Introduction

For Parents and Teachers

Mathematics 4 is an attractively formatted hardcover textbook with colorful pictures and illustrations. It teaches students basic math facts and concepts. Its use of practical applications helps students relate to math in the real world. Its incremental approach and spiral review (teaching concepts in small increments and continuous review) makes Mathematics 4 an effective math course. The consistent, systematic review helps students retain what they have learned. The goal is mastery, not just exposure.

How to Use Mathematics 4

Each **unit** follows a theme, introduced by a story and photographs relating to the theme. Many word problems and nuggets of information follow this theme.

The **header** in each lesson tells what unit and lesson is taught that day. It also tells which flash cards to review and which drill to administer.

The **colored teaching box** beginning each lesson teaches the new concept, followed by exercises to reinforce the concept. This concept is reviewed again just before Sharpening Your Skills. The icon indicates lessons taught in the previous grade.

We Remember follows the teaching lesson and its reviews. It reviews concepts taught in earlier lessons. Students should be able to work through these exercises independently. Small reference numbers after each exercise indicate the page number where the concept was taught.

Sharpening Your Skills drills students in basic computation (using any of the four math operations), mental math, and fact focus. Fact Focus drills basic math facts and measurement equivalents.

Lessons 5, 10, and **16** of each unit are quiz or test lessons. Most material has been reviewed five times before it is quizzed or tested. Quiz and test lessons include optional enrichment activities. They are neither reviewed nor tested. They are optional and just for fun.

The **Glossary, Reference Charts,** and **Index** are reference materials to help students work independently.

Mathematics 4 was developed to equip students with tools that will enable them to apply principles to math in everyday life. It enables students to see the beauty in numbers and to learn to appreciate math. We believe that mathematics should help students achieve the ultimate goal—loving, serving, and bringing glory to God.

Course Materials

- **Mathematics 4 Textbook**
- **Student Packet**
  Graph Worksheets
  Progress Charts
  Speed/Mastery Drills
- **Quiz and Test Packet**
- **Teacher's Guide**
  Resource CD
- **Flash Cards**
- **Full Solution Answer Key**

Unit 1

Contents

Lesson 1 2
Understanding Numbers Through Thousands; Multiplication

Lesson 2 5
Fractions; Facts About Fractions

Lesson 3 8
Solving Word Problems; Finding Half of a Number Mentally

Lesson 4 11
Reading and Writing Decimals; Ordering Decimals With Tenths

Lesson 5 14
Quiz 1

Lesson 6 15
Placing Decimal Points; Subtraction in Word Problems

Lesson 7 18
Rounding Measurements; Changing Units of Measure

Lesson 8 21
Borrowing; Finding the Missing Part in Word Problems

Lesson 9 24
Metric Units of Length; Solving Two-Step Word Problems

Lesson 10 27
Quiz 2

Lesson 11 28
Multiplying and Carrying; Factors and Multiples; When to Add, When to Multiply

Lesson 12 31
Rounding to the Nearest Ten or Hundred; Finding Change

Lesson 13 34
Adding and Subtracting Mentally; Doubling Numbers Mentally

Lesson 14 37
Carrying Mentally; Multiplying by Tens and Hundreds Mentally

Lesson 15 40
Naming Lines; Mental Math Trails

Lesson 16 43
Unit 1 Test

Unit 7

Lesson 1 . . . . . **266**
Counting Zeros to Multiply

Lesson 2 . . . . . **269**
Rounding Tenths to Whole Numbers

Lesson 3 . . . . . **272**
Types of Angles

Lesson 4 . . . . . **275**
Making a Bar Graph

Lesson 5 . . . . . **278**
Quiz 1

Lesson 6 . . . . . **279**
Expressions and Variables; Analogies

Lesson 7 . . . . . **282**
Estimating Multiplication; Multiplication Facts of 11

Lesson 8 . . . . . **285**
Adding or Subtracting Mixed Numbers; If/Then Statements

Lesson 9 . . . . . **288**
Rounding Numbers With Two Nines

Lesson 10 . . . . . **291**
Quiz 2

Lesson 11 . . . . . **292**
Multiplying Three-Digit Numbers by Three-Digit Numbers

