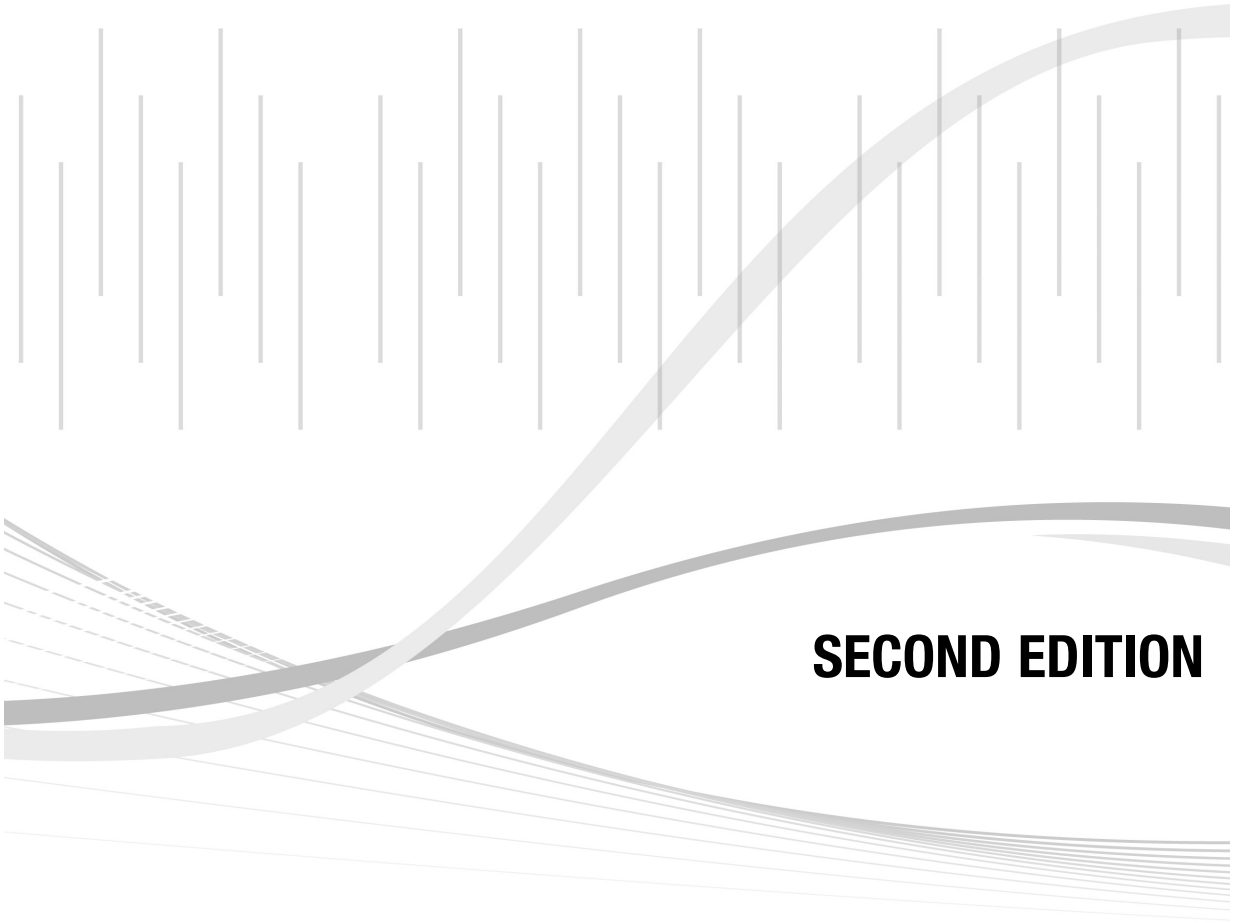
Real-Life Math

DECIMALS AND PERCENTS



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.

Introduction

Organization

The book is organized around four themes or contexts that are of high interest to students: Sports, Money, Entertainment, and Travel/Transportation. Within each context, there are eight different concepts or topics addressing decimals and percents. The concepts are Reading and Writing Decimals and Percents; Decimals and Percent Equivalents; Comparing Decimal Numbers; Basic Operations with Decimals; Percent of a Number; Percent of Increase/Decrease; Problem Solving with Decimals and Percents; and More Problem Solving with Decimals and Percents. The activities are grouped by concept, with four different contexts for teaching each concept. Choose the context—or contexts—that you find most appropriate for your students.

Order of Activities

The activities in the book are arranged to reflect the order in which decimal and percent concepts are presented in many textbooks. As such, you can supplement or enrich a concept presented in the textbook with this resource, or use the activities as an introduction to a new concept. The activities can also be done in any order; however, before students do the problem-solving and percent activities, they should have some facility with the concepts presented in the first part of the book.

Level of Difficulty

Some activities use more difficult mathematical concepts than others. As a general rule, the activities in the second half of the book are more difficult than those in the first half. It should be noted that the lessons that are less difficult mathematically still involve using higher-order thinking skills.

Time Considerations

Since student ability levels and school schedules vary greatly, time suggestions for the activities are not given. Before using an activity, review it and decide how much time would be appropriate for your students.

Calculators and Other Technology

A practical way of using calculators with the activities is to allow them if the situation described in the activity would warrant the use of a calculator in real life. In some of the activities, students can use spreadsheets, word processing, and desktop publishing software.

