

This free download includes three lessons from

Math 7

LightUnit 702

The course consists of ten LightUnit workbooks (701-710).

Following the lessons are corresponding pages from the Teacher's Guide.

Course description:

Sunrise Math 7 teaches new skills and concepts in incremental, continuously reviewed steps. Concepts are tested only after being reviewed for five days or more. Use Christian Light's Math Diagnostic Test to place students new to the curriculum.

Unit themes feature an occupation, vocation, or a business, with word problems focusing on using math on the job. Math 7 builds on geometry, pre-algebra, and calculating sales tax and discounts learned in previous grades. Students continue to hone basic math skills. They increase their knowledge of geometric formulas, pre-algebra skills, scale drawings, graphs, percents, decimals, and fractions. Students are introduced to interest for savings accounts and loans, graphing linear equations on a coordinate plane, set theory, and scientific notation.

The course consists of ten LightUnits and two Teacher's Guides.



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To the Teacher and Student



The information shown in shaded boxes with an exclamation mark is needed to complete the work in this LightUnit.



Shaded boxes with a light bulb contain information that will not be reviewed or tested.

Area Formulas

Area of a square	$A = s^2$
Area of a rectangle	$A = lw$
Area of a triangle	$A = \frac{1}{2}bh$
Area of a parallelogram	$A = bh$
Area of a trapezoid	$A = \frac{1}{2}(b_1 + b_2)h$

Circle Formulas

Circumference of a circle	$C = \pi d$
Area of a circle	$A = \pi r^2$

Volume Formula

Volume of a rectangular prism	$V = lwh$
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Perimeter Formula

Perimeter of a rectangle or parallelogram	$P = 2l + 2w$
--	---------------

Equivalent Measurements

Capacity Conversions

1 fl oz = 2 tbsp
1 c = 8 fl oz
1,000 cm ³ = 1 L
1 cubic meter = 1,000 liters
1 cc = 1 mL

Time Conversions

1 decade = 10 years
1 century = 100 years
1 millennium = 1,000 years

Metric Chart

Measurement Units						
Kilo (k) 1000	Hecto (h) 100	Deca (dk) 10	meter (m) liter (L) gram (g) 1	Deci (d) 0.1	Centi (c) 0.01	Milli (m) 0.001

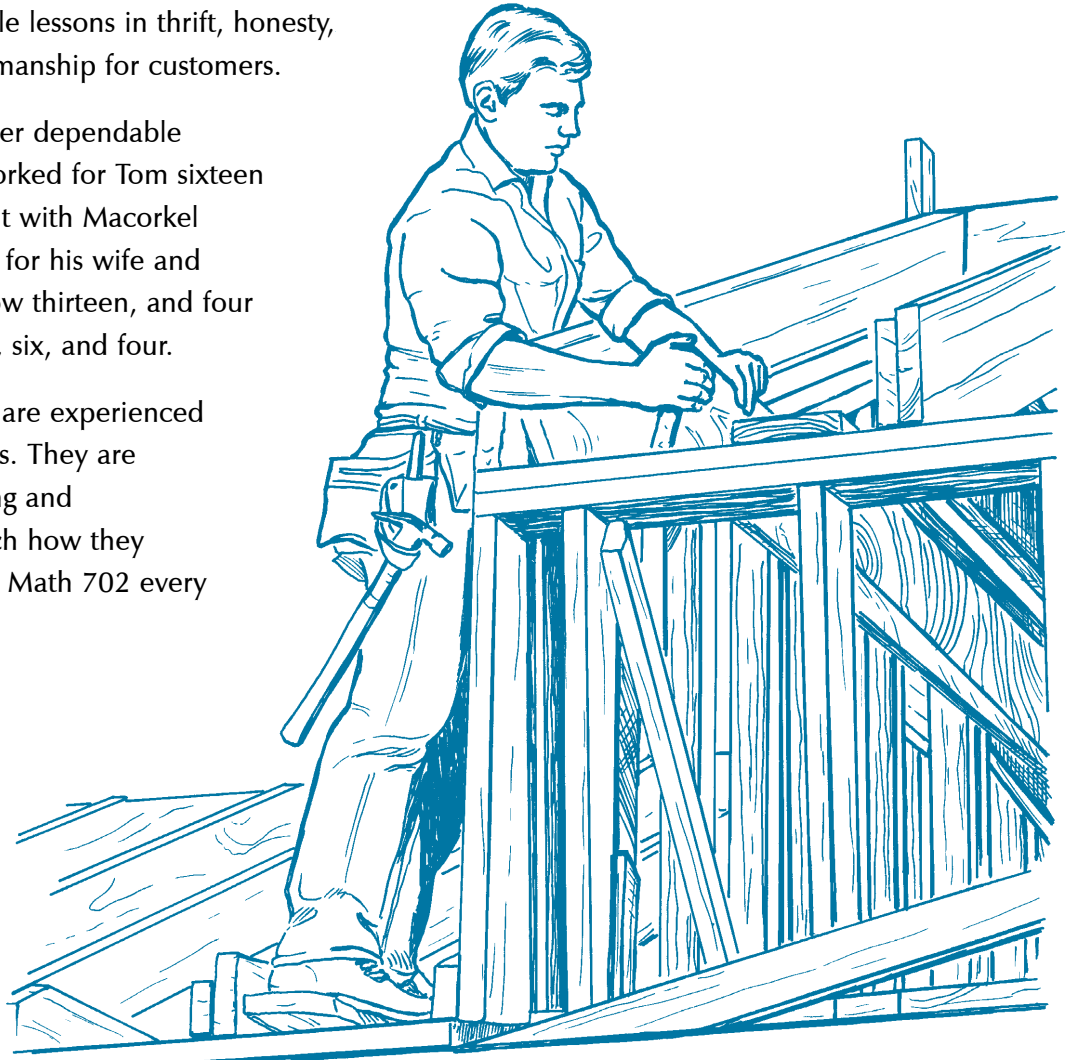
Math in the Life of a Building Contractor

Tom Macorkel is the owner of Macorkel Construction. As a small general contractor in a farming community, he works on a variety of residential and agricultural buildings. Some of his work is new construction, and some is repair work. As you work through LightUnit 702, you will get glimpses of how practical math becomes in real life work such as construction.

Melvin, Tom's nineteen-year-old son, has recently finished high school and now works full time with his father. Melvin has helped his father during summer vacation for the past five years. He hopes to gain additional skills. He has been saving money to add more tools to those he has already accumulated. His father has taught him valuable lessons in thrift, honesty, and trustworthy workmanship for customers.

Phil Shuey is another dependable employee. Phil has worked for Tom sixteen years. His employment with Macorkel Construction provides for his wife and family of twin girls, now thirteen, and four sons, ages eleven, ten, six, and four.

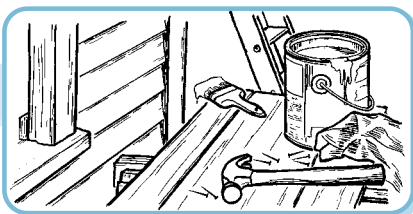
Both Tom and Phil are experienced carpenters and masons. They are also skilled at plumbing and electrical wiring. Watch how they use the skills taught in Math 702 every day on the job.



“Now therefore ye are no more strangers and foreigners, but fellowcitizens with the saints, and of the household of God; and are built upon the foundation of the apostles and prophets, Jesus Christ himself being the chief corner stone; in whom all the building fitly framed together groweth unto an holy temple in the Lord: in whom ye also are built together for an habitation of God through the Spirit” (Ephesians 2:19-22).

