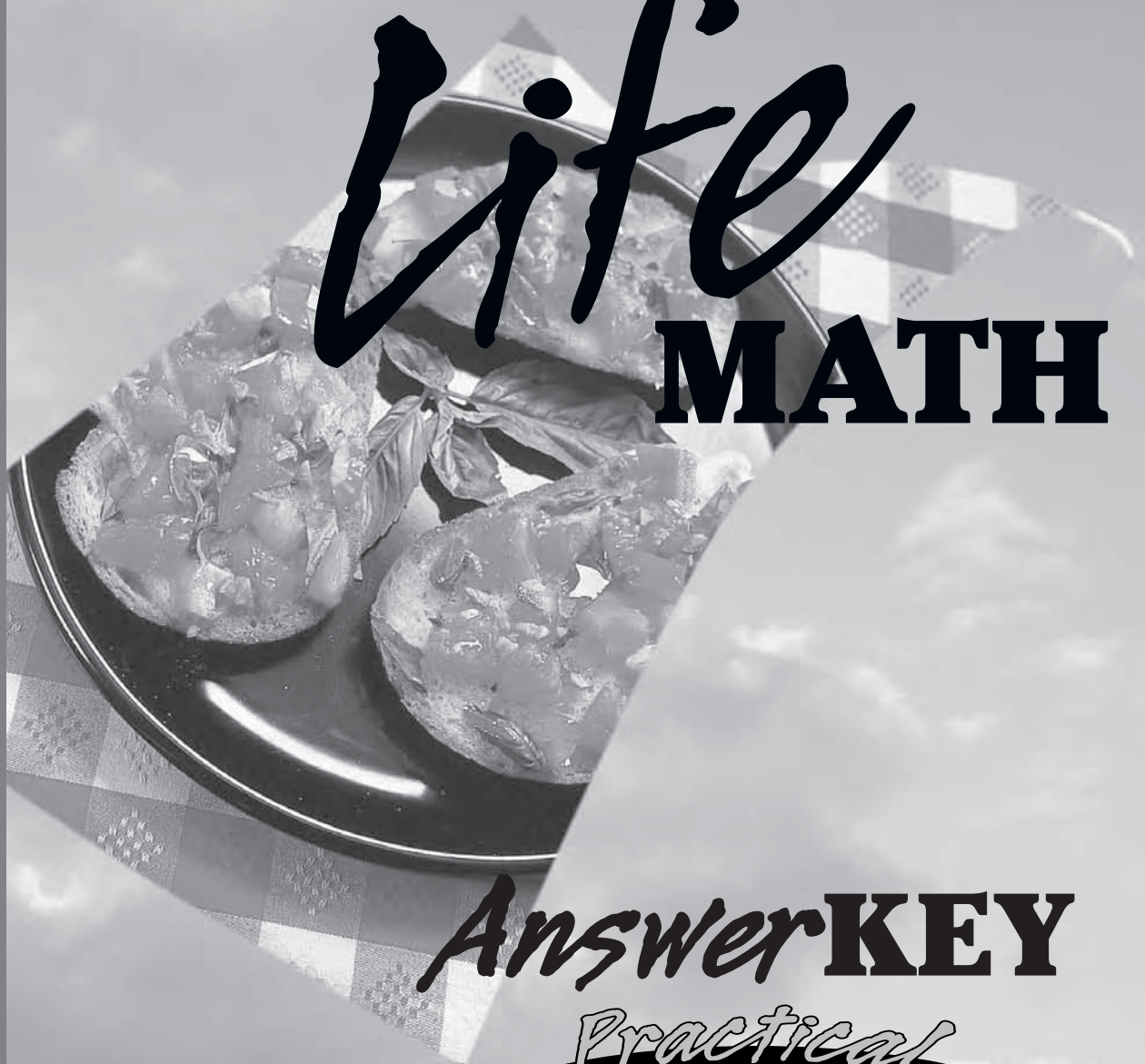


# EVERYDAY

*Life*

# MATH



*Answer* **KEY**

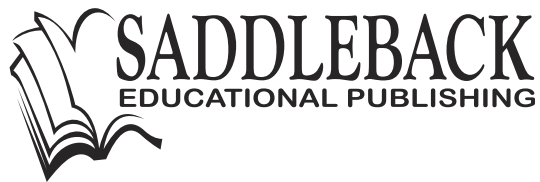
*Practical*

# MATH

*in Context*

# Practical Math in Context

## Book 1 Everyday Life Teacher's Notes



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# To the Teacher

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Welcome to *Everyday Life*, Book 1 of the *Practical Math in Context* series.

