

## Answer on Question #43924 – Math – Statistics and Probability

### Question:

Define what we mean by a variable, and explain the difference between a quantitative variable and a qualitative (categorical) variable.

### Solution:

**Variables** are properties or characteristics of some event, object, or person that can take on different values or amounts (as opposed to constants such as  $\pi$  that do not vary).

In other words, we can also characterize variables as things which are measured, controlled or manipulated in a research problem. Variables differ in respect of their role in research.

**Quantitative variables** differ in magnitude, they can be measured in terms of numbers, e.g. income, age, GNP, etc., like “number of people per square mile”, “weight of platform is 8.5 pounds” .

**Qualitative variables** do not have natural sense of ordering, they can be observed but not measured. They differ in kind rather than in magnitude, they deal with description, e.g. marital status, gender, religion, smells, tastes, textures, eye color, nationality, etc., like “brown dog fur.”