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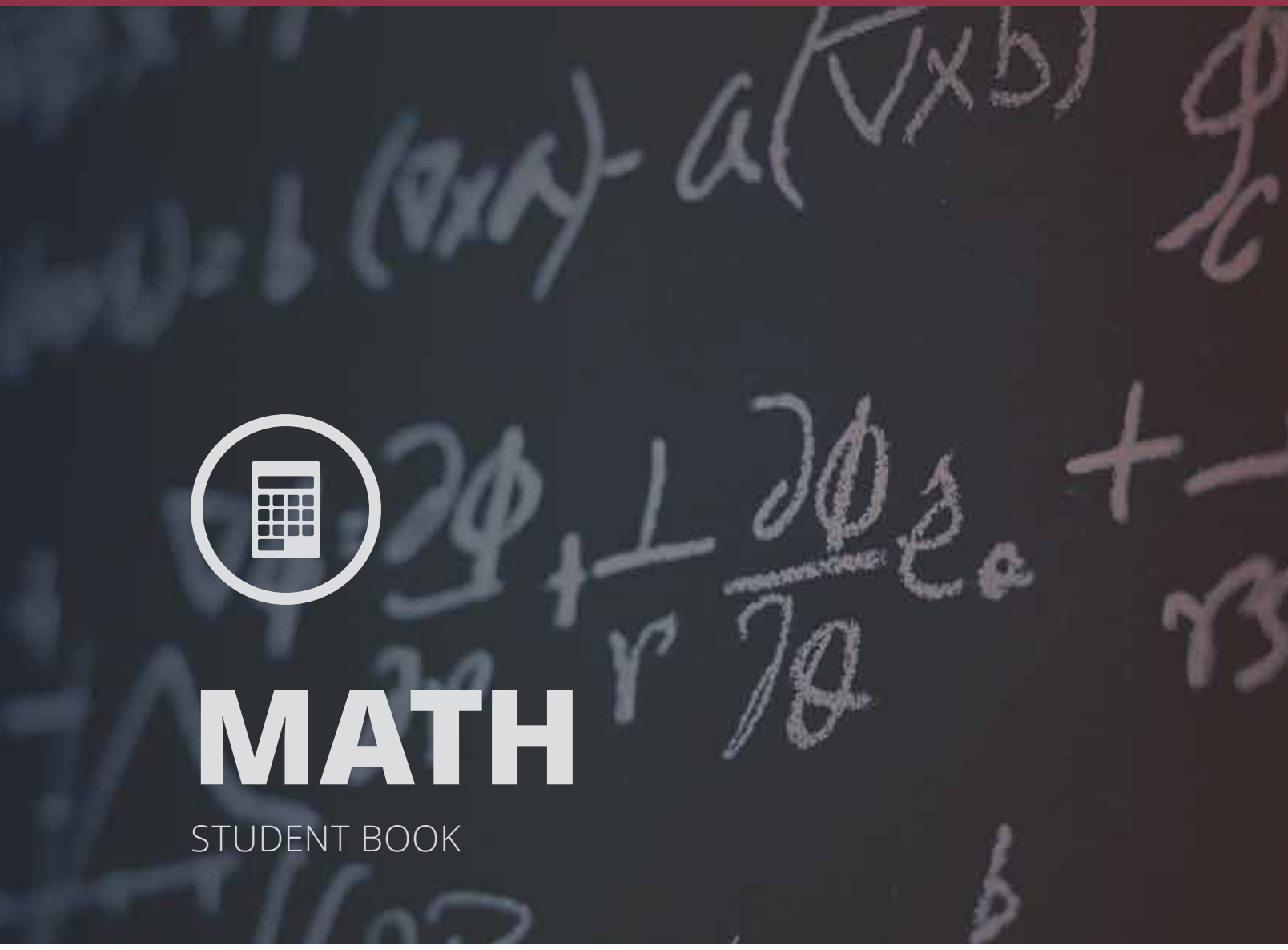

MATH

STUDENT BOOK

6th Grade | Unit 1

Alpha Omega
PUBLICATIONS

MATH 601

Whole Numbers and Algebra

LIFEPAC Test is located in the center of the booklet. Please remove before starting the unit.

