Table of Contents

Introduction

ata Analysis 5–6 contains ready-to-use activity pages to provide your students with skill practice. The activities can be used to supplement and enhance what your students are already learning at school. Give an activity page to students as independent class work, or send the pages home as homework to reinforce skills taught in class. An answer key is included at the end of the book as a convenient reference.

This book provides activities that will directly assist students in practicing basic skills and concepts. The structure of the book enhances their learning and enables them to meet new challenges with confidence. Students will receive reinforcement in the following skills:

- ✐ recognize terminology related to data collection and statistics
- ✐ collect and display data using tables and graphs
- ✐ interpret information presented in tables and graphs
- ✐ analyze information found in different types of graphs
- ✐ create tables and graphs from given information
- ✐ understand and calculate averages, mean, median, mode, and range

Use *Data Analysis 5–6* to reinforce or extend concepts and skills. "Recharge" skill review with the ready-to-go activities in this book, and give students the power to succeed!

Name _____ Date _____

Collecting Information

Match each term with its definition.

1. survey _____
2. population _____
3. bias _____
4. frequency _____
5. variable _____
6. statistics _____
7. inference _____
8. sample _____
9. data _____

A. group of people or items to be studied

B. part of the population selected to be surveyed

C. collection and study of numbers of observations and the data drawn from these observations

D. number of times an event occurs

E. information

F. asking people's opinion

G. influence on a sample that keeps it from truly representing the population

H. one of the choices or categories on a table or graph

I. conclusion formed after reviewing the data

A **biased** sample *does not* accurately represent the whole population.

A sample is **unbiased** if *every individual* in the population has an equal opportunity of being selected.

Identify each statement below as a **biased** or an **unbiased** sample.

10. _____ You survey 15 of your friends to see what activity they would like to do for your birthday party.

11. _____ A teacher sends out an Internet survey to find out how many students use the Internet for learning purposes.

12. _____ Viewers are asked to vote online for their favorite contestant.

13. _____ A computer randomly selects people from an extensive list to participate in a survey.

Name _____ Date _____

Ways to Collect Data

The four main methods of collecting data are the following:

A. in person   **B.** by phone

C. by mail   **D.** by e-mail or Internet

Read each statement. Write the letter of the method it describes. Some statements may have more than one answer.
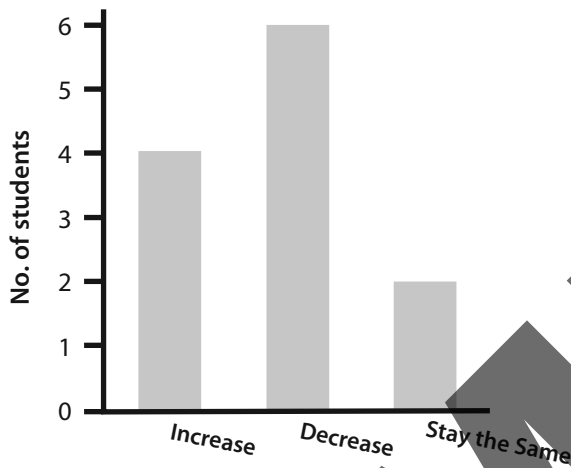
1 _____ A computer randomly selects people from an extensive list to participate in a survey.

2 _____ This method requires many data collectors to conduct each survey.

3 _____ This method allows the person responding to complete the survey at his or her convenience.

4 _____ This method allows the person responding to ask questions about the survey as he or she is completing it.

5 _____ This method allows the person responding to handwrite his or her responses.

6 _____ The person responding may be more likely to lie or refuse to answer when this method is used.

7 _____ This method allows a larger population to be interviewed in a shorter amount of time.

8 _____ This method requires the person responding to own or use a computer.

9 _____ There is a greater possibility that the survey will not be completed or returned with this method.

10 _____ This method limits responses to the statements that are presented in the survey.
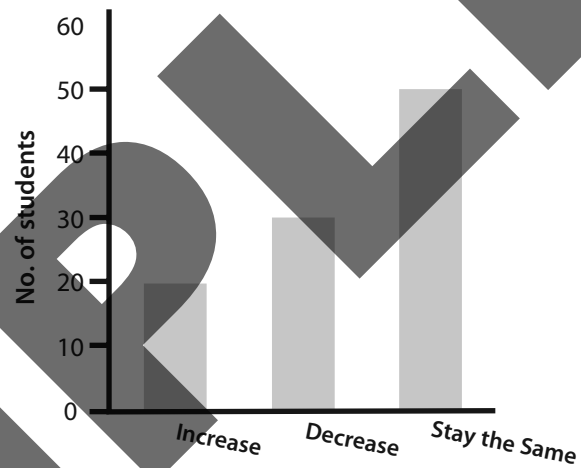
Name _____ Date _____

Survey Says

The students in Mrs. Washington's fifth-grade class were asked to conduct a survey of the students at Fifth Street Elementary School to discover their preferences regarding the length of P.E. classes. 347 students attend the school.

