

How many measurements do you have to make?

When planning a science project, one of the most important decisions to make is how many measurements you're going to make (sample size). In general, the answer is **always more than one**. In fact, **the more measurements you make the better the project will be**. Below are several typical examples for you to use as guidance when deciding the proper sample size for your type of project:

Distance: If you're measuring the “bounce” of the same ball at different pressures, ten or more measurements for each pressure tested would seem reasonable.

Time: If you're measuring the time it takes for different balls to travel down a ramp, you should make ten or more measurements for each ball.

Effect of music on arithmetic ability: Experiments with people need even more measurements. Use at least twenty subjects having similar characteristics such as age or grade level. If you choose to measure the differences caused by age, gender, etc., be sure to have a similar (and large) number representing each subset of participants.

Temperature: If you're trying to find out the effect of salt on the boiling point of water, use at least five separate measurements for each salt concentration.

Plant growth: While measuring the effect of fertilizer on plant growth, set up at least two containers for each concentration of fertilizer. Each of the containers should be planted with five to ten seeds, and as time passes, every plant in every container should be measured. Don't fall into the trap of just measuring the tallest (or shortest) plant in each container.

Many more examples could be given, but you get the idea. **The more the better.** Don't throw away data. For the most part it is best to use all the data you collect. Manipulation of data by the use of average values is covered in another section.