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# Introduction

## Why Teach Data Analysis Skills?

Data is all around us. But data analysis can be difficult for teachers to teach. Most core curriculum programs have only a few lessons about data and graphs. As a result, teachers do not have a wealth of content to use to teach these skills.

With *Data Science and Data Literacy*, students are given strong problem-solving strategies that they will use in their daily lives and in their future careers. This book will provide students with frequent opportunities to master and retain data analysis skills in a structured, user-friendly manner.

*Data Science and Data Literacy* will teach students how to read data in graphs, how to create their own graphs based on data that is meaningful to them, and how to analyze and interpret data in graphs.

## About the Book

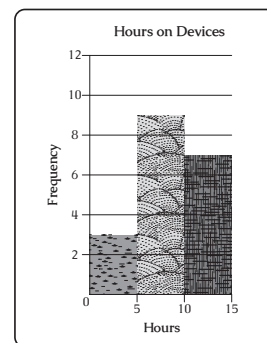
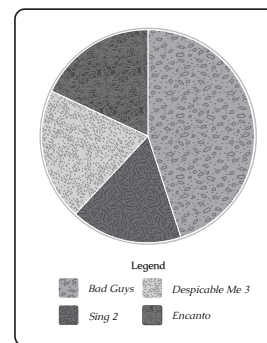
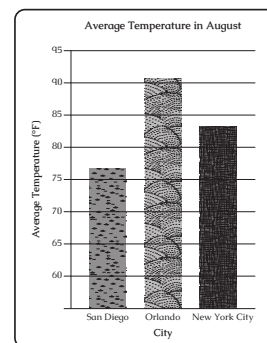
This book is divided into units that correspond to the type of graph used. Each unit has a real-world theme about which students will gather data. All surveys, problems, and graphs in that unit are centered around the theme. These themes include favorite foods, pets, and book genres.

Each unit is presented in the following sequence:

- 🕒 an introduction to the type of graph covered in the unit
- 🕒 a unit vocabulary page with terms students will need to know for the unit
- 🕒 a real-world situation presented in the form of data and a graph, with questions that students answer to analyze the given data
- 🕒 data provided for students to create their own graphs and interpret the results
- 🕒 a final activity in which students create their own survey, collect data, and analyze the information gathered

The book concludes with an appendix, which provides the following:

- 🕒 a section on spotting misleading data that gives information about ways graphs can be used to show deceptive or incorrect information; students will become data detectives, ready to recognize these techniques on social media or elsewhere in their daily lives
- 🕒 full-size blank templates of graphs from each unit that students can use to collect and record a variety of data
- 🕒 an answer key for each unit in the book