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Whole Numbers and Algebra

Introduction

Math 600 is a full-year elementary math course focusing on number skills and numerical literacy, with an introduction to the number skills needed for algebra. In it, students will gain solid experience with number theory and operations, including decimals and fractions. This course also integrates geometric concepts and skills throughout the units, as well as introducing students to statistical and probability concepts.

By the end of the course, students will be expected to do the following:

- Perform all four operations on whole numbers, decimals, and fractions.
- Factor numbers completely and find greatest common factors.
- Convert between fractions, decimals, and percentages.
- Represent numbers with exponents.
- Calculate perimeters and areas of regular plane shapes and measure angles.
- Plot ordered pairs on coordinate grids.
- Represent data on statistical charts, including picture, bar, line, and circle graphs.
- Calculate probabilities and make predictions.

In this unit, you will explore whole numbers. You will use place value to round, estimate, and compute with whole numbers. You will study how the whole number properties and the order of operations can be used to simplify numerical expressions. You also will use exponents to represent repeated multiplication and study square and cube roots. In addition, you will investigate patterns and sequence of numbers and will be introduced to algebra.

Objectives

Read these objectives. The objectives tell you what you will be able to do when you have successfully completed this LIFEPAC. When you have finished this LIFEPAC, you should be able to:

- Round, estimate, and compute with whole numbers.
- Understand commutative, associative, identity, and distributive properties.
- Identify exponents and roots.
- Understand the order of operations.
- Identify number patterns and sequences.
- Translate and evaluate expressions.
- Simplify expressions.
- Solve equations.

Survey the LIFEPAC. Ask yourself some questions about this study and write your questions here.

1. WHOLE NUMBERS AND THEIR PROPERTIES

Benjamin Franklin said, "A place for everything, everything in its place." In math, numbers have a place too. In fact, the placement of a **digit** (a numeral from 0 to 9) in a number is very important—it tells us the value of that digit!

In this lesson, we'll review **place value** and use it to round numbers and make estimations.

Objectives

- Identify the place value of a digit in a whole number.
- Round and estimate with whole numbers.
- Add, subtract, multiply, and divide with whole numbers.
- Solve word problems involving whole numbers.
- Identify the commutative, associative, identity, and distributive properties.
- Use the commutative, associative, identity, and distributive properties to simplify problems.

Vocabulary

addend. A number to be added.

additive identity. The sum of any number and zero resulting in the number itself.

associative property. A property of the whole numbers that states that how numbers are grouped, using parenthesis, in a sum or product does not change the value.

commutative property. A property of the whole numbers that states that the order in which numbers are added or multiplied does not change the value (does not have to include parenthesis to indicate specific order of operations).

difference. The result of subtracting two numbers.

digit. One of the numerals from 0 to 9.

distributive property. A number multiplied by a sum is the same as the sum of the number multiplied by each addend.

dividend. The number being divided.

divisor. The number of parts that the dividend is being divided into.

estimate. An approximate value close to the actual value.

factor. A number to be multiplied.

multiplicative identity. The product of any number and one resulting in the number itself.

place value. The position of a digit in a number, which determines its value.

product. The result of multiplying two or more numbers.

quotient. The result of dividing two numbers.

sum. The result of adding two or more numbers.

whole number. A number belonging to the set made up of zero and the counting numbers: 1, 2, 3, and so on.

Note: *All vocabulary words in this LIFEPAC appear in* **boldface** *print the first time they are used. If you are not sure of the meaning when you are reading, study the definitions given.*

PLACE VALUE

Place value is the position of a digit in a number. It determines the value, or worth, of the digit. Let's look at an example. The number 8,739,205 can be read as "eight million, seven hundred thirty-nine thousand, two hundred five." Each digit represents a different value in the number. Take a look.