Mastery of practical math skills is the overarching goal of the *Practical Math in Context* series. To this end, each of the six books has been carefully designed to present topics students are likely to encounter in everyday life. Each book includes problems that involve estimation, equations, mental math, calculators, and critical thinking. Each book includes additional concept-specific skills such as graphing, averages, statistics, ratios, and measurement.

The books are appropriate for use with small groups, a full class, or by independent learners. The self-explanatory nature of the lessons frees the teacher for individual instruction. Each unit begins with a preview lesson, which models and explains the types of problems students will encounter in the unit. Then there are five lessons, at least one of which is a game. Game titles are italicized in the Table of Contents, on the lesson pages, and in the Answer Key. Each unit ends with a review of the unit concepts. Both illustrations and graphic art are used to support the instruction and maintain interest. A variety of problem types and games are used to sharpen critical thinking skills throughout the program.

Below are the titles of the other books in the *Practical Math in Context* series:

Book 2: Home & School

Book 3: On the Job

Book 4: Budgeting & Banking

Book 5: Smart Shopping

Book 6: Sports, Hobbies, & Recreation

Students from middle school through adult classes will appreciate the practical content of each book.

Through modeling, practice, and review, students will build their math skills and learn to approach everyday mathematical situations with confidence. *Practical Math in Context* will help your students become successful problem solvers!

# Notes

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## Unit 1: Personal Care

### Lesson 1: Hair Care

1. \$40.00
2. D 700
3. Draw line between 7 ounces and \$9.99
4. 4 weeks
5. \$10 bill
6. B \$1

**Challenge Problem.** No, because it will only have grown 4 inches.

### Lesson 2: Face & Skin Care

1. 1,003
2. 2 gift boxes circled
3. Lotion, dry skin kit, and face scrub
4. C \$780

### Lesson 3: Soapy Percents

1. three spaces that show 50%
2. 3, 5

### Lesson 4: Dental Care

1. \$200
2. C \$720
3. Parsley is the cheaper way to freshen your breath, by 24.5 cents a week.
4. \$77 is circled; \$4.62 has a square around it; \$11 is in the blank.

**Challenge Problem.** Both are the same: 10% of 8% of product price is the same as 8% of 10% of product price.

### Lesson 5: Accessories

1. \$217.75
2. C \$375
3. The last row should be circled, showing No and No.
4. \$617.50

**Challenge Problem.** Answers may vary. Sample answer: The total value of all purchases that are less than \$50 each.

## Review

1. \$20.50
2. 1,260
3. 60%
4.  $\frac{4}{10}$  or  $\frac{2}{5}$
5. \$315
6. A \$232.65

## Unit 2: Health

### Lesson 1: Nutrition

1. 300 g
2. C 0.72 mg
3. fill in chart
4. a. 1/2,400; b. 99.95%

**Challenge Problem.** 735 children

### Lesson 2: Calories Count

1. 1,625 grams
2.  $\frac{1}{4}$

### Lesson 3: Medication

1. 17 days
2.  $2 \times 3 = 6$
3. B 3
4. John should take 9 capsules over 4 days.

**Challenge Problem.** Sample response: Yes. Over 50% were helped with the new medicine, while only 10% said there was an improvement with the placebo.