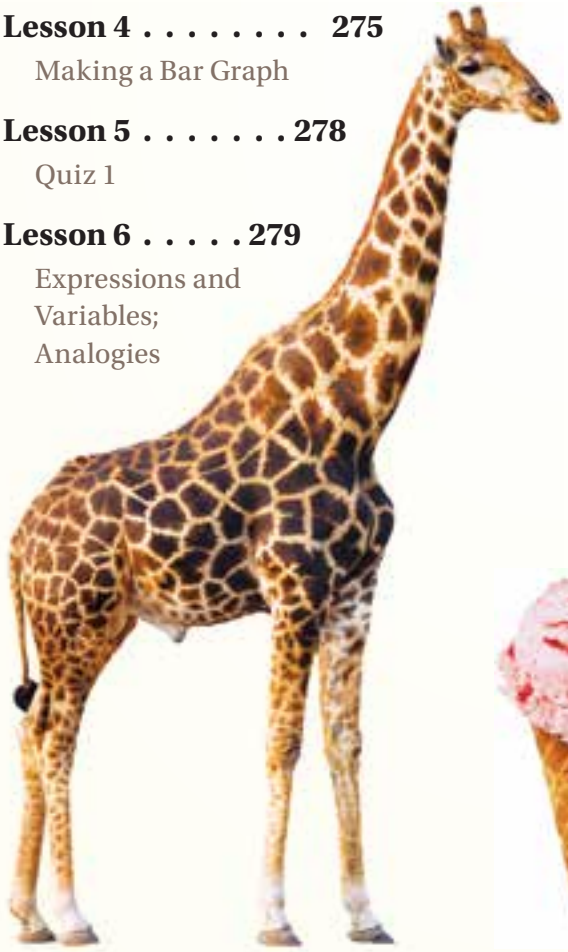
Lesson 12 . . . . . **295**
Comparing Positive and Negative Numbers

Lesson 13 . . . . . **298**
Simplifying Expressions

Lesson 14 . . . . . **301**
Simplifying Mixed Numbers With Improper Fractions

Lesson 15 . . . . . **304**
Writing Dates With Numbers; What Would Equal 100?

Lesson 16 . . . . . **307**
Unit 7 Test



Unit 10

Lesson 1 . . . . . **398**
Metric Units for Liquids With Decimals

Lesson 2 . . . . . **401**
Rounding to the Nearest Fourth-Inch

Lesson 3 . . . . . **404**
Sets With Many Members

Lesson 4 . . . . . **407**
Prime and Composite Numbers

Lesson 5 . . . . . **410**
Quiz 1

Lesson 6 . . . . . **411**
Keys to Finding Prime Numbers

Lesson 7 . . . . . **414**
One Half and Tenths

Lesson 8 . . . . . **417**
One Half and Hundredths

Lesson 9 . . . . . **420**
The Square Root Symbol

Lesson 10 . . . . **423**
Quiz 2

Lesson 11 . . . . . **424**
Dry Food Measures

Lesson 12 . . . . . **427**
Symmetry and Asymmetry; Symmetrical Patterns

Lesson 13 . . . . . **430**
Completing Symmetrical Shapes

Lesson 14 . . . . . **433**
Finding Places on a Grid

Lesson 15 . . . . . **436**
Scale Drawing on a Grid

Lesson 16 . . . . . **439**
Unit 10 Test

Glossary **440**

Reference **448**

Index **451**

Credits **468**

Division With a Remainder

Division With a Remainder

Math 3

A. Sometimes a number cannot be divided into equal groups. The amount left over is called the **remainder**. That group must be smaller than the other groups.

2 groups of 3 with a remainder of 2
8 ÷ 3 = 2 R2

B. The fourth step in division is the **compare** step. Compare the remainder with the divisor. The remainder must be smaller than the divisor.

Write the remainder beside the quotient with an R.

Steps to Divide

1. Divide
2. Multiply
3. Subtract
4. Compare

$$\begin{array}{r} 4\ \text{R1} \\ 2\overline{)9} \\ -\,8 \\ \hline 1 \end{array}$$

Compare
The remainder is smaller than the divisor.

Copy and solve. Write remainders with R.