Lesson

1

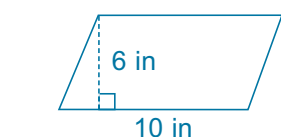


Math
6

Formula for the Area of a Parallelogram

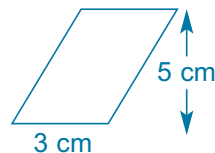
A quadrilateral is a parallelogram if it has two pairs of parallel sides. Squares and rectangles are parallelograms because their two pairs of opposite sides are parallel. We find the area of a rectangle with the formula $A = lw$, and the area of a square with the formula $A = s^2$.

Not all parallelograms are squares or rectangles. A parallelogram without right angles needs a different area formula. This formula is $A = bh$. In this formula, b stands for base, and h stands for height. The base is the same as the length. The height is the perpendicular distance from the base to the opposite side. Study the examples.



$$\begin{aligned} A &= bh \\ A &= 10 \times 6 \\ A &= 60 \text{ in}^2 \end{aligned}$$

Remember to
give area in
square units.



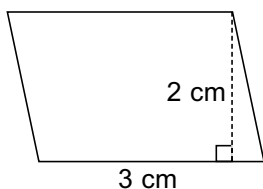
$$\begin{aligned} A &= bh \\ A &= 3 \times 5 \\ A &= 15 \text{ cm}^2 \end{aligned}$$



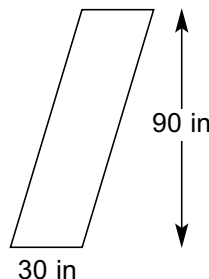
REMEMBER

The formula for finding the area of a parallelogram is $A = bh$.

Use the formula to find the area of each parallelogram.



1. a. _____



b. _____



We Remember

Combine integers.

2. a. $-6 + (-8) =$ _____ b. $-6 + 9 =$ _____ c. $7 + (-5) =$ _____
 3. a. $9 + 16 =$ _____ b. $-7 + (-10) =$ _____ c. $-4 + 15 =$ _____



Mastery Drill



4. a. 1 liter = _____ cubic centimeters b. 1 cubic meter = _____ liters
 5. a. 1 millennium = _____ years b. 1 century = _____ years
 6. The short version of the percent proportion is _____.
 7. The formula for finding the area of a square is _____.
 8. The three dimensions of a solid are _____, _____, and _____.
 9. The formula for finding the area of a rectangle is _____.
 10. The formula for finding the perimeter of a rectangle or parallelogram is _____.

Round to the nearest 1,000 to estimate. Then copy and solve.

11. $4,379 + 9,734 + 9,376 =$ _____
 _____ + _____ + _____ = _____

Simplify the expressions.

12. a. $3x - 3 + 2x - x$ b. $7x + 2 - 4x + 3$

Convert the metric units.

kilo	hecto	deca		deci	centi	milli
------	-------	------	--	------	-------	-------

13. a. 64 L = _____ mL b. 32 cm = _____ mm c. 610 g = _____ kg

Lesson 1

Find the cost after the discount.

14. The cost was \$94
before a 6% discount.

a. The final cost is _____.

- The cost was \$19.95
before a 5% discount.

b. The final cost is _____.

Match the following properties.

15. _____ $a \cdot b = b \cdot a$

16. _____ $(a + b) + c = a + (b + c)$

17. _____ $a(b + c) = ab + ac$

18. _____ $(a \cdot b) \cdot c = a \cdot (b \cdot c)$

19. _____ $a + b = b + a$

a. The distributive property

b. The commutative property of addition

c. The associative property of addition

d. The commutative property of multiplication

e. The associative property of multiplication

-  20. Melvin would like to purchase his own battery-powered tool kit. He can purchase the same brand as his father's locally for \$529.99 plus 6% sales tax, or he can order it through a catalog for \$479.99 plus 10% for shipping and handling.

a. How much does the tool kit cost locally with tax added?

b. How much does the tool kit from the catalog cost with shipping and handling added? _____

c. How much would Melvin save by purchasing the kit through the catalog? _____

Solve.

21. What is 60% of 170? _____

22. 15 is 20% of what number? _____

23. 21 is what percent of 35? _____

— $\div$ $\times$ *Skill Builders* —

24. a.
$$\begin{array}{r} 26,249 \\ \times \quad 52 \\ \hline \end{array}$$

b.
$$\begin{array}{r} 49,220 \\ - 45,917 \\ \hline \end{array}$$

c.
$$75.4 \overline{)6,001.84}$$



Our number system is filled with interesting patterns. Here are two. See if you can figure out the patterns and fill in the missing numbers. Use a calculator to help you get started.

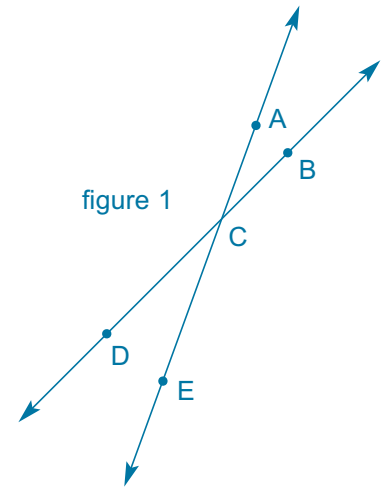
25.
$$\begin{array}{lcl} 1 \cdot 1 & = & 1 \\ 11 \cdot 11 & = & 121 \\ 111 \cdot 111 & = & \underline{\hspace{2cm}} \\ 1,111 \cdot 1,111 & = & \underline{\hspace{2cm}} \\ 11,111 \cdot 11,111 & = & \underline{\hspace{2cm}} \\ 111,111 \cdot 111,111 & = & \underline{\hspace{2cm}} \end{array}$$

26.
$$\begin{array}{lcl} 123,456,789 \cdot 9 & = & 1,111,111,101 \\ 123,456,789 \cdot 18 & = & 2,222,222,202 \\ 123,456,789 \cdot 27 & = & \underline{\hspace{2cm}} \\ 123,456,789 \cdot 36 & = & \underline{\hspace{2cm}} \\ 123,456,789 \cdot \underline{\hspace{1cm}} & = & \underline{\hspace{2cm}} \end{array}$$

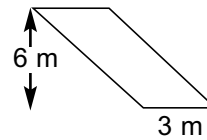
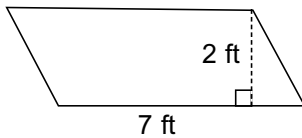
Lessons 1, 2

Use figure 1 to fill in the blanks.

27. The sum of all the angles is _____.
28. Name two straight angles. _____



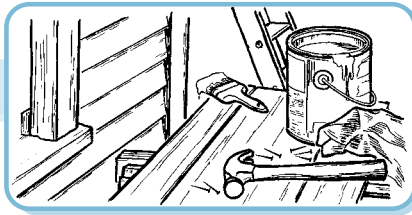
Use the formula to find the area of each parallelogram.



29. a. _____

b. _____

Lesson 2



Finding Digit Sums by Casting Out Nines

The digit sum of a number is the sum of its digits. Whenever a digit sum itself has more than one digit, add the digits of that sum again. By following this process, any number, no matter how large, can eventually be found to have a digit sum of 1, 2, 3, 4, 5, 6, 7, 8, or 9.

What is the digit sum of 46,813,917,016? $4 + 6 + 8 + 1 + 3 + 9 + 1 + 7 + 0 + 1 + 6 = 46$.
 $4 + 6 = 10$, and $1 + 0 = 1$. The digit sum of 46,813,917,016 is 1.

What is the digit sum of 7,694,835? $7 + 6 + 9 + 4 + 8 + 3 + 5 = 42$; $4 + 2 = 6$. The digit sum of 7,694,835 is 6.

Digit sums are easier and quicker to find if we cross off the digit 9 and any sets of digits that add up to nine. Let's try that with the two numbers from page 6.

~~4~~ ~~6~~, ~~8~~ ~~1~~ ~~3~~, ~~0~~ ~~1~~ ~~7~~, 0 1 6

$6 + 3 = 9$; Cross out 6 and 3.

$8 + 1 = 9$; Cross out 8 and 1.