For Example...

The numbers 420 and 204 each have the same digits and the same number of digits. However, the digits are in a different order, so the numbers have different values.

Example:

In the number 24,913, which digit is in the thousands place?

Solution:

Beginning from the right, the 3 is in the ones place, the 1 is in the tens place, the 9 is in the hundreds place, and the 4 is in the thousands place.

2**4**,913

Example:

How is the number 480,232 read?

Solution:

Using place value, this number is read, "Four hundred eighty thousand, two hundred thirty-two."

ROUNDING AND ESTIMATION

Sometimes when we're working with numbers, we don't have to use exact values. For example, a candy bar at the store costs 48¢. If you plan to buy four candy bars, it's easier to figure out your total cost by first rounding the cost of each candy bar to 50¢. Then, you can say that the cost of four candy bars is about $2.00. This total is called an **estimate** because it is an approximate amount that is close to the actual amount.

There are some rules for rounding numbers and making estimates. To round numbers to a certain place value, we actually look at the place directly to the right of it. If the value to the right is 5 or larger, we round the digit up. If the value to the right is less than 5, we keep the digit the same. Then, the rest of the numbers to the right of the digit become zeros. Let's look at an example.

Key point!

Estimation is very helpful when you don't need an exact answer. The first step in estimation is to round each number so that they're easier to work with. We rounded 48¢ to 50¢ because 50¢ is an easier number to calculate with.

Round 3,751 to the nearest hundred.

Notice that the 7 is in the hundreds place. The number to the right of it is a 5. Since this value is 5 or larger, we're going to round the digit in the hundreds place up. So, the 7 becomes an 8. Then, all the digits to the right of the hundreds place become zeros. So, the 5 and 1 become zeros. The number 3,751 rounded to the nearest hundred is 3,800. Let's try another one.

Example:

Round 42,4**8**1 to the highlighted place value.

Solution:

We need to round this number to the nearest ten. The digit in the ones place is less than 5, so we'll keep the digit in the tens place the same. Then, change the digits to the right of the tens place to zero. So, 42,481 rounded to the nearest ten is 42,480.

Example:

Round 2,985 to the nearest hundred.

Solution:

The 9 is in the hundreds place, so it is the number we will be rounding. Look at the digit that is to the right of the 9, which is 8. Since the 8 is five or larger, we need to round the 9 up. The 9 rounds up to 10 and the digits to the right of it turn into 0's. The 9 rounded up to 10, but each place value can only hold one digit. So the 9 actually becomes a 0 and the digit before it rounds up. In this example, the 2 before it rounds up to a 3. 2,985 rounded to the nearest hundred is 3,000.

Now that we've practiced rounding numbers, we can begin estimating. When estimating with large numbers, you should always begin by rounding each number to the same place value. Here's an example.

Example:

Round each number to the nearest ten and then estimate the answer.

113 + 58

Solution:

First, round each number to the nearest ten.

113: The 3 tells us that the digit in the tens place will remain the same. So, 113 rounds to 110.
58: The 8 tells us that the digit in the tens place will round up. So, 58 rounds to 60.

Now, estimate the answer, using the rounded numbers. 110 + 60 = 170
So, the answer to 113 + 58 is approximately 170.

Let's Review!

Before going on to the practice problems, make sure you understand the main points of this lesson.

- ✓ Place value determines a digit's value in a number.
- ✓ Numbers are rounded to make them easier to work with.
- ✓ Estimation is helpful when an exact answer is not needed.

Match the following items.

1.1

_____	one of the numerals from 0 to 9	a. digit
_____	an approximate value close to the actual value	b. place value
_____	the position of a digit in a number, which determines its value	c. estimate

Circle the correct answer.