### Lesson 4: Getting Exercise, Staying Fit

1. 4
2. 144
3. C 412.50
4. Curtis, by 3 laps
5. 6 hours

**Challenge Problem.** Sample response: He needs to know how long each of the four steps (2 through 5) will take him.

### Lesson 5: Vitamin Power

1. 75
2.  $1\frac{1}{3}$  servings
3. Package of salmon chowder

4. Divide the total number of raisins in the box by three (Beverly and her two friends).

**Challenge Problem.** Hal is right. Explanation should support the answer.

## Review

1. 8 g
2. B 6
3. 33
4. No, she is not correct. The difference is 1.0 calories/hour/kilogram (12.6 – 11.6).
5. 6

## Unit 3: Getting Around

### Lesson 1: Bus Schedules

1. 10:00 a.m.
2. D every 2 hours
3. 10:10 a.m.
4. 3:45 p.m.
5. 3 hours

**Challenge Problem.** The earliest they can get back to the town center is 4:30 p.m. Their parking fee is \$3.75.

### Lesson 2: Bicycles

1. Wheel Revolutions: 3.2; 6.4; 12.8; 16
2. A 12
3. 125 revolutions; 10,125 inches; 843.75 feet
4. 168.75 feet

**Challenge Problem.** a. 708.3 feet; b. 745.4 revolutions; 9.44 minutes

### Lesson 3: Walking

1. 7
2. The first column is circled ( $\frac{1}{2}$ ; 1; 3).
3. C 6 miles
4. 10

**Challenge Problem.** Yes, if all bridges are intact. No, if bridge X collapses.

## Unit 3 (continued)

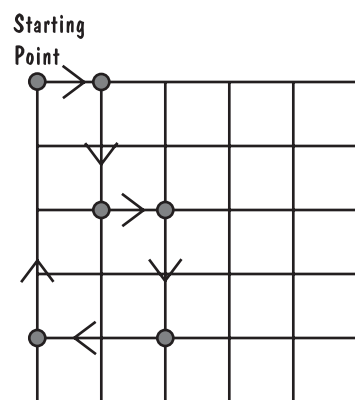
### Lesson 4: Maps & Directions

1. A 6 miles east, 13 miles south
2. 32.5

### Lesson 5: Traveling by Car

1. Second row is circled: 55 mph; \$109.38; 35 hours.
2. a. 160 miles; b. 53.33 miles per hour
3. a. less; b. lower; c. more; d. more
4. D 70 mph

**Challenge Problem.** Sample answer: Two other routes are modifications of the route shown. A route can only extend two grid points to the east. Explanations should support the answer.



### Review

1. C 12 noon
2. 200 revolutions
3. X
4. 5:25 p.m.
5. NE
6. a. 9.3 gallons; b. 7.8 hours

## Unit 4: Managing Time

### Lesson 1: Sleep

1. 90
2. +
3. 5 hours
4. B 2,016
5. a. -3; b. -6; c. +6

**Challenge Problem.**  $n \rightarrow 5n \rightarrow 5n + 4 \rightarrow 10n + 8 \rightarrow 10n \rightarrow 10$

### Lesson 2: Time Zones

1. C 9 p.m.
2. the states in the Central time zone
3. They have gained 2 hours.
4. Change the time to 5 p.m.
5. D 8 p.m.

**Challenge Problem.** There are only 2 possible sequences: 2,4,1,3 and 3,1,4,2.

### Lesson 3: The Small-Black-Circle Game

1. equilateral triangle, circle, square, or pentagon, each large or small and black, gray, or white
2. triangular; at one corner

### Lesson 4: Cycles of Time

1. May 2, 3, 9, and 10
2. D 29
3. 2005; 2011
4. 12 different council members

**Challenge Problem.** Technologies that are not developed yet; explanation should support answer.

### Lesson 5: Spending Time

1. Yes, they met their goal.  $\frac{3}{4}$  of the clock face is shaded.
2. a. 20%; b. 2.08
3. D \$13
4.  $(54 - 45) \div 45 = 20\%$
5. The first expression is circled.

**Challenge Problem.** 1 hour. If the time were 12:30 p.m. or 1 p.m., he would have to wait for the next two sets of strikes.

### Review

1. 7:45 a.m.
2.  $0.45 \times 2,000$
3. D 10 p.m.
4. 2005
5. 38%

## Unit 5: Community

### Lesson 1: Education

1. 9 credit hours
2. C less than

3. Student should circle the invoice that reads "\$88 per credit hour."
4. a. \$295 (Circle all the fees, except tuition, in the row for 9 credit hours.); b. \$780

**Challenge Problem.** The health and advisor fees do not increase as the number of credit hours increases. The student service fee does not increase after 12 credit hours. The numerator (fees) is not increasing as fast as the denominator (credit hours).