Cross out 9.

$1 + 7 + 1 = 9$; Cross out 1, 7, and 1.

The digits left are 4, 0, and 6.

$4 + 0 + 6 = 10$; $1 + 0 = 1$.

7, ~~6~~ ~~0~~ 4, 8 ~~3~~ ~~5~~

$6 + 3 = 9$; Cross out 6 and 3.

Cross out 9.

$4 + 5 = 9$; Cross out 4 and 5.

The digits left are 7 and 8.

$7 + 8 = 15$; $1 + 5 = 6$.

These are the same digit sums that the longer method gave us. The shorter method is called *casting out nines*.

When casting out 9's (including sums of 9), make sure you don't cross out all the digits, but leave at least one 9 if there is nothing else left. To find the digit sum of 396, either cross out the 3 and 6, or cross out the 9. Or you can add them all to get 18, then add $1 + 8$ to get 9.

Either way, you get a digit sum of 9.



Here is another shortcut you may want to use. When adding a long row of digits, as soon as your sum has two digits, add the two digits to make one digit, and continue. This way your digit sums are always small and easy to add.

Write the digit sum of each number.

1. a. 2,693 _____

b. 34,847 _____

c. 319,067 _____

2. a. 3,490 _____

b. 28,651 _____

c. 747,826 _____

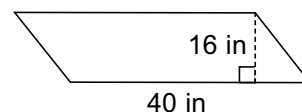
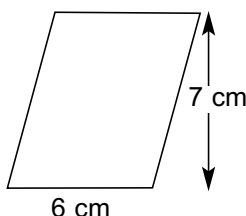
3. a. 80,762 _____

b. 9,996 _____

c. 208,722 _____



Use the formula to find the area of each parallelogram.



4. a. _____

b. _____

Lesson 2

Mastery Drill

5. a. The decimal for $\frac{1}{2}$ is _____. b. The decimal for $\frac{1}{4}$ is _____.
6. a. 1 cup = _____ fluid ounces b. 1 fluid ounce = _____ tablespoons
7. The three angles of a triangle measure a total of _____°.
8. The four angles of a quadrilateral measure a total of _____°.
9. The formula for finding the area of a circle is _____.
10. The formula for finding the area of a parallelogram is _____.
11. a. $\sqrt{144} =$ _____ b. $\sqrt{225} =$ _____ c. $11^2 =$ _____ d. $13^2 =$ _____

Simplify the expressions.

12. a. $5(25)$ b. $8(16)$

-  **13.** Tom Macorkel's fuel receipts for the company truck during the third quarter were as follows: \$68.34, \$75.80, \$81.38, \$72.49, \$77.15, and \$73.82. Find the total cost of fuel for the third quarter. _____

-  **14.** Macorkel Construction built a garage for Allen Smith. Total the material costs for the garage. _____

<u>Supply Places</u>	<u>Material Costs</u>
Winston Building Supply	\$8,753.82
Neuman Excavating	\$3,400.00
A-1 Concrete	\$853.33
Morton's Plumbing Supply	\$86.44
Smith's Electric Supply Company	\$189.94

- ☆ **15.** Check numbers 13 and 14 using digit sums.

Use either factor trees or prime factor division to find and list the prime factors for each number.

16. a. $78 =$ _____ b. $140 =$ _____ c. $84 =$ _____

Write the percents as decimals.

17. a. $89\% =$ _____ b. $165\% =$ _____ c. $340\% =$ _____ d. $70\% =$ _____

Write an expression for each, using an exponent.

18. a. Seven to the fourth power _____ b. Ten cubed _____

Solve and check.

19. a. $7x - 13 = 15$

b. ☒

c. $5x + 12 = 57$

d. ☒

— ?... Mental Math —

20. 14^2
 $- 46$
 $\div 15$
 $\times 10$
 $- 20$
 $\div 10$
 $=$ _____

Lesson 2

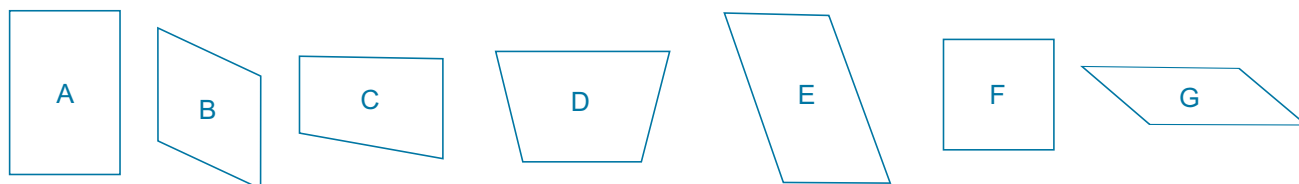
$\div$ Skill Builders

Write the remainder with *R*.

21. a. $0.31 \overline{)1.24248}$

b. $540 \overline{)62,721}$

c. $\begin{array}{r} 726 \\ 662 \\ \hline 254 \\ 78 \\ \hline +169 \end{array}$



Write letters from the quadrilaterals above to answer the questions.

22. Which two figures are trapezoids? _____

23. Which figure is a square? _____

24. Which two figures are rectangles? _____

25. Which five figures are parallelograms? _____

26. Which two figures are rhombuses? _____

Find the total cost.

27. \$8.69 with 6% sales tax = _____

28. \$10.99 with 5% sales tax = _____

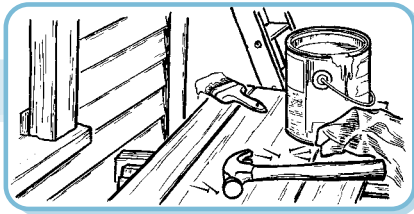
Write the digit sum of each number.

29. a. 9,667 _____

b. 93,154 _____

c. 867,839 _____

d. 92,867 _____



Multiplying to Solve Equations

The expression $4x$ means x multiplied by 4.

If we do the opposite and *divide by 4*, only x will be left after we cancel factors: $\frac{4x}{4}$

The expression $\frac{x}{4}$ means x divided by 4.

If we do the opposite and *multiply by 4*, only x will be left after we cancel factors. $\frac{x}{4} \cdot 4$

This is how we get x by itself to solve some equations. When the variable has a denominator, we multiply both sides of the equation by that denominator.

$$\frac{x}{6} = 12$$

$$\frac{x}{6} \cdot 6 = 12 \cdot 6 \quad \text{Multiply both sides by the denominator.}$$

$$\frac{x}{\cancel{6}} \cdot \cancel{6} = 72 \quad \text{Cancel factors on one side; do the math on the other side.}$$

$$x = 72 \quad \text{Write the solution.}$$

To check the equation, replace the variable with the answer in the equation and solve.

$$\frac{72}{6} = 12$$

$$12 = 12$$

Solve and check. The first one shows you how.

1. a. $\frac{x}{2} = 9$

$$\frac{x}{2} \cdot 2 = 9 \cdot 2$$

$$x = 18$$

b. ☒ $\frac{18}{2} = 9$

$$9 = 9$$

c. $\frac{y}{8} = 9$

d. ☒

Lesson 3



2. a. $\frac{n}{12} = 5$

b.

c. $6 = \frac{x}{5}$

d.



We Remember

Write the digit sum of each number.

3. a. 124,644 _____

b. 37,199 _____

c. 497,328 _____

d. 46,643 _____

4. a. 608,786 _____

b. 43,581 _____

c. 36,254 _____

d. 9,885 _____



Mastery Drill



5. a. 1 foot² = _____ inches²

b. 1 yard² = _____ feet²

6. a. 1 yard³ = _____ feet³

b. A straight angle measures _____°.

7. a. The decimal we use for π is _____.

b. The fraction we use for π is _____.