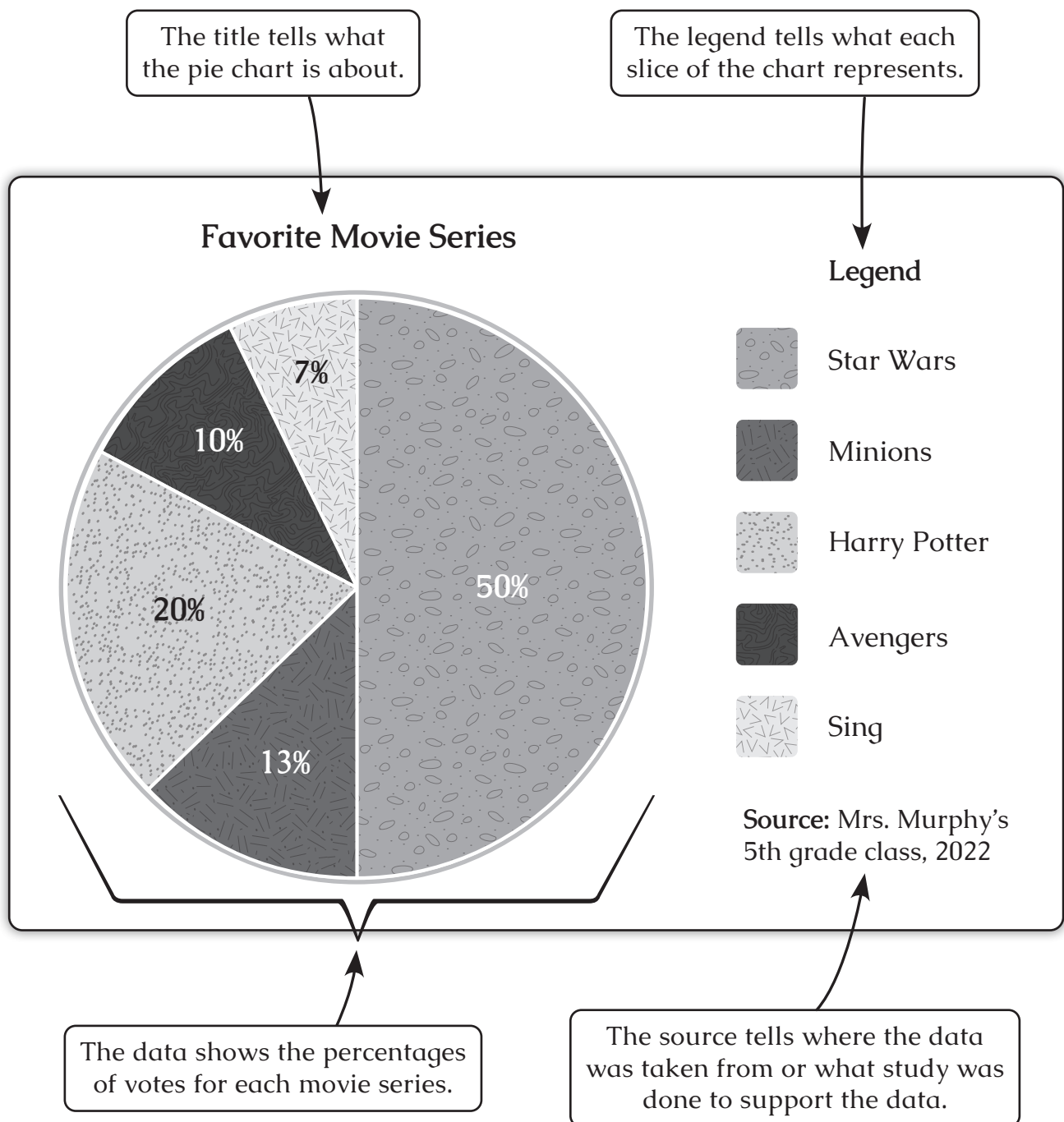


# Pie Charts

## Introducing the Chart

A pie chart shows data in the shape of a circle. These graphs show how a whole data set is broken into parts. Each “slice” of the chart represents a percentage, fraction, or proportion of the whole data set.

Pie charts have three main parts: the title, the legend, and the data. Pie charts showing information from scientific studies, government research, or other studies from experts will also contain a source. The source tells which study the information in the pie chart comes from.



Name: \_\_\_\_\_

Date: \_\_\_\_\_

### Collect and Record Data

**Directions:**

- Choose a group of people whose height you want to measure. Examples: You could measure the height of everyone in your family, or you could gather data about the height of your favorite athletes or TV stars.
- Measure at least 10–20 people to have enough data to analyze.
- Record the data on a dot plot. Be sure to include a title with the units of measurement you used.

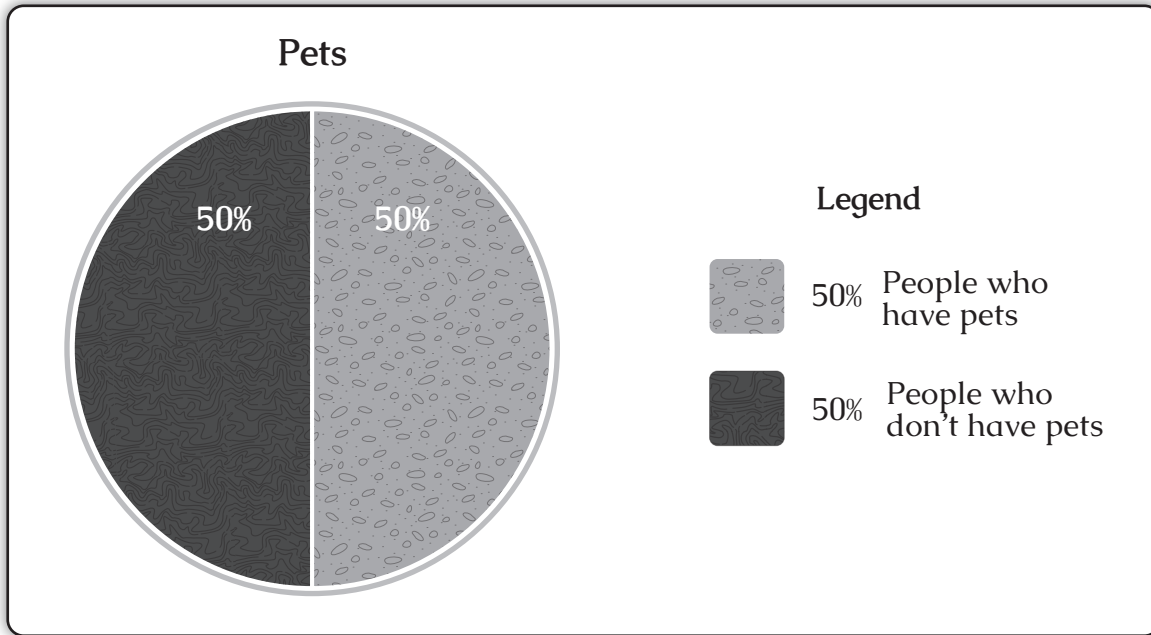
Title: \_\_\_\_\_

A large empty rectangular box with a dashed border, intended for drawing a dot plot. A horizontal double-headed arrow is drawn across the bottom of the box.

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Data can also mislead people if the sample size is very small. Look at the pie chart below.



According to this chart, 50% of people have pets and 50% do not.

The pie chart does not tell us the number of people surveyed. This leads us to believe that 50% of all people have pets. But, what if you found out the pie chart only reflects data from 6 people surveyed about the topic? If only 6 people were surveyed, that means that 3 of them have pets and 3 do not.

$$\frac{3}{6} = 50\%$$

This is not a large enough sample size to produce accurate data.

1. Do you think the data in the pie chart reflects what you know to be true about people who have pets? Why or why not?

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2. What would be a better sample size to collect data from? Explain your thinking.

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