

Introduction

For Parents and Teachers

Mathematics 7 combines proven teaching methods with colorful pictures and illustrations to teach 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) make Mathematics 7 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 7

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

The **header** in each lesson tells what unit and lesson is taught that day. It also tells which speed drill or mastery 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*.

Applying Your Skills follows the teaching lesson and its reviews. It also reviews concepts taught in earlier lessons. Students should be able to work through these exercises independently. A small reference number after each exercise indicates 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, which 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 7 equips students with tools that help them apply math principles to 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 7 Textbook**
- **Student Packet**
 - Worksheets
 - Speed/Mastery Drills
 - Quizzes
 - Tests
- **Teacher's Guide**
 - Resource CD
- **Full Solution Answer Key**

UNIT 2



Lesson 146

Dividing Decimals; Identifying
Parts of a Circle

Lesson 249

Dividing to Solve Equations;
Finding a Percent of a Number
and Computing Sales Tax

Lesson 352

Formulas for the Area of Polygons;
Converting Fractions to Decimals

Lesson 455

Making a Tally Chart

Lesson 558

Quiz 1

Lesson 659

Repeating Decimal Quotients;
Formula for Perimeter and Volume

Lesson 762

Using Prime Factors to Find
Greatest Common Factor;
Converting Mixed Number
Percents to Decimals

Lesson 865

Formula for the Circumference
of a Circle; Using Proportions
to Convert U.S. Measures



Lesson 968

Dividing to Solve Two-
Step Equations

Lesson 1071

Quiz 2

Lesson 1172

Finding the Area of Irregular Shapes

Lesson 1275

Subtracting Integers

Lesson 1378

Classifying Triangles by
Angles and Sides

Lesson 1481

Multiplying to Solve Equations

Lesson 1584

Using Proportions to Solve
Percent Problems

Lesson 1687

Test 2



UNIT 5



Lesson 1 178

Combining Numbers and Words
to Express Large Numbers

Lesson 2 181

Formula for the Volume
of a Triangular Prism

Lesson 3 184

Order of Operations With
Exponents and Square Roots

Lesson 4 187

Building Line Graphs

Lesson 5 190

Quiz 1

Lesson 6 191

Identifying Reflex Angles

Lesson 7 194

Using Exponents to List
Prime Factors

Lesson 8 197

Calculating Depreciation

Lesson 9 200

Using Proportions to Convert
Between Pounds and Kilograms

Lesson 10 203

Quiz 2

Lesson 11 204

Calculating Unit Price
to the Nearest Cent

Lesson 12 207

Graphing Solutions (\geq , \leq)

Lesson 13 210

Calculating the Amount of
Increase or Decrease

Lesson 14 213

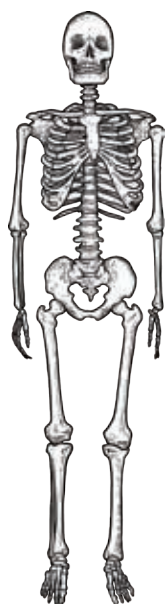
Formula for the Volume
of a Cylinder

Lesson 15 216

Simplifying Complex Fractions

Lesson 16 219

Test 5



UNIT 9



Lesson 1 354

Constructing Parallel Lines

Lesson 2 357

Making a Table of Values

Lesson 3 360

Calculating Operating Expenses

Lesson 4 363

Choosing Appropriate
Graphs to Display Data

Lesson 5 366

Quiz 1

Lesson 6 367

Venn Diagram for
Intersection of Sets

Lesson 7 370

Graphing Linear Relations

Lesson 8 373

Disjoint Sets and the Empty Set

Lesson 9 376

Converting Bible Measures
of Capacity to Standard Measures



Lesson 10 379

Quiz 2

Lesson 11 380

Complement of a Set

Lesson 12 383

Map Scales Using a Proportion

Lesson 13 386

Changing Standard Form
to Scientific Notation

Lesson 14 389

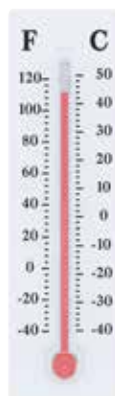
Converting Between Celsius
and Fahrenheit Temperatures