1. $3\overline{)14}$ **2.** $4\overline{)35}$ **3.** $2\overline{)5}$ **4.** $5\overline{)27}$ **5.** $4\overline{)39}$

Oral Practice

Read to your teacher: 65,123 201,101 369,965 2.2 0.2

We Remember

Write the digit from 913,246,587 **for each place value.**

6. millions p. 68
7. tens p. 68
8. thousands p. 68
9. ten millions p. 68
10. ten thousands p. 68
11. ones p. 68
12. hundred thousands p. 68
13. hundred millions p. 68
14. hundreds p. 68

Follow the directions.

28. Write the first five multiples of 4.
p. 28

29. Write the two improper fractions. $\frac{1}{4}$ $\frac{12}{8}$ $\frac{20}{20}$ $\frac{5}{8}$
p. 81

30. Write the three proper fractions. $\frac{3}{8}$ $\frac{7}{16}$ $\frac{16}{7}$ $\frac{5}{8}$
p. 81

31. Draw three circles. Color the circles to show $2\frac{1}{2}$.
p. 96

32. Write $2\frac{1}{2}$ as an improper fraction.
p. 81, 96

Sharpening Your Skills

Computation

Copy and solve.

33. $\begin{array}{r} 207 \\ -\ 148 \\ \hline \end{array}$

34. $\begin{array}{r} 6.7 \\ -\ 0.9 \\ \hline \end{array}$

35. $\begin{array}{r} \$27.85 \\ +\ 23.56 \\ \hline \end{array}$

36. $\begin{array}{r} 3.2 \\ 15.4 \\ +\ 7.5 \\ \hline \end{array}$

37. $\frac{5}{13} - \frac{4}{13}$

38. $\frac{3}{11} + \frac{3}{11}$

39. $\frac{4}{5} - \frac{1}{5}$

40. $\begin{array}{r} \frac{11}{27} \\ +\ \frac{8}{27} \\ \hline \end{array}$

41. $3\overline{)28}$

42. $6\overline{)27}$

43. $4\overline{)38}$

44. $7\overline{)37}$

Fact Focus

Write the answers.

45. 18 ÷ 9

46. 90 ÷ 9

47. 45 ÷ 9

48. 54 ÷ 9

49. 63 ÷ 9

50. 72 ÷ 9

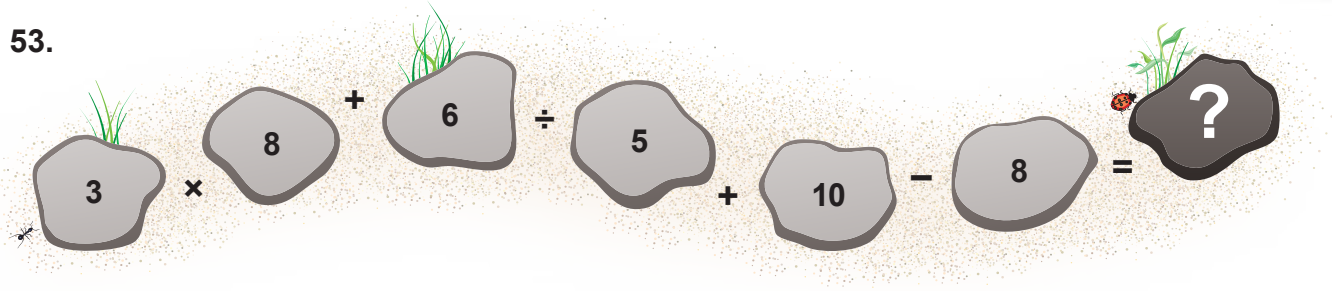
51. 36 ÷ 9

52. 81 ÷ 9

Mental Math

Write the answer.

53.



Unit 8 Test

Glasswing Butterflies

The tiny delicate glasswing butterfly, native to Bolivia, feeds on the nectar of a variety of rainforest flowers. They lay their eggs on a highly poisonous plant. The caterpillars are bright purple and red. Birds and animals do not enjoy this snack.

Complete the facts about the glasswing butterfly. To find the letter or number for each blank, find where the row for the symbol and the column for the number meet.