8. The formula for finding the volume of a rectangular prism is _____.

9. The formula for finding the circumference of a circle is _____.

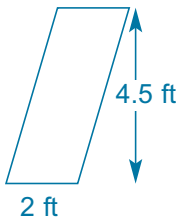
10. The formula for finding the area of a parallelogram is _____.

Convert to decimals rounded to the nearest thousandth.

11. $\frac{5}{12} \approx$ _____

12. $3\frac{1}{7} \approx$ _____

Use the formula to find the area of each parallelogram.



13. a. _____

b. _____

14. Macorkel Construction hired a mason for one job because they were too busy to lay the block. The mason charged them \$3.92 per 10" block to lay 500 blocks. What was the mason's total fee? _____

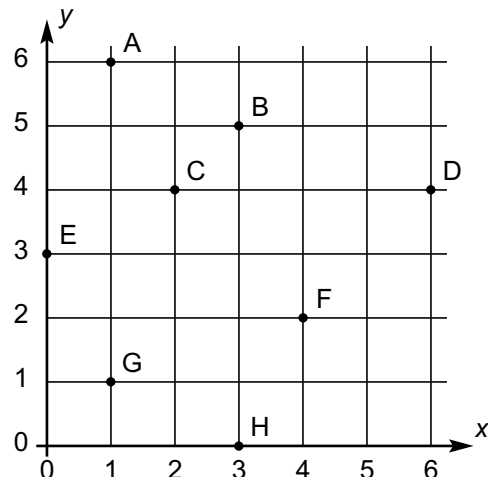
Write the ordered pair for each point.

15. a. A _____ b. B _____

16. a. C _____ b. D _____

17. a. E _____ b. F _____

18. a. G _____ b. H _____



Lesson 3

+ - x Skill Builders

Write the remainder with R.

Use a bar over repeating digits.

$$5\frac{1}{4}$$

19. a. $174 \overline{) 75,260}$

b. $18 \overline{) 6}$

c. $-2\frac{1}{6}$

$$5\frac{1}{4}$$

20. a. $5\frac{1}{4} \times 2 = \underline{\hspace{2cm}}$

b. $5\frac{1}{4} \div 1\frac{1}{6} = \underline{\hspace{2cm}}$

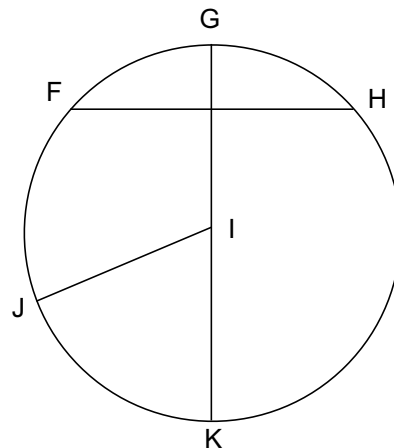
c. $+2\frac{1}{6}$

Name the parts of the circle.

21. Name the diameter of the circle.

22. Name the three radii.

23. Name the two chords.



Write the remainder
as a decimal.

Solve. Use proportions if necessary.

24. a. 6 pounds = ounces

b. 11,000 pounds = tons

Introduction

CLE Sunrise Math is built on the thesis that most students can learn, understand, and master mathematics concepts. It seeks to relate math to everyday life and to make it practical. We believe that mathematics should help students achieve the ultimate goal—loving, serving, and bringing glory to God.

CLE Sunrise Math introduces concepts in incremental steps. This allows the student to master each increment of a skill before advancing to the next step. Thus he does not face entire lessons or chapters on a single concept but meets several simple concepts simultaneously. Each increment easily becomes a part of his “big picture,” not only because it is small but also because it fits with what he has already learned.

The only way a student will retain what he has learned is by consistent, systematic review. CLE Sunrise Math uses a system of continuous review. Instead of having a grand review at the end of the year, a large part of every day’s work is review. The goal is mastery, not just exposure.

Course Materials

Items in italics are available from CLE.

For the Teacher:

→ Teacher’s Guide for Math 700 (this volume)

For each student:

- LightUnits 701-710
- *Answer Key 701-705* and *Answer Key 706-710*
(Classrooms may need only one set for the entire class.)
- *Intermediate Math Reference Chart* for each student or small group of students.
- Rulers with millimeters, centimeters, meters, inches, feet, and yards
- Protractor for each student (the smallest ones work best)
- Compass for each student

How to Use the LightUnits

Math 701

The purpose of Math 701 is discussed on page 2 of this volume.

Math 702-710

Themes—Each LightUnit from Math 702-710 features an occupation, vocation, or business run by Christians. The emphasis in story problems is using mathematics for the glory of God in whatever life-work the students may do in future years.

Lessons 1-17

1. *What’s New?* New material in Math 702 through 710 is introduced at the beginning of each lesson, right under the lesson number and the title bar containing the theme picture. Students with average reading ability for this level should be able to work through most new material on their own with only occasional help from the teacher. A large Teacher Check circle beside the new lesson title indicates that the material is unusually challenging. You may need to formally teach this lesson.

2. Refresher lessons.  This symbol indicates that this concept was originally taught in Math 600. Either it is a spiral kind of concept that appears for a short time in several different levels and is then dropped, or it came too late in the previous level to be thoroughly mastered, and needs to be taught again.

3. We Remember. This section of each lesson contains continuous regular review of previously taught skills and concepts. It ensures mastery of these concepts. Students should need little help with this section.

4. Quiz 1, Quiz 2, and the LightUnit Test. Quizzes and tests cover only material that has been reviewed for five days or more. Quizzes and tests are cumulative. Quiz 1 is Lesson 5, Quiz 2 is Lesson 10, and the test is Lesson 16 in each LightUnit.

5. Fascinating Discoveries. Lessons 5, 10, and 17 contain optional enrichment material. You may use these parts of Lessons 5 and 10 after the quiz if time and interest permit. Lesson 17 is an extra enrichment lesson for the day after the test. These lessons will not be reviewed or tested at any time. You may skip them if your school year is shorter than 170 days.

Introduction

Symbols Used in the LightUnits



Teacher Check. Used before quizzes and tests, and anywhere else the student must obtain the teacher's initials before proceeding.



Teacher Aide Check. Used with exercises that need to be checked by the teacher or teacher's aide. The student may continue working beyond this symbol even if the exercise has not yet been checked.



Optional Activity. The student should check with the teacher as to whether to do exercises marked with a star.



Refresher Lesson. This concept was taught in Math 600 and appears again in Math 700.



Story Problem.



We Remember – This daily review section continuously reviews skills and concepts learned in previous lessons.

? . . . Mental Math – Exercises in which the student works mentally and writes down only the answers.



Skill Builders – Mixed computation practice.

Mastery Drill – Contains information students are expected to memorize, know, and use.

Fascinating Discoveries – Optional activities in Lessons 5, 10, and 17.



A calculator may be used for this problem.



This motif, along with a shaded box, indicates optional enrichment which will not be reviewed or tested.



This motif, along with information in a shaded box, indicates required information for completing the work in the lesson/LightUnit.

Grading a LightUnit

To obtain a final LightUnit grade, average the two quiz grades and any other optional grades. Add this average to the LightUnit Test grade and divide by two. This average will be the final grade for the LightUnit.

Example: Quiz 1 – 96%

Quiz 2 – 98%

Average – 97%

Test score – 93%

Average – 95%

LightUnit score is 95.

Scores Below 80. If a student scores 75-79% on a LightUnit Test, he may review the concepts he is weak in. Verify that he knows the material by quizzing him or giving a remedial assignment.

If a student scores 70-74%, have him restudy for the test and take the Alternate LightUnit Test located in Appendix C.

If a student scores 70% or below, have him do a thorough review of the LightUnit before taking the Alternate LightUnit Test or have him redo the entire LightUnit and then take the Alternate LightUnit Test. For both scenarios, if the student scores between 75-100% on the Alternate LightUnit Test, record the score for the LightUnit as 80%.

