
Length of the unit	2-3 lesson(s) of 50 minutes each
Materials needed	<ul style="list-style-type: none">• Piece of paper or booklet to solve the tasks if there is not enough space on the information sheet• Stationery• Calculator
Objectives	<ul style="list-style-type: none">• The students improve their team skills.• The students apply mathematical content to everyday problems.• The students improve their understanding of the text.• The students get to know different ways of presenting data.• Students learn about statistical indicators such as mean, mode and median and learn how to use them.
Content related anchor points	The following questions must be clarified for the teacher when preparing the teaching unit: <ul style="list-style-type: none">• What materials are required (newspaper, print out terms wrapped in foil, create a worksheet)?• Does a short mathematical input have to be given, where the students are familiarized with the most important terms and laws?• How can the teacher support the students during the work phase?• Is the topic treated in individual, partner or group work?

Methodology related anchor points	<p>Newspapers will be distributed at the beginning of the lesson. The teacher places terms such as “bar chart”, “pie chart” and “boxplot” on a table. The students have the task of cutting out different types of representation of data from the newspapers and assigning them to the terms.</p> <p>After that, all the types of representation mentioned will be discussed and reproduced using an example you have chosen yourself. In this phase, the students themselves are active.</p> <p>The coming phase is then designed more as frontal teaching. For the self-chosen example, the body sizes or the shoe sizes of the students can be used. Each learner has to write their value on the blackboard. After that, the term "original list" can be discussed and this list can be sorted. Here it is particularly suitable to address the terms "minimum", "maximum", "range", "mode", "median" and "arithmetic mean". This exercise can be complemented by the notion of a quartile and the creation of an associated boxplot.</p> <p>In order to take up the presentation of data again, the absolute frequencies of the individual values are first found out with a tally and noted as a number. After that, these values can be grouped. This grouping results in new absolute frequencies. Based on this, a pie chart, a histogram and a column chart are now created. If the term "quartile" was explained at the beginning, a boxplot can also be created at this point. A worksheet can be prepared in advance for this phase, in which only the values need to be completed. In addition, the use of a compass for the pie chart can be avoided, which the students often do not have with them, especially in the upper school.</p> <p>After this rather large input, the same worksheet can be dealt out again, since there are no values on it. The worksheet can be supplemented with the shoe sizes of the students and worked on again in pairs. In addition, additional questions can also be processed at this point, which, for example, address the influence of an extremely large value or an extremely small value (a so-called outlier) on the mean and the median.</p>
Language related anchor points	<p>Articles that contain graphics may be written in language that is difficult for students. In addition, they contain a wealth of new words and expressions, which should be discussed with the learners in advance. Pupils in particular, for whom the text was not written in their mother tongue, could have major problems here. However, this linguistic hurdle can also arise for students whose mother tongue corresponds to the language in the text. Many expressions are rarely used in the everyday life of the students and are therefore often unfamiliar.</p>