

## 5.1: Terminology

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Before we consider different types of distributions, let's define some key terms. You may wish, as well, to review the discussion of different types of data in Chapter 2.

### Populations and Samples

A population includes every possible measurement we could make on a system, while a sample is the subset of a population on which we actually make measurements. These definitions are fluid. A single bag of M&Ms is a population if we are interested only in that specific bag, but it is but one sample from a box that contains a gross (144) of individual bags. That box, itself, can be a population, or it can be one sample from a much larger production lot. And so on.

### Discrete Distributions and Continuous Distributions

In a discrete distribution the possible results take on a limited set of specific values that are independent of how we make our measurements. When we determine the number of yellow M&Ms in a bag, the results are limited to integer values. We may find 13 yellow M&Ms or 24 yellow M&Ms, but we cannot obtain a result of 15.43 yellow M&Ms.

For a continuous distribution the result of a measurement can take on any possible value between a lower limit and an upper limit, even though our measuring device has a limited precision; thus, when we weigh a bag of M&Ms on a three-digit balance and obtain a result of 49.287 g we know that its true mass is greater than 49.2865... g and less than 49.2875... g.

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