If all controls are followed but the student consistently fails to achieve 80%, consider underlying causes. What is the student's natural ability? Can he be expected to achieve 80% or above? These students may need to be evaluated by a trained person or to have one-on-one assistance.

The Intermediate Math Reference Chart

The Intermediate Math Reference Chart is a portable, durably laminated glossary. It is filled with definitions, diagrams, equivalent measures, geometry, common abbreviations, etc. Students can work more independently when they can look up information as needed. The reference chart is a tool that will help them achieve this goal.

The Appendixes

Take time to become familiar with the appendixes in this teacher's guide.

Appendix A: Math 600 Skills Index tells you where in Math 600 each skill is introduced.

Appendix B: Math 700 Scope and Sequence gives an overview of the whole course. Many states require homeschoolers to submit a scope and sequence of the course they plan to study. You may copy this one for that purpose.

Appendix C: Alternate LightUnit Tests cover the same concepts as the regular LightUnit Tests, but with alternate exercises. They may be photocopied and used when a student needs to retake a test for any reason.

Appendix D: Math 700 Skills Index tells you where in Math 700 each skill is introduced.

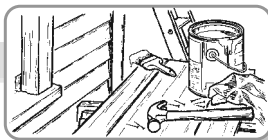
Appendix E: Extra Practice Sheets provide reinforcement for concepts in LightUnit 701.

Appendix F: Math Reference Charts are reproduced here for the teacher's benefit.

Lesson 1 pp. 2-6

Lesson

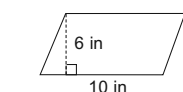
1

Math
6

Formula for the Area of a Parallelogram

A quadrilateral is a parallelogram if it has two pairs of parallel sides. Squares and rectangles are parallelograms because their two pairs of opposite sides are parallel. We find the area of a rectangle with the formula $A = lw$, and the area of a square with the formula $A = s^2$.

Not all parallelograms are squares or rectangles. A parallelogram without right angles needs a different area formula. This formula is $A = bh$. In this formula, b stands for base, and h stands for height. The base is the same as the length. The height is the perpendicular distance from the base to the opposite side. Study the examples.

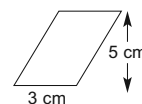


$$A = bh$$

$$A = 10 \times 6$$

$$A = 60 \text{ in}^2$$

Remember to
give area in
square units.



$$A = bh$$

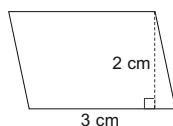
$$A = 3 \times 5$$

$$A = 15 \text{ cm}^2$$

**REMEMBER**

The formula for finding the area of a parallelogram is $A = bh$.

Use the formula to find the area of each parallelogram.

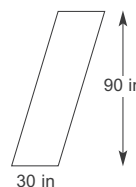


$$A = bh$$

$$A = 3 \times 2$$

$$A = 6$$

1. a. 6 cm²



$$A = bh$$

$$A = 30 \times 90$$

$$A = 2,700$$

b. 2,700 in²

2

Formula for the Area of a Parallelogram

Lesson Preparation

- LightUnit 702 for each student
- Read “To the Teacher and Student” just before page 1 of the LightUnit.

Working in the LightUnit**What’s New?**

➔ **Formula for the Area of a Parallelogram.** So far, students have used area formulas to find the areas of squares and rectangles. But not all parallelograms are squares or rectangles, because some parallelograms do not contain right angles. For such parallelograms, we use the formula $A = bh$ to find area. The base is the horizontal length of the parallelogram. The height is the perpendicular distance from the base to the opposite side.

Lesson 1



We Remember

Combine integers.

2. a. $-6 + (-8) = \underline{-14}$ b. $-6 + 9 = \underline{3}$ c. $7 + (-5) = \underline{2}$
 3. a. $9 + 16 = \underline{25}$ b. $-7 + (-10) = \underline{-17}$ c. $-4 + 15 = \underline{11}$



Mastery Drill



4. a. 1 liter = 1,000 cubic centimeters b. 1 cubic meter = 1,000 liters
 5. a. 1 millennium = 1,000 years b. 1 century = 100 years
 6. The short version of the percent proportion is $\frac{\text{is}}{\text{of}} = \frac{\%}{100}$.
 7. The formula for finding the area of a square is $A = s^2$.
 8. The three dimensions of a solid are length, width, and height.
 9. The formula for finding the area of a rectangle is $A = lw$.
 10. The formula for finding the perimeter of a rectangle or parallelogram is $P = 2l + 2w$.

Round to the nearest 1,000 to estimate. Then copy and solve.

11. $4,379 + 9,734 + 9,376 = \underline{23,489}$
 $\underline{4,000} + \underline{10,000} + \underline{9,000} = \underline{23,000}$
- | |
|---------|
| 4,379 |
| 9,734 |
| + 9,376 |
| 23,489 |

Simplify the expressions.

12. a. $3x - 3 + 2x - x$ b. $7x + 2 - 4x + 3$
 $4x - 3$ $3x + 5$

Convert the metric units.

13. a. 64 L = 64,000 mL b. 32 cm = 320 mm c. 610 g = 0.61 kg

kilo	hecto	deca		deci	centi	milli
------	-------	------	--	------	-------	-------

Note: Beginning in this LightUnit, the  symbol indicates that we recommend students be allowed to use a calculator for the exercise. You must decide if you want students to use a calculator for other exercises that are not marked. Some teachers find it efficient to allow students to complete all the calculator exercises in each lesson first. Then the students put away the calculators to do the rest of the “We Remember” section.

Teacher Notes:

Lesson 1

Find the cost after the discount.

14. The cost was \$94 before a 6% discount.

a. The final cost is \$88.36.

$$\begin{array}{r} 100\% - 6\% = 94\% \qquad \$94 \\ \times 0.94 \\ \hline 376 \\ 8460 \\ \hline \$88.36 \end{array}$$

Match the following properties.

15. d $a \cdot b = b \cdot a$

16. c $(a + b) + c = a + (b + c)$

17. a $a(b + c) = ab + ac$

18. e $(a \cdot b) \cdot c = a \cdot (b \cdot c)$

19. b $a + b = b + a$

- The cost was \$19.95 before a 5% discount.

b. The final cost is \$18.95.

$$\begin{array}{r} 100\% - 5\% = 95\% \qquad \$19.95 \\ \times 0.95 \\ \hline 9975 \\ 179550 \\ \hline \$18.9525 \approx \$18.95 \end{array}$$

- a. The distributive property
b. The commutative property of addition
c. The associative property of addition
d. The commutative property of multiplication
e. The associative property of multiplication

20. Melvin would like to purchase his own battery-powered tool kit. He can purchase the same brand as his father's locally for \$529.99 plus 6% sales tax, or he can order it through a catalog for \$479.99 plus 10% for shipping and handling.

a. How much does the tool kit cost locally with tax added?
\$561.79

b. How much does the tool kit from the catalog cost with shipping and handling added? \$527.99

c. How much would Melvin save by purchasing the kit through the catalog? \$33.80

$$\begin{array}{r} \text{a.} \quad \$529.99 \\ \times 1.06 \\ \hline 317994 \\ 529990 \\ \hline \$561.7894 \approx \$561.79 \end{array}$$

$$\begin{array}{r} \text{b.} \quad \$479.99 \\ \times 1.10 \\ \hline 479990 \\ 4799900 \\ \hline \$527.9890 \approx \$527.99 \end{array}$$

$$\begin{array}{r} \text{c.} \quad \$561.79 \\ - 527.99 \\ \hline \$33.80 \end{array}$$

Solve.