The survey asked this question: *Do you think the number of minutes for each P.E. class should increase, decrease, or stay the same as they are now?*

Here are the results of Rhonda's survey: **Here are the results of Mia's survey:**

Answer the following questions.

1 What was the sample size of Rhonda's survey? _____

2 What was the sample size of Mia's survey? _____

3 How are the results of the two surveys different? Why do you think this occurred?

_____

4 Which do you think more accurately reflects the entire population of students?

Why? _____

_____

5 What inference can you make about the size of a sample surveyed? _____

_____

Name _____ Date _____

Watch Those Questions!

How a survey question is phrased is as important as the number of people you choose to survey. Questions need to include all possible responses, be unbiased, and be relevant to the topic surveyed in order to obtain the information you need.

Read the following survey questions. Tell why each would **not** make a good question. Then rewrite the questions and the answers so that they are unbiased, relevant, and include all possible responses.

1 How much TV do you watch in a week?   **a)** 1–5 hours   **b)** 6–10 hours   **c)** 10–15 hours

_____

_____

2 Many unwanted pets end up in animal shelters. Do you think we should raise money for our local animal shelters?

_____

_____

3 How interested are you in science?   **a)** extremely   **b)** very interested   **c)** interested
                                                    interested

_____

_____

4 You root for the Tigers baseball team, don't you?

_____

_____

5 How old are you?   **a)** under 10   **b)** under 20   **c)** under 30

_____

_____

Name _____ Date _____

Interpret a Tally Chart

A **tally chart** is a grid used to show information as it is collected. It uses tally marks to show numbers and a cross-through to show a set of five marks. The **frequency** is the total number of tally marks for a specific item.
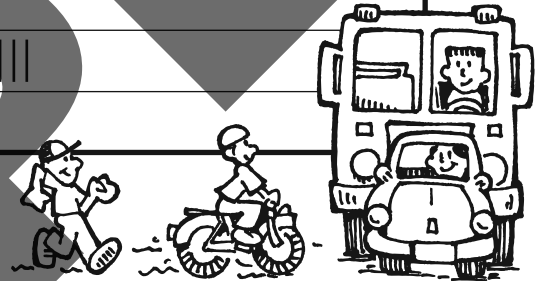
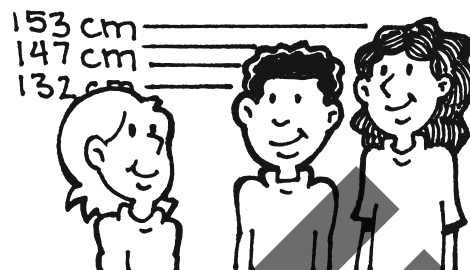| Transportation to and from Georgetown Middle School	
walk	✂ ✂ ✂ ✂ ✂ ✂ ✂ ✂ ✂ ✂ ✂ |||
auto	✂ ✂ ✂ ✂ ||||
school bus	✂ ✂ ✂ ||||
public bus	||||
bicycle	✂ ✂ ✂ ✂ ✂ ✂ ||||
other	||

Solve.

1 Find the frequency for each choice:

walk _____   auto _____   school bus _____

public bus _____   bicycle _____   other _____

2 How do most students get to Georgetown Middle School? _____

3 What was the total number of students surveyed? _____

4 How many students rely on someone else to take them to and from school? _____
Explain your answer.

_____

5 Why does the survey include a category called "other"? _____

_____

6 What inference can you make based on this tally chart? _____

_____

Name _____ Date _____

Tally Ho!

Record the data below using the tally chart.

Height of each student in the fifth grade (in centimeters):

132, 148, 141, 142, 141, 136, 133, 149, 138, 139, 142, 144, 145, 147, 148, 147, 152, 154, 137, 137, 150, 151, 146, 154, 147, 149, 152, 148, 149, 135, 151, 157, 156, 150, 139, 132, 147, 156, 146, 153, 144, 146, 141, 142, 135, 144, 145, 144, 149, 150, 136, 140, 157, 145