### Lesson 2: Post Office

1. a. Sample answer:  $(\$4.40 + \$1.00 + \$5.50) = \$10.90$ ;  
b. Sample answer: 55 cents
2. B 19
3. Sample answers: 0 dollar bill; 2 quarters; 0 dimes; 0 nickels; 2 pennies
4.  $a / 2 + 1$

**Challenge Problem.** You will pick up your mail on Wednesday, May 14.

### Lesson 3: Library

1. The mean number of days Trey has to read each of the other books is 3 days.
2. Fill in rows as follows:  
2 books: 0.50; 1.00; 1.50; 2.00; 2.50; 3.00; 3.50;  
3 books: .075; 1.50; 2.25; 3.00; 3.75; 4.50; 5.25;  
4 books: 1.00; 2.00; 3.00; 4.00; 5.00; 6.00; 7.00.
3. 6; 3; 2; 1
4. D \$48

**Challenge Problem.** \$13.35. Sample answer: You need to know the number of books that were late and the fine per book per day.

### Lesson 4: A Passport to Travel

1. 20
2. B 25 years old
3.  $x = 1.08$ ;  $y = 4$
4. any combination of bills that adds to \$115
5. 2 weeks and 0 days

## Unit 5 (continued)

**Challenge Problem.** The results can be only these ten numbers: 0, 99, 198, 297, 396, 495, 594, 693, 792, 891. Sample response: The digits are  $x$ ,  $y$ , and  $z$ . So the difference between the numbers is  $100x + 10y + z - (100z + 10y + x)$  equals  $99x - 99y$  or  $99(x - y)$ . The value of  $y$  can be 0 to 9; the value of  $x$  can be 1 to 9 so  $(x - y)$  can be 0, 1, 2, 3, 4, 5, 6, 7, 8, or 9. Multiply each of these values by 99 to get all the possibilities for the difference of the two 3-digit numbers.

### Lesson 5: Government Services

1. \$1,025
2. \$165

### Review

1. 12
2. On the second invoice, answer written in is a reasonable number greater than \$95.
3. B \$13.50
4. Circle Friday the twenty-second.
5. 28

## Unit 6: Thinking about the Future

### Lesson 1: Career Options

1. \$29,849; \$54,191.80; \$43,140; \$40,114
2. C \$2,250
3. Lines are drawn between \$46,690 and 70%; \$3,335 and 5%; \$2,668 and 4%; \$1,334 and 2%; \$6,003 and 9%; \$2,001 and 3%; \$4,669 and 7%.

**Challenge Problem.** Explanations should support choices and include the fact that cost of living and merit can vary.

### Lesson 2: Costs of Living

1.  $16 + 1 \times s = 52 \times 2$ , so  $s = 88$ . She can spend \$88.
2. a mean cost of \$377 per month
3. D \$126
4. \$41

**Challenge Problem.** Starting at the top of the triangle and proceeding clockwise the numbers are 9, 4, 3, 7, 6, 2, 8, 5, 1.

### Lesson 3: Making Money

1. \$195
2. \$1,000,000

### Lesson 4: Paying Taxes

1. \$8,168.75
2. Fitness club membership
3. Change the figure to \$1,050.
4. D \$1,113

**Challenge Problem.** At least \$752.40; \$8276.40 plus next year's taxes. Opinions will vary but should be supported with reasons.

### Lesson 5: Getting Insurance

1. Judith pays \$172 more than Mindy.
2. \$150
3.  $95 - 75 = 20$
4. C \$1,000,000

**Challenge Problem.** Sample response: J. L. takes out disability insurance to make sure he will continue to earn a reasonable salary even if he becomes disabled and can no longer play. The team takes out insurance to ensure the income they expect to make as a result of J. L. being on the team.