Lesson 15 392

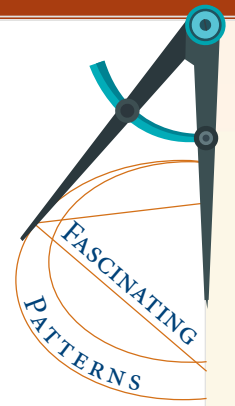
U.S. and Metric Land
Area Measures

Lesson 16 395

Test 9



Calendar Discoveries



Below are some interesting number observations about calendars. Read each observation. Try it to see if it works. If it works, try the observation with your own numbers to prove if it is always true. Write only the observations that are true.

Observation 1 Use the numbers from the brown boxes.

The sum of any two adjacent dates is always odd.

Observation 2 Use the numbers from the light gray boxes.

The sum of any three dates in a row is always even.

Observation 3 Use the numbers from the blue boxes.

The sum of any four dates in an L shape is ten times larger than the smallest date in the shape.

Observation 4 Use the numbers from the orange boxes.

Multiply the diagonals of any 2×2 square.
The difference between the two products is seven.

Observation 5 Use the numbers from the green boxes.

The sum of any diagonal stair-step shape of three dates is a multiple of three.

July 2015						
SUN	MON	TUES	WED	THUR	FRI	SAT
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

Write each number using only digits.

19. 2.41 billion
p. 178

20. 250 trillion
p. 178

Write each number using digits and words.

21. If Methuselah had lived until his 970th birthday, he would have been over 30,600,000,000 seconds old.
p. 178

22. If a cubit was 1.5 feet, Noah's ark had a volume of over 1,500,000 cubic feet.
p. 178

Write the equation for each word problem and solve.



23. Mike and Sally find a washer at an appliance store. Normally it costs \$339.99 but is reduced to \$288.99 because the side is dented. What percent is the reduced price of the normal price? Round to the nearest tenth of a percent.
p. 140

24. Sally finds a one-year-old washer advertised for \$125.00. How much would the Ulrichs save by buying the used washer rather than the damaged new one?
p. 21

25. Marlene starts 80% of her flowering plants from seed this year. If she has 55 flowering plants, how many does she start from seed? Use the fractional equivalent for the percent.
p. 166

Use a compass and a straightedge to construct each line segment. Use Worksheet 38.

26. $\overline{UE} \cong \overline{PB}$
p. 169

27. $\overline{AD} \cong \overline{SV}$
p. 169

Write the name of each part of the solid. edge face vertex

28. D
p. 8

29. GH
p. 8

30. EFGD
p. 8

Write the formula and find the measurement of each figure.



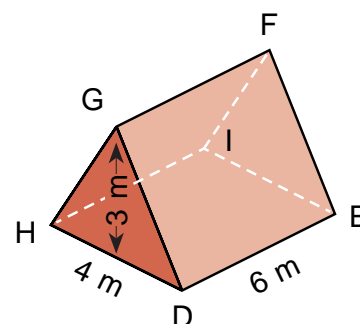
31. triangular prism $V = \underline{\hspace{2cm}}$
p. 52, 181

32. $\triangle XYZ$ $m\angle X = 105^\circ$ $m\angle Y = 35^\circ$ $m\angle Z = \underline{\hspace{2cm}}^\circ$
p. 172



Life Expectancy

The Bible says the life span of a person is threescore years and ten or possibly fourscore years. A score is twenty, so most people can expect to live 70 to 80 years. On average, women live 8 years longer than men.



