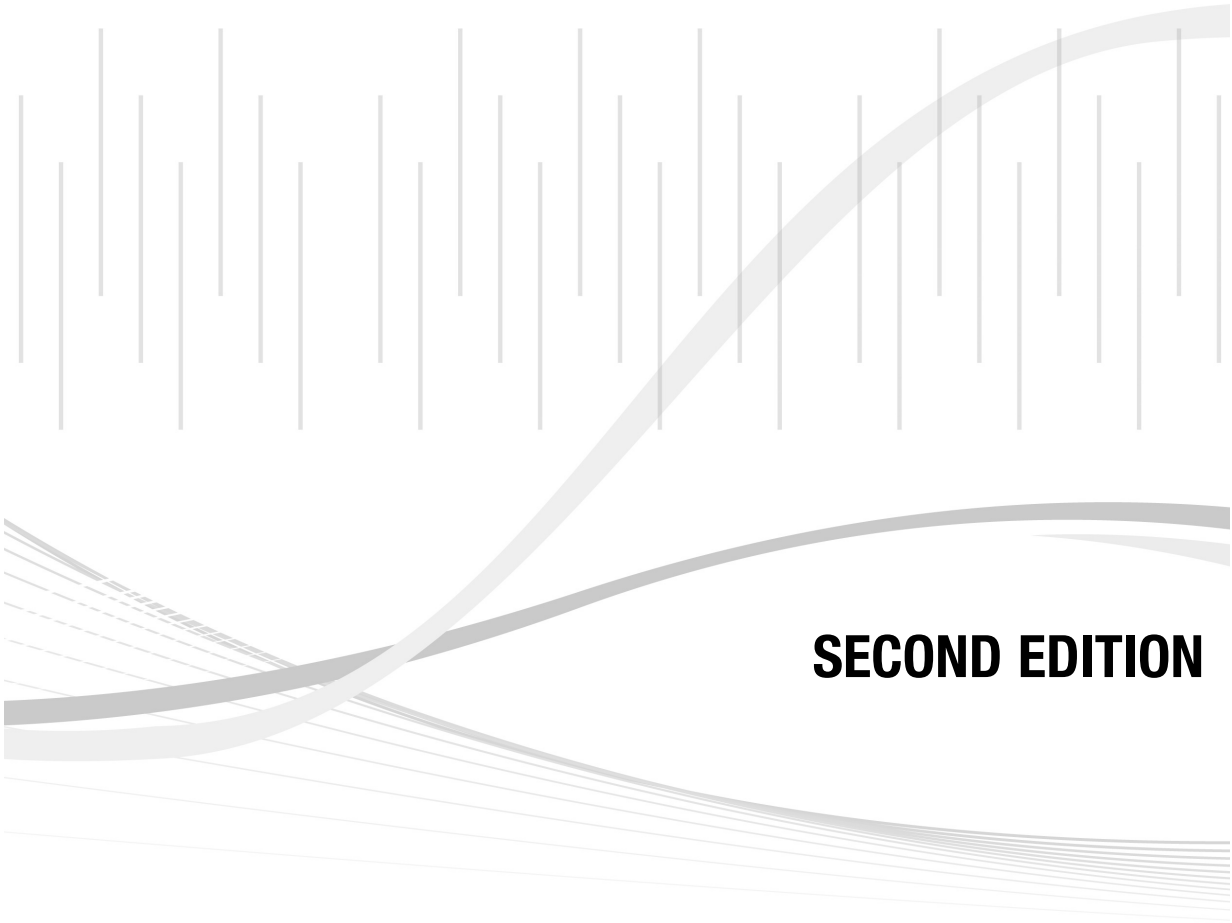
Real-Life Math

TABLES, CHARTS, AND GRAPHS



SECOND EDITION

WALCH PUBLISHING

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How to Use This Series

The *Real-Life Math* series is a collection of activities designed to put math into the context of real-world settings. This series contains math appropriate for pre-algebra students all the way up to pre-calculus students. Problems can be used as reminders of old skills in new contexts, as an opportunity to show how a particular skill is used, or as an enrichment activity for stronger students. Because this is a collection of reproducible activities, you may make as many copies of each activity as you wish.

Please be aware that this collection does not and cannot replace teacher supervision. Although formulas are often given on the student page, this does not replace teacher instruction on the subjects to be covered. Teaching notes include extension suggestions, some of which may involve the use of outside experts. If it is not possible to get these presenters to come to your classroom, it may be desirable to have individual students contact them.

We have found a significant number of real-world settings for this collection, but it is not a complete list. Let your imagination go, and use your own experience or the experience of your students to create similar opportunities for contextual study.

Foreword

A college professor of mine once explained to our class that there were three kinds of lies, "lies, —— lies, and statistics." His premise for the morning's lecture was that since most Americans had little or no education in reading statistics critically, we were all susceptible to being hoodwinked by number manipulators. This was a course for math majors, and we all wondered when he would get off his soapbox. Unfortunately, he was able to prove his point. Because students rarely read tables and graphs in the context of learning about them, they tend to see any graphically presented, organized piece of information as being necessarily true.

