

Yenka Statistics Lesson Plan

Averages



www.yenka.com

Duration	10-15 minutes
Materials	<p>Yenka software:</p> <ul style="list-style-type: none"> • installed with version 2.2.0 or greater • licensed with School Site Licence for Yenka Statistics or a free Trial Licence available from yenka.com • projected onto a whiteboard
Objective(s)	To demonstrate that mean and median are measures of "average".
Setup	<p>The teacher should prepare line-ups with the names of some pupils in the class, preferably with details of their height and perhaps shoe size that have been collected in an earlier lesson. If possible, prepare separate line-ups for the girls and boys to allow comparison. Ideally, the chosen data will give similar values for mean and median.</p> <p>When introducing these concepts, it's best to use only a small number of individuals in a line-up (e.g., between 5 and 10). This will facilitate understanding and simplify the calculations.</p>
Instruction	<p>The lesson begins with the line-ups of pupils in the class. The teacher asks if the boys are taller than the girls or vice versa and this should not be too obvious from the data. It may help to discuss what this question is really asking. (Is it the same as asking if the tallest person is a girl or a boy? What else could this question mean?)</p> <p>After discussion and definition of "mean", the teacher prompts the pupils to compare the mean height of girls and boys, which are then displayed under the summary tabs. The teacher then asks why there is another average and what it means. (Depending on the class some pupils may have heard of the median).</p> <p>The discussion should focus on why we might need to calculate another measure of average and how the mean and median are different. By clicking on the mean and median in the summary tab, the teacher reveals the mean and median lines on the wall in the line-up, which are ideally similar. One or more pupils is then stretched or shrunk to show the effect on the mean and relative lack of effect on the median. This is a good opportunity for fun by creating very tall or very short individuals, but care should be taken to avoid offence.</p>
Extensions	<ul style="list-style-type: none"> • As a continuation, the teacher could show how medians are calculated using the original line-up height data, the shoe size data, or a completely new line-up. This could include calculating the effect of adding a new person to the line-up. • A discussion of mode could be introduced by editing the line-up so that two people have the same height. • A detour could be taken into the correlation between shoe size and height. • The same strategy could be used to illustrate the need for a measure of spread - though the data would need to be more carefully selected and might have to be invented. • The idea of changing the height of one or two selected pupils could also be used to illustrate the need for inter- quartile range as a measure of spread.



A video showing how this lesson plan can be used with Yenka Statistics is available here: www.yenka.com/en/Getting_Started/