

Table of Contents

Introduction	3	Unit 4: Pictographs	
How to Use This Book	4	Introducing the Graph	37
Parent Letter	6	Unit Vocabulary	38
		Data in the Real World	39
Unit 1: Tally Marks and Tally Charts		Analyze the Data	41
Introducing the Chart	7	Graph It!	42
Unit Vocabulary	8	Interpret the Graph	43
Data in the Real World	9	Collect and Record Data	44
Analyze the Data	11	Analyze Your Data	45
Graph It!	12		
Interpret the Graph	13	Unit 5: Line Graphs	
Collect and Record Data	14	Introducing the Graph	47
Analyze Your Data	15	Unit Vocabulary	48
		Data in the Real World	49
Unit 2: Bar Graphs		Analyze the Data	51
Introducing the Graph	17	Graph It!	52
Unit Vocabulary	18	Interpret the Graph	53
Data in the Real World	19	Collect and Record Data	54
Analyze the Data	21	Analyze Your Data	55
Graph It!	22		
Interpret the Graph	23	Unit 6: Line Plots	
Collect and Record Data	24	Introducing the Plot	57
Analyze Your Data	25	Unit Vocabulary	58
		Data in the Real World	59
Unit 3: Pie Charts		Analyze the Data	61
Introducing the Chart	27	Graph It!	62
Unit Vocabulary	28	Interpret the Graph	63
Data in the Real World	29	Collect and Record Data	64
Analyze the Data	31	Analyze Your Data	65
Graph It!	32		
Interpret the Graph	33	Appendix	
Collect and Record Data	34	Spotting Misleading Data	67
Analyze Your Data	35	Templates	73
		Answer Key	78

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

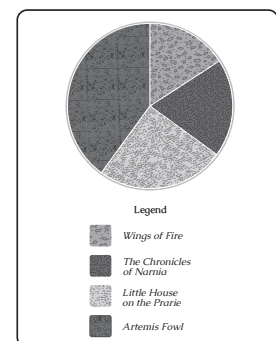
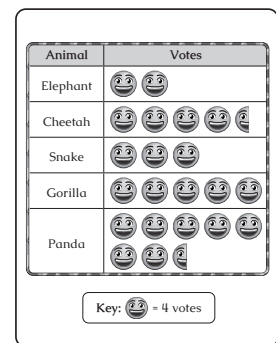
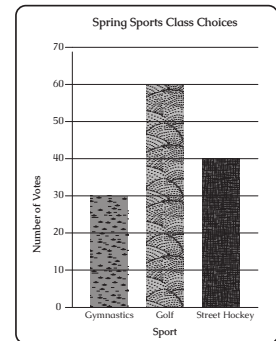
This book is divided into units that correspond to the type of graph used. Each unit has a real-world theme about which students will gather data. All surveys, problems, and graphs in that unit are centered around the theme. These themes include favorite foods, pets, and book genres.