21. What is 60% of 170? 102
 $\frac{n}{170} = \frac{60}{100} \quad 170 \times 60 \div 100 = 102$

22. 15 is 20% of what number? 75
 $\frac{15}{n} = \frac{20}{100} \quad 15 \times 100 \div 20 = 75$

23. 21 is what percent of 35? 60%
 $\frac{21}{35} = \frac{n}{100} \quad 21 \times 100 \div 35 = 60$

$$\begin{array}{r} 21. \quad 170 \\ \times 60 \\ \hline 10,200 \end{array}$$

$$\begin{array}{r} 23. \quad 60 \\ 35 \overline{)2100} \\ \underline{210} \\ 00 \end{array}$$

$$\begin{array}{r} 22. \quad 75 \\ 20 \overline{)1500} \\ \underline{140} \\ 100 \\ \underline{100} \\ 0 \end{array}$$

Teacher Notes:

Lesson 1

— $\div$ $\times$ *Skill Builders* —

$$\begin{array}{r} 26,249 \\ \times 52 \\ \hline 52498 \\ 1312450 \\ \hline 1,364,948 \end{array}$$

$$\begin{array}{r} 49,220 \\ - 45,917 \\ \hline 3,303 \end{array}$$

$$\begin{array}{r} 79.6 \\ 75.4 \overline{)6,001.84} \\ \underline{5278} \\ 7238 \\ \underline{6786} \\ 4524 \\ \underline{4524} \\ 0 \end{array}$$



Our number system is filled with interesting patterns. Here are two. See if you can figure out the patterns and fill in the missing numbers. Use a calculator to help you get started.

$$\begin{array}{lll} 25. & 1 \cdot 1 & = 1 \\ & 11 \cdot 11 & = 121 \\ & 111 \cdot 111 & = \underline{12,321} \\ & 1,111 \cdot 1,111 & = \underline{1,234,321} \\ & 11,111 \cdot 11,111 & = \underline{123,454,321} \\ & 111,111 \cdot 111,111 & = \underline{12,345,654,321} \end{array}$$

$$\begin{array}{lll} 26. & 123,456,789 \cdot 9 & = 1,111,111,101 \\ & 123,456,789 \cdot 18 & = 2,222,222,202 \\ & 123,456,789 \cdot 27 & = \underline{3,333,333,303} \\ & 123,456,789 \cdot 36 & = \underline{4,444,444,404} \\ & 123,456,789 \cdot 45 & = \underline{5,555,555,505} \end{array}$$

Teacher Notes:

Lesson 2 pp. 6-10

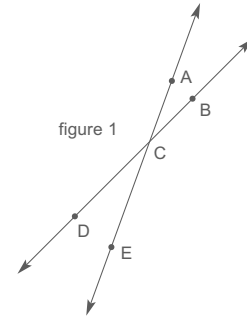
Lessons 1, 2

Use figure 1 to fill in the blanks.

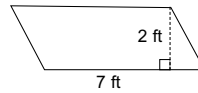
27. The sum of all the angles is 360° .

28. Name two straight angles. $\angle ACE$ $\angle DCB$

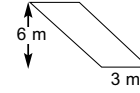
Order of letters may be reversed.



Use the formula to find the area of each parallelogram.



$$\begin{aligned} A &= bh \\ A &= 7 \times 2 \\ A &= 14 \end{aligned}$$



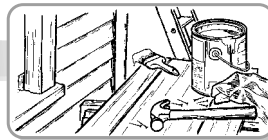
$$\begin{aligned} A &= bh \\ A &= 6 \times 3 \\ A &= 18 \end{aligned}$$

29. a. 14 ft^2

b. 18 m^2

Lesson

2



Finding Digit Sums by Casting Out Nines

The digit sum of a number is the sum of its digits. Whenever a digit sum itself has more than one digit, add the digits of that sum again. By following this process, any number, no matter how large, can eventually be found to have a digit sum of 1, 2, 3, 4, 5, 6, 7, 8, or 9.

What is the digit sum of 46,813,917,016? $4 + 6 + 8 + 1 + 3 + 9 + 1 + 7 + 0 + 1 + 6 = 46$. $4 + 6 = 10$, and $1 + 0 = 1$. The digit sum of 46,813,917,016 is 1.

What is the digit sum of 7,694,835? $7 + 6 + 9 + 4 + 8 + 3 + 5 = 42$; $4 + 2 = 6$. The digit sum of 7,694,835 is 6.

Finding Digit Sums by Casting Out Nines

Working in the LightUnit

What's New?

➔ **Finding Digit Sums by Casting Out Nines.** This lesson prepares students to use digit sums to check computation later in Math 700. "Casting out nines" is a shortcut method for finding digit sums quickly.

Lesson 2

Digit sums are easier and quicker to find if we cross off the digit 9 and any sets of digits that add up to nine. Let's try that with the two numbers from page 6.

~~4~~ ~~6~~, ~~8~~ ~~1~~ ~~3~~, ~~0~~ ~~1~~ ~~7~~, 0 1 6
 $6 + 3 = 9$; Cross out 6 and 3.
 $8 + 1 = 9$; Cross out 8 and 1.
 Cross out 9.
 $1 + 7 + 1 = 9$; Cross out 1, 7, and 1.
 The digits left are 4, 0, and 6.
 $4 + 0 + 6 = 10$; $1 + 0 = 1$.

7, ~~6~~ ~~0~~ 4, 8 ~~3~~ ~~5~~
 $6 + 3 = 9$; Cross out 6 and 3.
 Cross out 9.
 $4 + 5 = 9$; Cross out 4 and 5.
 The digits left are 7 and 8.
 $7 + 8 = 15$; $1 + 5 = 6$.

These are the same digit sums that the longer method gave us. The shorter method is called *casting out nines*.

When casting out 9's (including sums of 9), make sure you don't cross out all the digits, but leave at least one 9 if there is nothing else left. To find the digit sum of 396, either cross out the 3 and 6, or cross out the 9. Or you can add them all to get 18, then add $1 + 8$ to get 9. Either way, you get a digit sum of 9.



Here is another shortcut you may want to use. When adding a long row of digits, as soon as your sum has two digits, add the two digits to make one digit, and continue. This way your digit sums are always small and easy to add.

Write the digit sum of each number.

1. a. $\begin{array}{r} 2,693 \\ \underline{2893} \end{array} = 2$

b. $\begin{array}{r} 34,847 \\ \underline{3+4+8+4+7} \end{array} = 26$
 $2 + 6 = 8$

c. $\begin{array}{r} 319,067 \\ \underline{319067} \end{array}$
 $1 + 7 = 8$

2. a. $\begin{array}{r} 3,490 \\ \underline{3490} \end{array}$
 $3 + 4 = 7$

b. $\begin{array}{r} 28,651 \\ \underline{28651} \end{array}$
 $8 + 5 = 13$; $1 + 3 = 4$

c. $\begin{array}{r} 747,826 \\ \underline{747826} \end{array}$
 $7 + 4 + 8 + 6 = 25$; $2 + 5 = 7$

3. a. $\begin{array}{r} 80,762 \\ \underline{80762} \end{array}$
 $8 + 6 = 14$; $1 + 4 = 5$

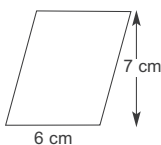
b. $\begin{array}{r} 9,996 \\ \underline{9996} \end{array} = 6$

c. $\begin{array}{r} 208,722 \\ \underline{208722} \end{array}$
 $2 + 8 + 2 = 12$; $1 + 2 = 3$



We Remember

Use the formula to find the area of each parallelogram.



$A = bh$
 $A = 6 \times 7$
 $A = 42$



$A = bh$
 $A = 40 \times 16$
 $A = 640$
 $\begin{array}{r} 16 \\ \times 40 \\ \hline 640 \end{array}$

4. a. $\underline{42 \text{ cm}^2}$

b. $\underline{640 \text{ in}^2}$

7

Board Work

→ Find the digit sum of each number.