### Review

1. \$13,916
2.  $\$2,463 \div 6 = \$410.50$
3. \$249.15
4. C \$5666.25
5. \$1,367

## Unit 7: Thrifty Thinking

### Lesson 1: Sales & Bargains—Shop 'Til You Drop!

1. A He spends \$30 and saves \$10.

### Lesson 2: Do It Yourself

1. \$1.80; 20 minutes; \$1.86
2. Supplies \$12.50; Labor \$70.00; Total cost \$178.50; Answer \$71.50

3. They save \$10. Responses may mention the pleasure and satisfaction of doing it themselves.

**Challenge Problem.** Responses may mention the cost of food handling equipment, plates and cutlery, people's time to man the booth, and food handler's licenses.

### Lesson 3: Buying in Bulk

1. \$0.55; \$1.24
2. A \$93.75
3. Circle under Expenses  $1,000 \times \$4.50$ ; Income  $1,000 \times \$7$ ; Profit  $1,000 \times \$2.50$

**Challenge Problem.** Responses may mention that the moving company will probably be cheaper than the office supply company but more expensive than the (free) supermarket.

### Lesson 4: New versus Used

1. \$105.23; \$5.00 Reasons should include the sharply reduced cost of used clothing items.
2.  $14 \times (\$0.89 - \$0.30)$
3. D mean: \$10.63; mode: \$17
4. \$75

**Challenge Problem.** Responses might include these points: James' unit costs him \$152 a year. Tony's unit costs him \$100 a year. James does not have to replace his for 5 years. Tony has to replace his in 2 years.

### Lesson 5: Conserving Resources

1. \$6.60
2. Responses may mention that, over the long term, maintaining the same temperature may cost less than raising the temperature a significant number of degrees.
3. \$4.60; \$12.95; \$3.70

**Challenge Problem.** Responses may point out that Gary saves time waiting in line to put his car on the ferry and saves gas doing short trips. He also gets exercise biking

## Unit 7 (continued)

to work. However, he cannot make long trips or carry large packages on his bicycle.

### Review

1. \$7.50; \$22.50; \$22.50; \$7.50
2. C \$5; \$3
3.  $275 + 2 \times 4 \times 5 \times 8$
4.  $\$2.50 - (\$12 \div 10) = \$1.30$
5. \$2.37

## Unit 8: Sustaining the World

### Lesson 1: Recovering Waste

1. \$4.33
2. All but final column of squares is shaded. (20 squares shaded; 5 are not shaded.)
3. B \$13
4.  $3 \div 2.5 \div 2$

**Challenge Problem.**  $c \times 0.40 + b \times 0.06 + p \times 0.10$

### Lesson 2: Black Out!

There are no answers in this game. The game is over when a player tosses a double 1 and everything is blacked out.

### Lesson 3: Finding Other Ways

1. \$350
2. 50%; \$1,400
3. D 6,333.33
4. Fill in order column with the following: 2, 1, 4, 3

**Challenge Problem.** The heights are not in proportion to the power generated. Possible explanation lies in the difference in the rotor size and average wind strength.

### Lesson 4: The People of the World

1. C 21.84%
2. 5.75 of the faces are shaded.
3. \$625; 175
4. 2.5%

**Challenge Problem.** Responses may mention that the number of births in the twentieth century would have to have been far, far greater than in the whole rest of human history. The population growth of the world was very slow for a long time and has increased rapidly in recent years.

### Lesson 5: Success Stories of Species

1. 965
2. B 0.62%
3.  $15 \times (2,000,000 \div 3,500) = 8,571.43$
4. The circle below the 18.5 mark on the line is darkened.

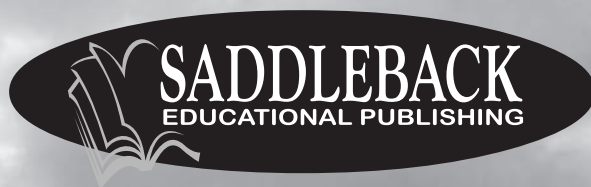
**Challenge Problem.** Sample answer: If tropical forests fall, vegetation goes with them. If this is the vegetation that Okapis feed on, in time they will die out.

### Review

1. \$13; \$3.25
2. B  $1,000 \times \$1.50 = \$1,500$
3. 12.4%
4. 9.75 faces should be shaded.
5.  $\$9,000 \div 18 = \$500$ ;  
 $5,670 \div 18 = 315$
6. A 28.5 million

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