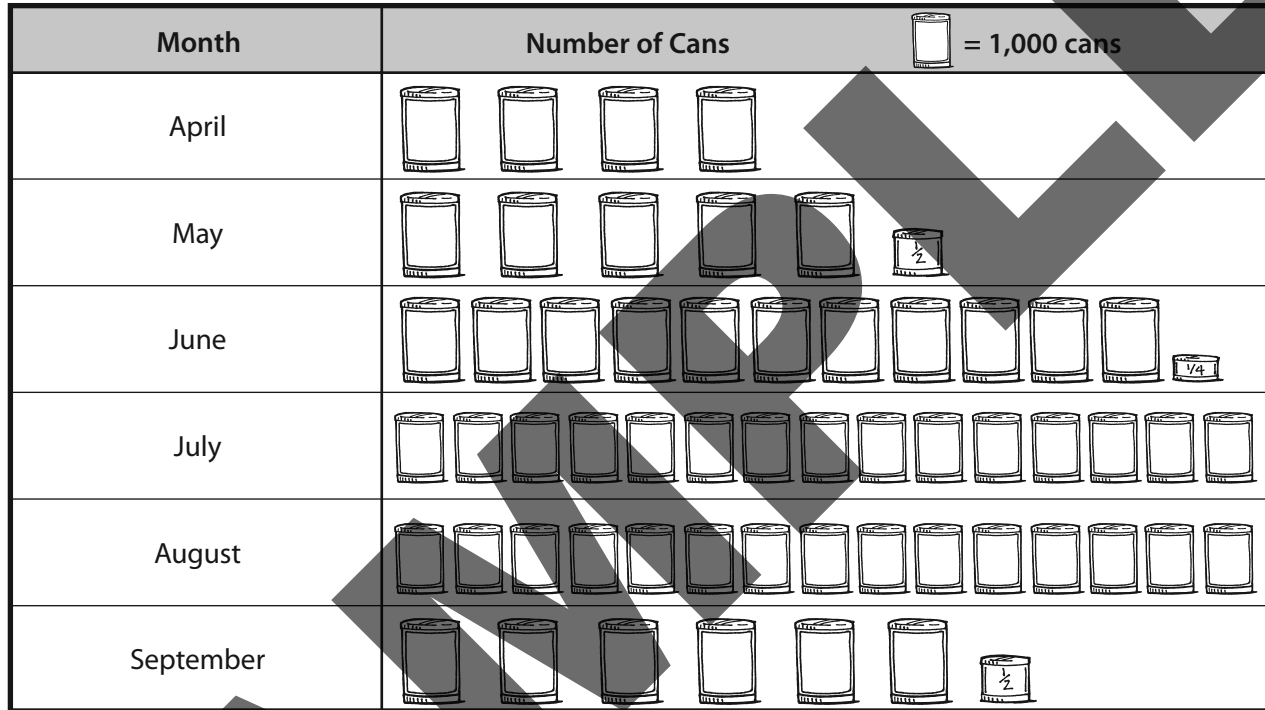| Height	Tally	Frequency
132 cm–134 cm		
135 cm–137 cm		
138 cm–140 cm		
141 cm–143 cm		
144 cm–146 cm		
147 cm–149 cm		
150 cm–152 cm		
153 cm–155 cm		
156 cm–158 cm		

Use the information in the chart to answer the following questions:

1 Which height range has the highest frequency? _____

2 Which height range has the lowest frequency? _____

3 What was the total population sampled? _____

_____

4 Which height range has more kids: 138 cm–140 cm or 150 cm–152 cm? _____

5 How many students were 147 cm or taller? _____

6 What inference can you make about the data on this chart? _____

_____

Name _____ Date _____

Read a Pictograph

Pictographs are diagrams that organize and present data in a visual way. They use symbols that describe the topic of the data. Each symbol represents a fixed number. Partial symbols can be used to show smaller quantities.

Aluminum Cans Recycled

Month	Number of Cans = 1,000 cans
April	(4 cans)
May	(5½ cans)
June	(11¼ cans)
July	(15 cans)
August	(15 cans)
September	(6½ cans)

Solve.

1 How many cans were recycled in May? _____

2 How many cans were recycled in June? _____

3 What was the difference between the number of cans recycled in August and September?

_____

4 What was the total number of cans recycled for these 6 months? _____

5 Which months had the same totals? _____

6 What inference can you make about the data on this chart? _____

_____

Name _____ Date _____

Picture This

Annual Michigan Christmas Tree Harvest

Tree Species	Number of Trees $\quad$ 🎄 = 100,000 trees
Douglas fir	
Noble fir	
Scotch pine	
Fraser fir	
Blue spruce	
White spruce	
Other	

Use the data below to complete the pictograph.

1 Record on the graph the amount of each tree harvested.

Douglas fir	700,000	Noble fir	400,000	Scotch pine	2,000,000
Fraser fir	300,000	Blue spruce	600,000	White spruce	450,000
Other	550,000				

2 What is the total number of trees harvested annually in Michigan? _____

3 Fraser firs are what percent of the total number of trees? _____

4 How many more Scotch pines are harvested than the next largest amount? _____

5 The category "Other" includes red pines, which are 3% of the total number of trees. If you were to add this to the graph, how many symbols would you add? _____

6 What inference can you make from this graph? _____

_____

_____

_____