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

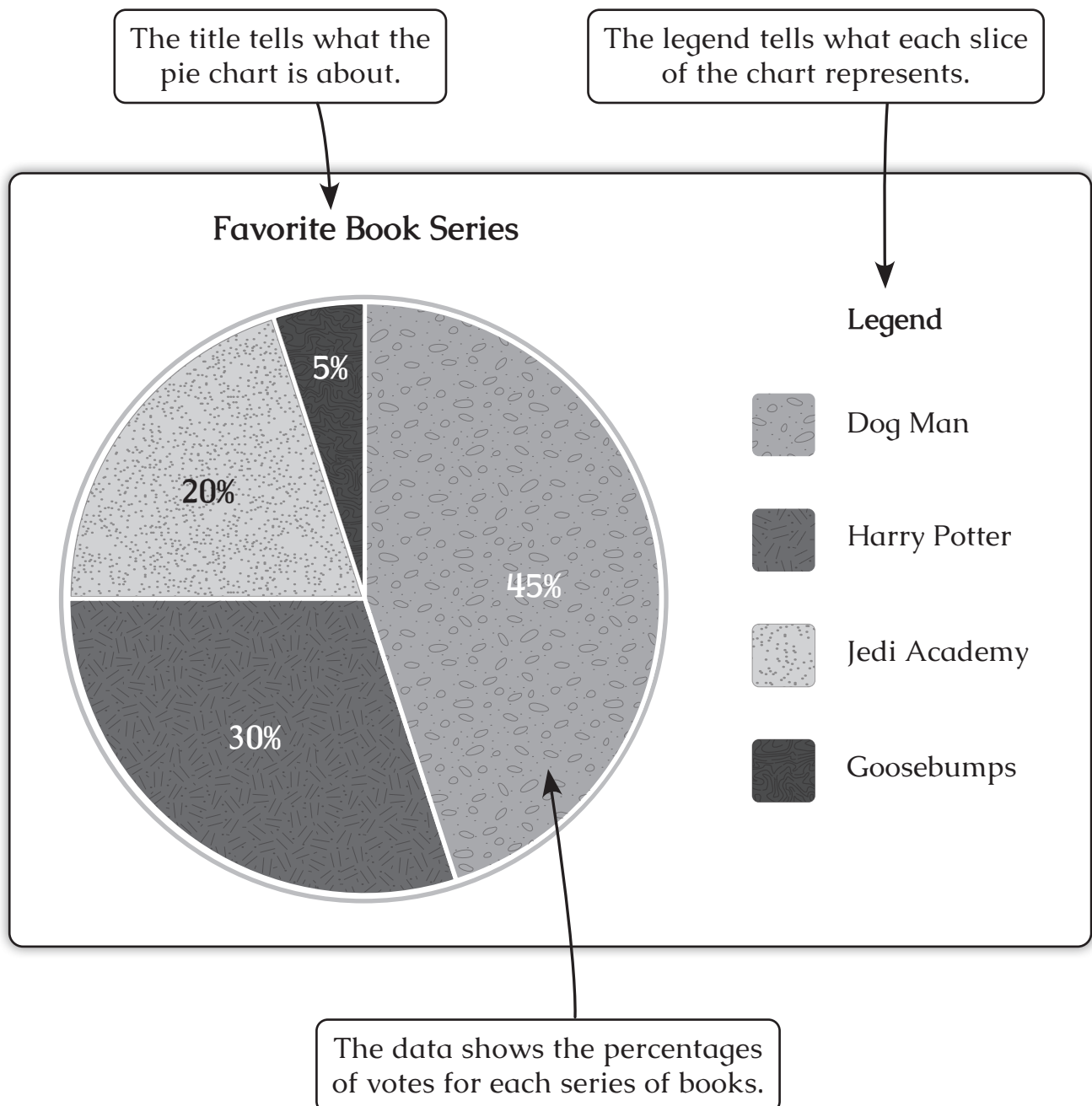


Pie Charts

Introducing the Chart

A **pie chart** shows data in the shape of a circle. Pie charts are also called circle graphs. 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: title, legend, and 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: _____

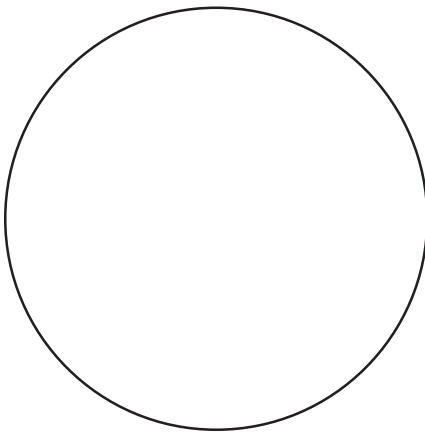
Collect and Record Data

Directions:

- ⌚ Choose a question you want to ask people to answer about books. Examples: “Which types of books do you read the most?” or “What is your favorite book series?” Use your question to help you choose the title for your pie chart.
- ⌚ Survey family members, friends, or classmates by asking them the question you have chosen. Try to ask at least 10–20 people to have enough data to analyze.
- ⌚ Record the data below. (You do not have to use all spaces in the Genre/Book Series column.)
- ⌚ Use the data to create a pie chart. Color in each box of the legend to match the color you choose for each genre on your pie chart.