(continued)

Introduction

Organizing the Classroom

The Teacher Guide pages list suggestions on how to arrange students for the activities. Some of the lessons work best for individual student work, other lessons are more appropriate for students working in pairs, and some lessons work best for groups of students. The final decision on how to organize your students is left up to you.

Evaluation and Assessment

In cases where appropriate, selected answers are given. However, since the lessons model real-life situations, exact answers cannot always be provided.

Name _____ Date _____

1. The Track Banquet

A track coach has to do more than just prepare the team for track meets. Another responsibility may be to speak at a banquet at the end of the season. Imagine you are a track coach preparing a speech for the upcoming banquet. In the speech, you want to mention all the school records set this year. This means you'll have to read decimal numbers out loud. Follow the directions below to make sure you are prepared for your speech.

For each school track record listed below, use words to write it out in two different ways.

Example: In the 100-meter race, Sam Speedy set a new record of 10.24 seconds.

- "ten and twenty-four hundredths of a second"
- "ten point two four seconds"

1. In the 100-meter race, Hideo Ikeda set a new record of 10.91 seconds, and Nicole Devers set a new record of 12.01 seconds.

2. In the 400-meter race, Shawnel Johnson set a new record of 44.312 seconds, and Gwen Dawson set a new record of 51.83 seconds.

3. In the 110-meter hurdles, Alex Santiago set a new record of 14.05 seconds.

4. The girls set a new school record in the 400-meter relay of 46.955 seconds.

5. Michael O'Brien set a new school record in the 400-meter hurdles of 52.001 seconds.

Name _____ Date _____

6. Doing Your Part

1. The table below lists the 2005 individual income tax rate percentages and taxable income level for people who are single. In the last column, write the decimal equivalent for each tax rate percentage.

2005 Individual Income Tax Rate for Singles

Taxable income level	Tax rate (percent)	Tax rate (decimal)
$0–$7300	10%	
$7301–$29,700	15%	
$29,701–$71,950	25%	
$71,951–$150,150	28%	
$150,151–$326,450	33%	
$326,451 and up	35%	

Source: http://www.irs.gov/

2. The table below lists the voter turnout in presidential elections from 1944 to 2004. For each election year, voter participation is listed as a decimal amount of the voting-age population. Change the voter participation decimal amounts to equivalent percentages and write them in the table.

Voter Turnout in Presidential Elections, 1944–2004

Year	Voter participation (decimal amount of voting-age population)	Voter participation (% amount of voting-age population)	Year	Voter participation (decimal amount of voting-age population)	Voter participation (% amount of voting-age population)
1944	.56		1976	.535	
1948	.511		1980	.54	
1952	.616		1984	.531	
1956	.593		1988	.502	
1960	.628		1992	.559	
1964	.619		1996	.49	
1968	.609		2000	.513	
1972	.5521		2004	.553	

Source: http://www.infoplease.com/

Name _____ Date _____

17. TV Time

Circle graphs help you visualize the amount or share of related items to the whole in terms of percent. A whole circle represents 100%, and each individual category listed in the graph represents that particular category's percent out of the total 100%.

When you watch television, what percent of the time do you think you spend actually watching the program? Let's find out. As you watch television tonight, make a chart to keep track of commercials, station breaks and previews, and the program itself. Do this by noting the time when each program, commercial, or preview starts and stops. Do this for one hour. When you are finished watching, calculate what percent of time each category represents. Construct a circle graph showing the results. Then answer the questions that follow.

Steps for constructing a circle graph:

1. Change the percent amount to a decimal.

   Example: $24.8\% \times 0.248$

2. Multiply the decimal amount by 360 to find the number of degrees.

   Example: $0.248 \times 360 = 89.28°$

3. Round the number of degrees to a whole number.

   Example: $89.28° \times 89°$

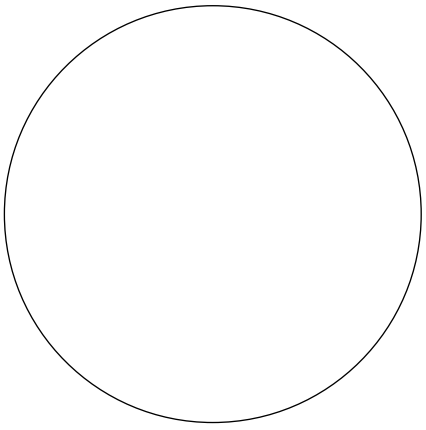
4. Use your protractor to draw a sector equal to the number of degrees on your graph.

Television Time in Percents

program: _____ preview: _____

commercial: _____ other: _____

station break: _____



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Name _____ Date _____

24. CDs

The company you work for manufactures three different types of recordable CDs. As a production supervisor, you have to forecast production levels for next year. To do that, you will examine the manufacturing trends over the previous years. The table below lists the production levels in millions for each of the three types of CD your company manufactured, and the amounts that were produced. Use that information to answer the questions that follow.

Units Manufactured, 2002–2006

CD	2002	2003	% change 2002–2003	2004	% change 2003–2004	2005	% change 2004–2005	200	% change 2005–2006
Type 1	407.5	495.4		662.1		722.9		778.9	
Type 2	366.4	339.5		345.4		272.6		225.3	
Type 3	2.3	1.2		1.9		2.2		2.9	

1. Fill in the table above with the percent changes from year to year.
2. How many units of each type of CD will you recommend be manufactured next year?

   type 1: _____

   type 2: _____

   type 3: _____

3. In the space below or on a separate sheet of paper, draft a memo to the production division manager that details your recommended production levels for the next year.