Multiplying Numbers When the Signs Are Different

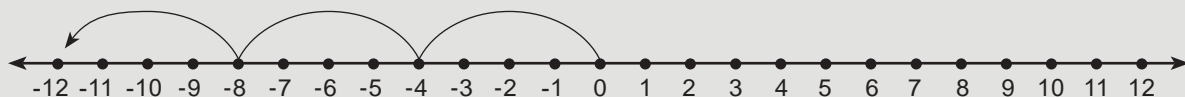
Multiplying Numbers When the Signs Are Different

Multiplication is repeated addition. To multiply numbers when the signs are different, multiply the two factors. The product is always a negative answer.

$$-4 + -4 + -4 = -12$$

$$-4 \times 3 = -12$$

$$3 \times -4 = -12$$



$$-2 \cdot 4.5 = -9$$

$$7 \cdot (-8) = -56$$

$$-4 \cdot 8 = -32$$

$$\frac{2}{3} \cdot \left(-\frac{1}{5}\right) = -\frac{2}{15}$$

$$-\frac{1}{2} \cdot \frac{1}{4} = -\frac{1}{8}$$

Multiply. Notice the pattern.

1. $2 \cdot 3$

2. $2 \cdot 2$

3. $2 \cdot 1$

4. $2 \cdot 0$

5. $2 \cdot -1$

6. $2 \cdot -2$

7. $2 \cdot -3$

Copy and simplify each expression.

8. $6 \cdot (-12)$

9. $-8 \cdot 0.9$

10. $-1.1 \cdot 4$

11. $\frac{1}{3} \cdot \left(-\frac{2}{3}\right)$

12. $-3 \cdot 7$

13. $\frac{2}{9} \cdot \left(-\frac{4}{5}\right)$



Applying Your Skills

Use a compass and a straightedge to construct each angle. Use Worksheet 46.

14. $\angle MNO \cong \angle FGH$

p. 222

15. $\angle PQR \cong \angle IJK$

p. 222

Find the unit price of each item. Round to the nearest cent.



16. milk 100 pounds for \$15.42

p. 204

17. binder clips 24 clips for \$9.79

p. 204

Converting Bible Measures of Length

Converting Bible Measures of Length

In Bible times, the **cubit** was a common unit of length. It measured the distance from a man's elbow to the end of his fingers.

Another unit, the **span**, was the distance between the end of the thumb and the end of the little finger with the hand stretched out. It was about half of a cubit.

In the New Testament, large distances are given in **stadia**, translated **furlongs**. In Bible times, a furlong was about 606 feet or 185 meters. Today a furlong is considered about $\frac{1}{8}$ mile or 660 feet.

The word *mile* is used only once in the New Testament. Matthew 5:41 says, "And whosoever shall compel thee to go a mile, go with him twain." This was a Roman mile and is a little shorter than our mile.

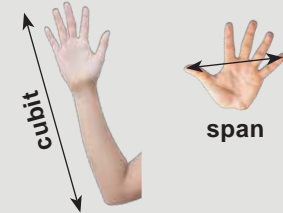
Set up a proportion to convert Bible measures to standard measures.

$$8 \text{ cubits} \approx n \text{ feet}$$

$$\frac{1 \text{ cubit}}{1.5 \text{ feet}} \approx \frac{8 \text{ cubits}}{n \text{ feet}}$$

$$1.5 \times 8 \div 1 = 12$$

$$n \approx 12 \text{ feet}$$



1 cubit $\approx 1\frac{1}{2}$ feet
1 cubit ≈ 18 inches
1 cubit ≈ 0.5 meter
1 span ≈ 9 inches
1 span ≈ 0.25 meter
1 furlong $\approx \frac{1}{8}$ mile
1 furlong ≈ 660 feet

Read the verses and write the answer for each blank. Round to the nearest whole number.



- The Bible says Goliath was ____ cubits and ____ span tall. 1 Samuel 17:4
- Goliath was about ____ feet and ____ inches tall. 1 cubit $\approx 1\frac{1}{2}$ feet 1 span ≈ 9 inches
- God told Noah to make the ark ____ cubits long, ____ cubits wide, and ____ cubits high. Genesis 6:15
- The ark was about ____ meters long, ____ meters wide, and ____ meters tall. 1 cubit ≈ 0.5 meters
- From Jerusalem to Emmaus was ____ furlongs. Luke 24:13 A score is 20.
- From Jerusalem to Emmaus was about ____ miles. 1 furlong $\approx \frac{1}{8}$ mile