Question: _____?

Genre/Book Series	Number of Votes
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____



Legend

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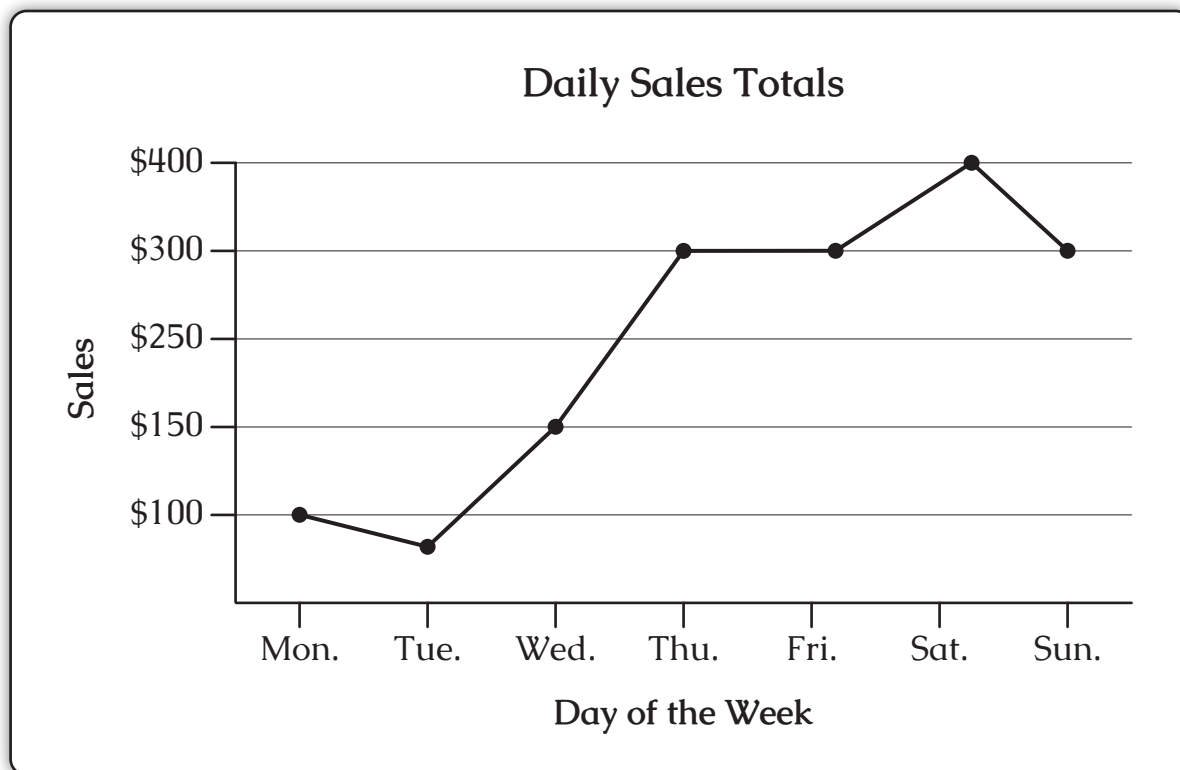
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Name: _____

Date: _____

Graphs with inconsistent intervals or a poorly chosen scale can mislead or cause confusion about the data.

Look at the line plot below. What do you notice about the intervals on this graph?



This line plot does not have consistent intervals. The numbers increase by 50 for one interval, and then they increase by 100 for another interval. This makes it more difficult to see the increases and decreases between the daily sales totals.

Also, notice that the intervals start at 100. If sales totals are less than \$100 for a given day, it is difficult to accurately show this information on the line plot.

1. Do you think someone created this line plot to purposely mislead people looking at the data? Explain why you think that way.

2. If you were to recreate this line plot, what intervals would you use? Why?
