

# Eureka Math Parent Guide

A GUIDE TO SUPPORT PARENTS AS THEY WORK WITH THEIR STUDENTS IN MATH.

GRADE 6  
MODULE 6

## GRADE FOCUS

Sixth grade mathematics is about (1) connecting ratio and rate to whole number multiplication and division and using concepts of ratio and rate to solve problems; (2) dividing more complex fractions and extending idea of rational numbers to include negative numbers; (3) writing, interpreting, and using expressions and equations; and (4) developing understanding of statistical thinking.

- Module 1: Ratios and Unit Rates
- Module 2: Arithmetic Operations Including Dividing by a Fraction
- Module 3: Rational Numbers
- Module 4: Expressions and Equations
- Module 5: Area, Surface Area, and Volume Problems

### » Module 6: Statistics

## LET'S CHECK IT OUT!

## MODULE 6 FOCUS

In this 22-lesson module, students will move from simply representing data into analysis of data. Students will begin to think and reason statistically, first by recognizing a statistical question as one that can be answered by collecting data. Students will learn that the data collected to answer a statistical question has a distribution that is often summarized in terms of center, variability, and shape. Students will also see and represent data distributions using dot plots, histograms, and box plots.

### MORE SPECIFICALLY, CHILDREN WILL LEARN HOW TO:

- Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers.
- Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape.
- Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number.
- Display numerical data in plots on a number line, including dot plots, histograms, and box plots.
- Summarize numerical data sets.

## TOPIC OVERVIEW

Topics are the lessons within a module that help children master the skills above. Here are the lessons that will guide your child through Module 6:

- Topic A: Understanding Distributions
- Topic B: Summarizing a Distribution that is Approximately Symmetric Using the Mean and Mean Absolute Deviation
- Topic C: Summarizing a Distribution that is Skewed Using the Median and the Interquartile Range
- Topic D: Summarizing and Describing Distributions

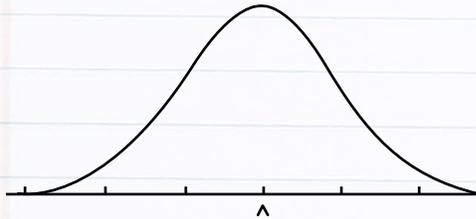
## WORDS TO KNOW

- **Statistical Question:** A question that anticipates variability in the data that would be collected in order to answer the question. *Examples:* How old are the students in my school? (ages will vary) What are the favorite colors of 6th graders in my school? (colors will vary); *Non-Examples:* How old am I? (only one age) What is my favorite color? (only one color)
- **Median:** A measure of center appropriate for skewed data distributions. It is the middle value when the data are ordered from smallest to largest if there are an odd number of observations and half way between the middle two observations if the number of observations is even.
- **Mean:** A measure of center appropriate for data distributions that are approximately symmetric. It is the average of the values in the data set. Two common interpretations of the mean are as a "fair share" and as the balance point of the data distribution.
- **Dot Plot:** A plot of numerical data along a number line.
- **Histogram:** A graphical representation of a numerical data set that has been grouped into intervals. Each interval is represented by a bar drawn above that interval that has a height corresponding to the number of observations in that interval.
- **Box Plot:** A graph of five numerical summary measures: the minimum, lower quartile, median, upper quartile, and the maximum. It conveys information about center and variability in a data set.
- **Variability:** Variability in a data set occurs when the observations in the data set are not all the same.
- **Deviations from the Mean:** The differences calculated by subtracting the mean from the observations in a data set.
- **Mean Absolute Deviation (MAD):** A measure of variability appropriate for data distributions that are approximately symmetric. It is the average of the absolute value of the deviations from the mean.
- **Interquartile Range (IQR):** A measure of variability appropriate for data distributions that are skewed. It is the difference between the upper quartile and the lower quartile of a data set and describes how spread out the middle 50% of the data are.

# SAMPLE PROBLEMS

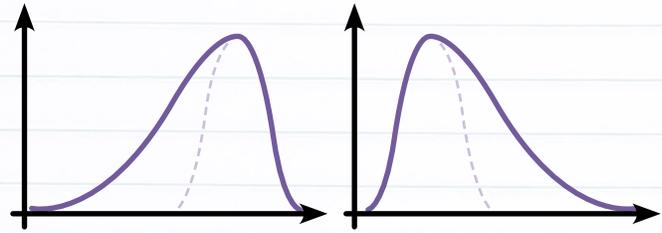
SAMPLE 1:

**Mound-Shaped or Symmetric Distribution**



**Skewed Distribution**

Skewed distributions have values that are not typical of the rest of the data. They may have data much greater or much lower than the rest of the data.

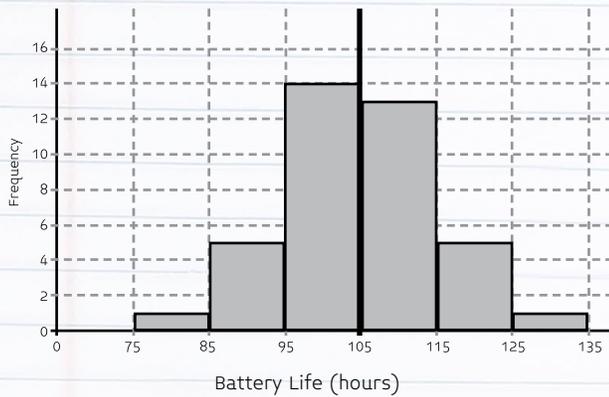


**Skewed Left**  
(skewed toward smaller values)

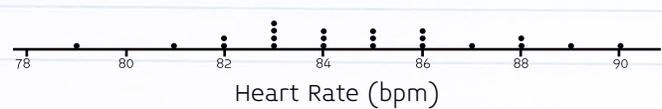
**Skewed Right**  
(skewed toward larger values)

SAMPLE 2

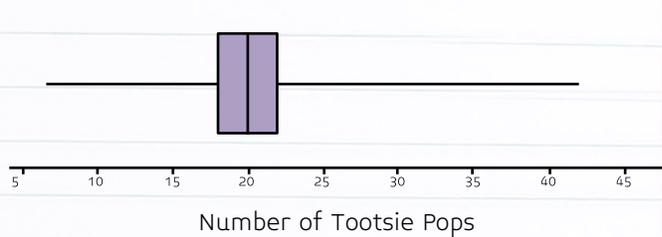
**Histogram of Battery Life**



**Dot Plot of Heart Rate**



**Box Plot of Tootsie Pops**



## HOW YOU CAN HELP AT HOME

- Every day, ask your child what they learned in school and ask them to show you an example.
- Ask your child to create a data set that represents a symmetrical distribution. One possible solution:  $\{-2,-2,-1,0,1,2,2\}$