745 7

8,976 3

34,562 2

999 9

897,212 2

Lesson 2

 Mastery Drill

5. a. The decimal for $\frac{1}{2}$ is 0.5. b. The decimal for $\frac{1}{4}$ is 0.25.
6. a. 1 cup = 8 fluid ounces b. 1 fluid ounce = 2 tablespoons
7. The three angles of a triangle measure a total of 180°.
8. The four angles of a quadrilateral measure a total of 360°.
9. The formula for finding the area of a circle is $A = \pi r^2$.
10. The formula for finding the area of a parallelogram is $A = bh$.
11. a. $\sqrt{144} =$ 12 b. $\sqrt{225} =$ 15 c. $11^2 =$ 121 d. $13^2 =$ 169

Simplify the expressions.

12. a. $5(25)$ b. $8(16)$
 125 128

13. Tom Macorkel's fuel receipts for the company truck during the third quarter were as follows: \$68.34, \$75.80, \$81.38, \$72.49, \$77.15, and \$73.82. Find the total cost of fuel for the third quarter. \$448.98

\$68.34 ③
75.80 ②
81.38 ②
72.49 ④
77.15 ②
+ 73.82 ② 6
\$448.98 6

14. Macorkel Construction built a garage for Allen Smith. Total the material costs for the garage. \$13,283.53

Supply Places	Material Costs
Winston Building Supply	\$8,753.82
Neuman Excavating	\$3,400.00
A-1 Concrete	\$853.33
Morton's Plumbing Supply	\$86.44
Smith's Electric Supply Company	\$189.94

\$8,753.82 ⑥
3,400.00 ⑦
853.33 ④
86.44 ④
+ 189.94 ④ 7
\$13,283.53 7

- ☆ 15. Check numbers 13 and 14 using digit sums.

Teacher Notes:

Lesson 2

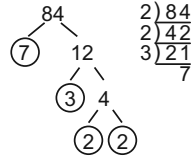
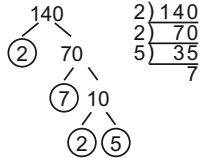
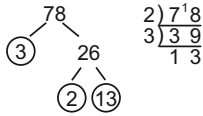
Use either factor trees or prime factor division to find and list the prime factors for each number.

16. a. $78 = 2 \cdot 3 \cdot 13$

b. $140 = 2 \cdot 2 \cdot 5 \cdot 7$

c. $84 = 2 \cdot 2 \cdot 3 \cdot 7$

Factor trees may vary.



Write the percents as decimals.

17. a. $89\% = 0.89$

b. $165\% = 1.65$

c. $340\% = 3.4$

d. $70\% = 0.7$

Write an expression for each, using an exponent.

18. a. Seven to the fourth power 7^4

b. Ten cubed 10^3

Solve and check.

19. a. $7x - 13 = 15$

$$\begin{array}{r} +13 \quad +13 \\ 7x = 28 \\ \hline 7 \quad 7 \\ x = 4 \end{array}$$

b. $7(4) - 13 = 15$

$$\begin{array}{r} 28 - 13 = 15 \\ 15 = 15 \end{array}$$

c. $5x + 12 = 57$

$$\begin{array}{r} -12 \quad -12 \\ 5x = 45 \\ \hline 5 \quad 5 \\ x = 9 \end{array}$$

d. $5(9) + 12 = 57$

$$\begin{array}{r} 45 + 12 = 57 \\ 57 = 57 \end{array}$$

— ?... Mental Math —

20. $14^2 - 46 + 15 \times 10 - 20 + 10 = 8$

Teacher Notes:

Lesson 2

— $\div$ $\times$ Skill Builders —

21. a. $0.31 \overline{) 1.24248}$

$$\begin{array}{r} 4.008 \\ 0.31 \overline{) 1.24248} \\ \underline{1.24} \\ 2 \\ \underline{0} \\ 24 \\ \underline{0} \\ 248 \\ \underline{248} \\ 0 \end{array}$$

Write the remainder with R.

b. $540 \overline{) 62721}$

$$\begin{array}{r} 116R81 \\ 540 \overline{) 62721} \\ \underline{540} \\ 872 \\ \underline{540} \\ 3321 \\ \underline{3240} \\ 81 \end{array}$$

c. $\begin{array}{r} 726 \\ 662 \\ 254 \\ 78 \\ \hline 1,889 \end{array}$



Write letters from the quadrilaterals above to answer the questions.

22. Which two figures are trapezoids? C D
23. Which figure is a square? F
24. Which two figures are rectangles? A F
25. Which five figures are parallelograms? A B E F G
26. Which two figures are rhombuses? B F

Find the total cost.

27. \$8.69 with 6% sales tax = \$9.21

$$\begin{array}{r} \$8.69 \\ \times 1.06 \\ \hline 5214 \\ 86900 \\ \hline \$9.2114 \approx \$9.21 \end{array}$$

28. \$10.99 with 5% sales tax = \$11.54

$$\begin{array}{r} \$10.99 \\ \times 1.05 \\ \hline 5495 \\ 109900 \\ \hline \$11.5395 \approx \$11.54 \end{array}$$

Write the digit sum of each number.

29. a. $9,667$ 1

$$\begin{array}{l} 9667 \\ 6 + 6 + 7 = 19 \\ 1 + 9 = 10; 1 + 0 = 1 \end{array}$$

b. $93,154$ 4

$$\begin{array}{l} 93154 \\ 3 + 1 = 4 \end{array}$$

c. $867,839$ 5

$$\begin{array}{l} 867839 \\ 8 + 7 + 8 = 23 \\ 2 + 3 = 5 \end{array}$$

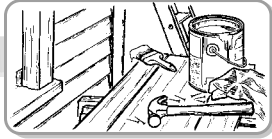
d. $92,867$ 5

$$\begin{array}{l} 92867 \\ 8 + 6 = 14 \\ 1 + 4 = 5 \end{array}$$

Teacher Notes:

Lesson

3



Multiplying to Solve Equations

The expression $4x$ means x multiplied by 4.

If we do the opposite and *divide* by 4, only x will be left after we cancel factors: $\frac{4x}{4}$

The expression $\frac{x}{4}$ means x divided by 4.

If we do the opposite and *multiply* by 4, only x will be left after we cancel factors. $\frac{x}{4} \cdot 4$

This is how we get x by itself to solve some equations. When the variable has a denominator, we multiply both sides of the equation by that denominator.

$$\frac{x}{6} = 12$$

$$\frac{x}{6} \cdot 6 = 12 \cdot 6 \quad \text{Multiply both sides by the denominator.}$$

$$\frac{x}{\cancel{6}} \cdot \cancel{6} = 72 \quad \text{Cancel factors on one side; do the math on the other side.}$$

$$x = 72 \quad \text{Write the solution.}$$

To check the equation, replace the variable with the answer in the equation and solve.

$$\begin{aligned} \frac{72}{6} &= 12 \\ 12 &= 12 \end{aligned}$$

Solve and check. The first one shows you how.

1. a. $\frac{x}{2} = 9$

$$\frac{x}{2} \cdot 2 = 9 \cdot 2$$

$$x = 18$$

b. $\frac{18}{2} = 9$

$$9 = 9$$

c. $\frac{y}{8} = 9$

$$\frac{y}{8} \cdot 8 = 9 \cdot 8$$

$$y = 72$$

d. $\frac{72}{8} = 9$

$$9 = 9$$

Multiplying to Solve Equations

Lesson Preparation

- Look over this lesson and prepare to teach it to your class.

Working in the Light Unit

What's New?

➔ **Multiplying to Solve Equations.** When an equation contains a variable divided by a number, the only way to isolate the variable on one side of the equals sign is to multiply both sides of the equation by the number under the division bar. This cancels out the number under the variable so that the variable stands alone, and the solution is the product on the other side of the equals sign. Show students how to check their solutions by replacing the variable in the original equation with the solution, and solving the equation.