	1	2	3	4	5	6	7	8	9
flower	A	B	C	D	E	F	G	H	I
leaf	J	K	L	M	N	O	P	Q	R
sun	S	T	U	V	W	X	Y	Z	0
snail	1	2	3	4	5	6	7	8	9

1. The wings of the glasswing butterfly are

[ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ].

sun 2 leaf 9 flower 1 leaf 5 sun 1 leaf 7 flower 1 leaf 9 flower 5 leaf 5 sun 2

2. The borders of their wings are dark [ ][ ][ ][ ][ ]

flower 2 leaf 9 leaf 6 sun 5 leaf 5

and sometimes tinted with [ ][ ][ ] or [ ][ ][ ][ ][ ][ ]

leaf 9 flower 5 flower 4 leaf 6 leaf 9 flower 1 leaf 5 flower 7 flower 5

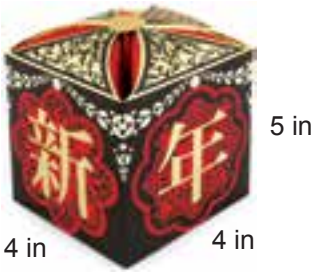
3. The wingspan of the glasswing butterfly is approximately [ ] centimeters.

snail 6

4. The glasswing butterfly is about [ ][ ] to [ ][ ] millimeters long.

snail 2 snail 8 snail 3 sun 9

Follow the directions.



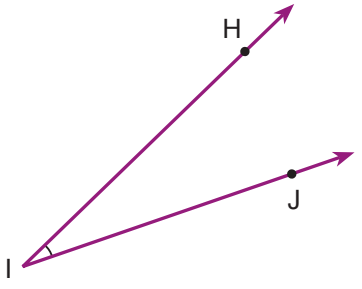
21. Write 402,002 using words.
p. 109

22. Find the LCM of 5 and 4.
p. 329

23. Find the area of a 10-centimeter square.
p. 143

24. Find the volume of the Chinese gift box.
p. 204

25. In 144 ÷ 2 = 72 ___ is the dividend, ___ is the divisor, and ___ is the quotient.
p. 49



26. Write the common factors from 2-10 for 36 and 40.
p. 222

27. Write eight and seventeen hundredths using digits.
p. 93

28. Expand 936,560,070 vertically and check.
p. 348

29. Measure ∠HIJ to the nearest 5°.
p. 342

30. Classify ∠HIJ.
p. 272

31. Write another name for ∠HIJ.
p. 319

32. Name the vertex of ∠HIJ.
p. 319

Round to the nearest whole number.

33. 3.2
p. 269

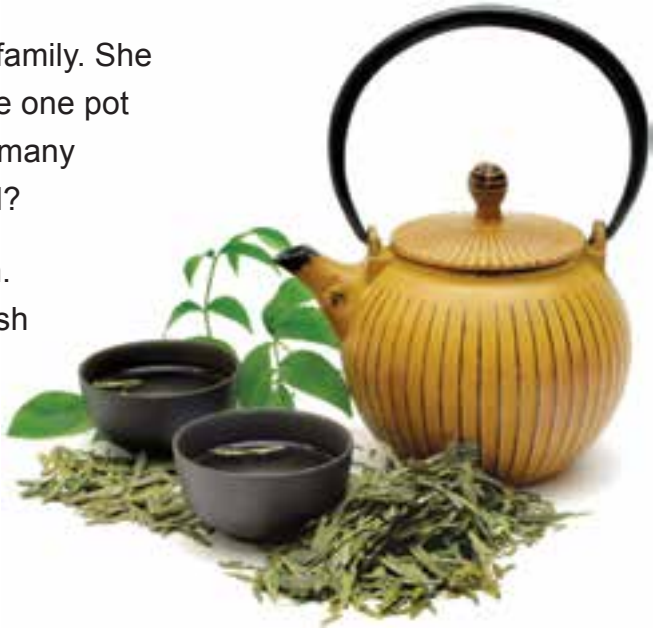
34. 40.8
p. 269

35. 23.5
p. 269

36. 25.3
p. 269

Solve the word problems.

37. Li Bing made a pot of cha (tea) for her family. She used 4 teaspoons of tea leaves to make one pot of tea. If she makes 4 pots of tea, how many teaspoons of tea leaves does she need?
p. 29



38. Yaoxing's cormorants catch fish for him. He lets the cormorants eat every 12th fish they catch. If they ate 7 fish, how many fish did they catch?
p. 241

39. If $\frac{1}{12}$ of the fish were small and $\frac{5}{12}$ were medium-sized, what fraction of the fish were large? Subtract from 1.
p. 25, 59, 235, 257