
Math Mammoth Statistics & Probability

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Introduction

Math Mammoth Statistics & Probability book is a worktext with instruction and exercises, meant for grades 5-7.

The book starts with the easiest topics, such as reading different graphs and bar graphs. These lessons are meant for 5th grade. Some are useful even in earlier grades. Then we study histograms and various kinds of line graphs, including how to draw them.

The next section deals with mean, median, and mode—the three measures of central tendency— how to use them, and how these concepts relate to line and bar graphs. When calculator use is allowed in the problem, it is marked with a little calculator symbol.

To create circle graphs, the student needs to calculate percentages, and it is assumed here that the student has already mastered how to calculate those. The lesson on data analysis presents various types of graphs for students to read, and reviews some other percent-related topics.

Then students learn how to make stem-and-leaf plots. Stem-and-leaf plots are simple plots that can be used with 15-100 data items. They are not often seen in media because you cannot use them with large amounts of data.

I decided to omit the topic of making box-and-whiskers plots (boxplots) though that is listed in some standards and is covered in some math curricula, because interpreting and using them is really beyond the knowledge of middle school students. They are not that common either.

We study range as a simple measure of variance. There exist far better measures of variance, such as the interquartile range, standard deviation, and others, but I feel those are also advanced for middle school. Statistical measures is a vast area of study, and I feel it is not necessary to introduce to students all kinds of measures (such as interquartile range) if all that students could do with it is to calculate it, and not use it in a meaningful way in interpreting data. Interpreting data using statistical measures (such as mean, median, mode, standard deviation, and others) is a skill that requires more in-depth understanding of statistics than what can be covered here.

The book also includes an optional statistics project, in which the student can develop investigative skills.

Probability is a topic that in the past was only taught in high school—for example, I personally encountered it the first time in 12th grade. However, in recent years it has “crept” down the grade levels and many states require probability topics even in elementary school.

We start with the concept of simple (classic) probability, and then expand into probability involving two events. This is all that is needful to master at this point (middle school). The exercises involve tree diagrams, dice, flipping coins, picking marbles, spinning spinners, and probability involving statistics, which are the usual types of situations in the study of probability.

*Wishing you success in all your math teaching endeavors,
Maria Miller, the author*