Lesson 3

2. a. $\frac{n}{12} = 5$ $\frac{n}{12} \cdot 12 = 5 \cdot 12$ $n = 60$	b. ☒ $\frac{60}{12} = 5$ $5 = 5$	c. $6 = \frac{x}{5}$ $6 \cdot 5 = \frac{x}{5} \cdot 5$ $30 = x$	d. ☒ $6 = \frac{30}{5}$ $6 = 6$
--	---	---	--



We Remember

Write the digit sum of each number.

3. a. $124,644$ <u>3</u> 124644 $4 + 4 + 4 = 12$ $1 + 2 = 3$	b. $37,199$ <u>2</u> 37199 $3 + 7 + 1 = 11$ $1 + 1 = 2$	c. $497,328$ <u>6</u> 497328 $7 + 8 = 15$ $1 + 5 = 6$	d. $46,643$ <u>5</u> 46643 $4 + 6 + 4 = 14$ $1 + 4 = 5$
4. a. $608,786$ <u>8</u> 608786 $6 + 8 + 7 + 8 + 6 = 35$ $3 + 5 = 8$	b. $43,581$ <u>3</u> 43581 $4 + 3 + 5 + 8 = 20$ $2 + 0 = 2$	c. $36,254$ <u>2</u> 36254 $3 + 6 + 2 + 5 = 16$ $1 + 6 = 7$	d. $9,885$ <u>3</u> 9885 $8 + 8 + 5 = 21$ $2 + 1 = 3$

Mastery Drill

- | | |
|---|--|
| 5. a. $1 \text{ foot}^2 = \underline{144} \text{ inches}^2$ | b. $1 \text{ yard}^2 = \underline{9} \text{ feet}^2$ |
| 6. a. $1 \text{ yard}^3 = \underline{27} \text{ feet}^3$ | b. A straight angle measures <u>180</u> °. |
| 7. a. The decimal we use for π is <u>3.14</u> . | b. The fraction we use for π is <u>$\frac{22}{7}$</u> . |
| 8. The formula for finding the volume of a rectangular prism is <u>$V = lwh$</u> . | |
| 9. The formula for finding the circumference of a circle is <u>$C = \pi d$</u> . | |
| 10. The formula for finding the area of a parallelogram is <u>$A = bh$</u> . | |

Board Work

→ Solve and check.

1. a. $\frac{n}{3} = 10$ $\frac{n}{3} \cdot 3 = 10 \cdot 3$ $n = 30$	b. Check: $\frac{30}{3} = 10$ $10 = 10$	c. $\frac{a}{7} = 5$ $\frac{a}{7} \cdot 7 = 5 \cdot 7$ $a = 35$	d. Check: $\frac{35}{7} = 5$ $5 = 5$
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Lesson 3

Convert to decimals rounded to the nearest thousandth.

11. $\frac{5}{12} \approx \underline{0.417}$

11. $\frac{0.4166}{12} \approx 0.417$

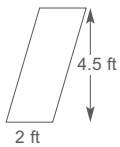
12. $\frac{0.1428}{7} \approx 0.143$

12. $3\frac{1}{7} \approx \underline{3.143}$

$$\begin{array}{r} 4 \overline{) 16.66} \\ 8 \\ \underline{8 } \\ 8 \\ \underline{8 } \\ 0 \\ \underline{0 } \\ 0 \\ \underline{0 } \\ 0 \end{array}$$

$$\begin{array}{r} 7 \overline{) 1.000} \\ 7 \\ \underline{7 } \\ 3 \\ \underline{2 } \\ 8 \\ \underline{7 } \\ 1 \\ \underline{1 } \\ 0 \\ \underline{0 } \\ 0 \end{array}$$

Use the formula to find the area of each parallelogram.



$A = bh$
 $A = 2 \times 4.5$
 $A = 9$



$A = bh$
 $A = 12 \times 4$
 $A = 48$

13. a. $\underline{9 \text{ ft}^2}$

b. $\underline{48 \text{ m}^2}$

14. Macorkel Construction hired a mason for one job because they were too busy to lay the block. The mason charged them \$3.92 per 10" block to lay 500 blocks. What was the mason's total fee? $\underline{\$1,960.00}$

$$\begin{array}{r} \$3.92 \\ \times 500 \\ \hline \$1,960.00 \end{array}$$

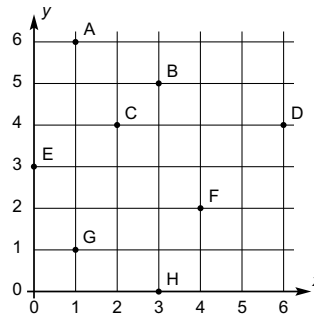
Write the ordered pair for each point.

15. a. A $\underline{(1, 6)}$ b. B $\underline{(3, 5)}$

16. a. C $\underline{(2, 4)}$ b. D $\underline{(6, 4)}$

17. a. E $\underline{(0, 3)}$ b. F $\underline{(4, 2)}$

18. a. G $\underline{(1, 1)}$ b. H $\underline{(3, 0)}$



Teacher Notes:

Lesson 3

$\frac{+}{-} \times$

Skill Builders

Write the remainder with R .

Use a bar over repeating digits.

$$5\frac{1}{4} = 5\frac{3}{12}$$

19. a. $174 \overline{) 75,260} \text{ R}92$

$$\begin{array}{r}
 432 \text{ R}92 \\
 174 \overline{) 75,260} \\
 \underline{696} \\
 566 \\
 \underline{522} \\
 440 \\
 \underline{348} \\
 92
 \end{array}$$

$$\begin{array}{r} 0.33 \approx 0.\overline{3} \\ \text{b. } 18 \overline{) 6.00} \\ \underline{54} \\ 60 \\ \underline{54} \\ 6 \end{array}$$

c. $-2\frac{1}{6} = 2\frac{2}{12}$
 $3\frac{1}{12}$

20. a. $5\frac{1}{4} \times 2 = 10\frac{1}{2}$

$$\frac{21}{\cancel{4}_2} \times \frac{\cancel{2}^1}{1} = \frac{21}{2} = 10\frac{1}{2}$$

b. $5\frac{1}{4} \div 1\frac{1}{6} = \underline{4\frac{1}{2}}$

$$\frac{\frac{3}{\cancel{21}}}{\cancel{2}} \times \frac{\cancel{3}}{\cancel{7}_1} = \frac{9}{2} = 4\frac{1}{2}$$

c. $+ 2\frac{1}{6} = 2\frac{2}{12}$

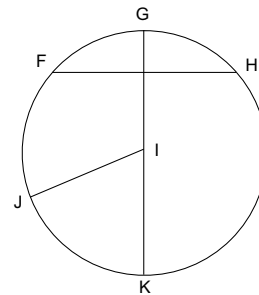
$7\frac{5}{12}$

Name the parts of the circle. Order of letters may be reversed.

21. Name the diameter of the circle. $\overline{GK}$

22. Name the three radii. $\overline{IG}$ $\overline{IJ}$ $\overline{IK}$

23. Name the two chords. $\overline{FH}$ $\overline{GK}$



Write the remainder as a decimal.

Solve. Use proportions if necessary.

24. a. 6 pounds = 96 ounces

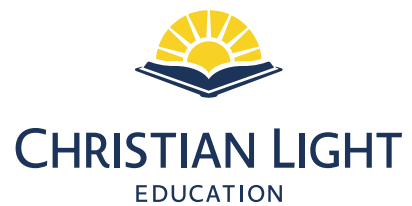
$$\begin{array}{r} 16 \\ \times 6 \\ \hline 96 \end{array}$$

b. 11,000 pounds = 5.5 tons 5.5

$$\begin{array}{r} 2,000 \overline{) 11,000.0} \\ \underline{10000} \\ 10000 \\ \underline{10000} \\ 0 \end{array}$$

Teacher Notes:

Enjoy THE JOURNEY



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