Years later, I watched an engineering supervisor present his error statistics for the first quarter of the year. In his business, two or three errors a quarter was too many, and his department had made five. However, he showed a bar graph of the number of errors in the previous five quarters, with the *y*-axis going up to 200. The bars in the graph were razor-thin blips at the bottom of the page, so five errors appeared essentially the same as one. As the supervisor received an ovation for his "fine work," I knew that reading charts, graphs, and tables critically needed to be a focus in my classroom. The activities in this book are designed to teach students to use these devices to read and interpret organized data, to organize their own data, and to think about how presentations can affect the way data are interpreted.

—Tom Campbell

Name _____ Date _____

2. Hat Sizes

Many hats are adjustable, but some are still sized. These include cowboy hats, top hats, dress hats, and fitted baseball caps. Most hat stores use a chart such as the one below to find a person's hat size by measuring the circumference of his or her head. Use the chart below to answer the questions that follow.

Hat Size	Circumference in Inches	Circumference in Centimeters	Hat Size	Circumference in Inches	Circumference in Centimeters
6 3/4	21 1/4"	54.5 cm	7 3/4	24 3/8"	62.5 cm
6 7/8	21 5/8"	55.5 cm	7 7/8	24 3/4"	63.5 cm
7	22"	56.5 cm	8	25 1/8"	64.5 cm
7 1/8	22 3/8"	57.5 cm	8 1/8	25 1/2"	65.5 cm
7 1/4	22 3/4"	58.5 cm	8 1/4	25 7/8"	66.5 cm
7 3/8	23 1/8"	59.5 cm	8 3/8	26 1/4"	67.5 cm
7 1/2	23 1/2"	60.5 cm	8 1/2	26 5/8"	68.5 cm
7 5/8	24"	61.5 cm			

1. A haberdasher in Phoenix, Arizona, gets an online order for a hat. The person's head measures 23 1/2 inches around. What size hat should he make?

2. Kirsi's head measures 61.5 centimeters in circumference. What size hat does he wear?

3. Amanda's head measures 22 3/8 inches in circumference. What hat size does she wear?

4. Jel knows that his hat size is 8 1/2. What is the circumference of his head in inches?

5. Riel remembers that his hat size is 7 3/8. What is the circumference of his head in centimeters?

6. Assume that you have a friend with a very large head, a little larger than size 8 1/2. Determine the next row of the chart to help him out.

   Size: _____
   circumference (inches): _____
   circumference (cm): _____

Name _____ Date _____

3. Reading a Nutrition Table

Adriana's doctor has advised her to carefully check the ingredients of what she eats. At breakfast this morning, while eating her cereal, she read the following information from her milk jug and her cereal box.

Cereal

Nutrition Facts

Serving Size 1 Cup

Amount per Serving	Cereal	with 1/2 cup skim milk
Calories	180	220
Calories from fat	10	10
	% Daily Value	
Total Fat 1g	2%	2%
Saturated Fat 0g	2%	2%
Polyunsaturated Fat 0g		
Monounsaturated Fat 0g		
Cholesterol 0g	0%	1%
Sodium 350mg	15%	17%
Potassium 160mg	5%	10%
Total Carbohydrate 41g	14%	15%
Dietary Fiber 5g	21%	21%
Soluble Fiber 1g		
Sugars 5g		
Other Carbohydrates 31g		
Protein 5g		
Vitamin A	0%	6%
Vitamin C	10%	10%
Calcium	4%	20%
Iron	45%	45%
Thiamin	25%	25%
Riboflavin	6%	15%
Niacin	25%	25%
Vitamin B^6	25%	25%
Folic Acid	25%	25%
Vitamin B^{12}	25%	35%
Vitamin D	0%	25%
Phosphorus	10%	25%
Magnesium	14%	17%
Zinc	20%	21%
Copper	8%	8%

1% Milk

Nutrition Facts

Serving Size 1/2 Cup

Amount per Serving	
Calories	55
Calories from fat	10
	% Daily Value
Total Fat 1.25 g	2%
Saturated Fat 0.75 g	4%
Polyunsaturated	
Monounsaturated Fat	
Cholesterol 8mg	2%
Sodium 63mg	3%
Potassium 0mg	0%
Total Carbohydrate 7g	2%
Dietary Fiber 0 mg	0%
Soluble Fiber 0 mg	0%
Sugars 6g	
Other Carbohydrates 0 mg	
Protein 4g	
Vitamin A	5%
Vitamin C	20%
Calcium	15%
Iron	0%
Thiamin	
Riboflavin	
Niacin	
Vitamin B^6	
Folic Acid	
Vitamin B^{12}	
Vitamin D	25%
Phosphorus	
Magnesium	
Zinc	
Copper	

(continued)

Name _____ Date _____

3. Reading a Nutrition Table

Use the nutrition tables to answer the following questions.

1. Approximately how many calories are there in a half-cup of skim milk?

2. How many more calories are there in a half-cup of 1% milk than in a half-cup of skim milk?

3. What is the recommended daily allowance of sodium, in milligrams?

4. What is the recommended daily allowance of carbohydrates, in grams?

5. List three ingredients in milk that are indicated on the cereal box label but not mentioned on the milk label.

6. How many cups of skim milk would you have to drink to get 100% of the daily requirement of riboflavin?

7. Suggest a reason that no percentage is listed on the "Sugars" line of either table.

8. How can the cereal have 0 grams of saturated fat and still contain 2% of the suggested daily value?