1.2 In the number 6,241,095, which digit is in the hundred thousands place?

a. 0 b. 1 c. 2 d. 4

1.3 In the number 993,140, which place value does the 3 hold?

a. hundreds b. thousands c. ten thousands d. hundred thousands

1.4 Which of the following numbers is read, "six thousand, three hundred fifty"?

a. 6,350 b. 6,305 c. 60,530 d. 60,350

1.5 Which of the following numbers has a 7 in the hundreds place, a 2 in the ones place, and a 4 in the thousands place?

a. 14,728 b. 344,172 c. 40,752 d. 204,732

1.6 Ava rounded 19,350 to the nearest thousand and got 20,000. Which of the following statements is true?

a. Ava rounded correctly.
b. Ava rounded incorrectly; the answer should be 19,400.
c. Ava rounded incorrectly; the answer should be 19,000.
d. Ava rounded incorrectly; the answer should be 19,300.

1.7 Round the number 13,2**9**3 to the indicated place value.

a. 13,290 b. 13,300 c. 13,390 d. 13,280

1.8 Round each number to the nearest hundred and then add them together.
149 + 2,470

a. 2,500 b. 2,600 c. 2,700 d. 2,800

1.9 Estimate the answer to the following problem by rounding each value to the tens place.
538 – 509

a. 10 b. 20 c. 30 d. 40

1.10 Jake went on a road trip with his family this summer. On Monday, they drove 629 miles. Tuesday, they drove 215 miles. On Wednesday, they only drove 111 miles. And, on Thursday, they drove 588 miles. Estimate the total number of miles Jake's family traveled by rounding each value to the hundreds place.

a. 1,200 b. 1,300 c. 1,400 d. 1,500

1.11 Sam earned $233.00 last week mowing lawns. He also spent $47.00 on fuel and repairs to his lawnmower. Estimate the amount of money he profited last week by rounding each number to the nearest ten. (Hint: Profit = money earned – money spent on expenses)

a. $200.00 b. $190.00 c. $180.00 d. $170.00

WHOLE NUMBER OPERATIONS

In this lesson, we'll review adding, subtracting, multiplying, and dividing with **whole numbers**. We'll even use these four operations to solve real-life problems!

ADDITION AND SUBTRACTION

Almost every person uses math in some way daily. Let's take a look at some examples from everyday life where math is used to find an answer or solve a problem.

Vocabulary

The numbers in this section are called *whole numbers*. Remember that the whole numbers include zero and the counting numbers, or 1, 2, 3, and so on.

Example:

Maya went to a summer festival with her friends. During the day, she spent $9.00 on food, $4.00 on drinks, and $11.00 on a t-shirt. What was the total amount that she spent?

To find the total amount that Maya spent throughout the day, add the different dollar amounts. Set up the addition problem vertically by lining up the ones digits. Move from right to left and add the digits in each column. Remember to carry, if necessary.

Solution:

$$\begin{array}{rr} & 9 \\ & 4 \\ & {\scriptstyle 1} \\ + & 11 \\ \hline & 24 \end{array}$$

In the ones column, 9, 4, and 1 add to 14. So, a 4 is written below the line in the ones column, and a 1 is carried to the tens column.

So, Maya spent $24.00 at the festival. This amount is called a **sum** because it is the answer to an addition problem. Each number that is added to get the sum is called an **addend**. Here's another example to review.

Example:

Maya spent $24.00 at the festival. If she started the day with $30.00, how much money did she have left at the end of the day?

Solution:

To find how much she had left at the end of the day, subtract $24.00 from $30.00. As with addition, subtraction problems are set up vertically by lining up the ones digits. Then, subtract from right to left. Remember to borrow, if necessary.

$$\begin{array}{rr} & {\scriptstyle 2\ 1} \\ & 3\cancel{0} \\ + & 24 \\ \hline & 6 \end{array}$$

In the ones column, 4 cannot be subtracted from 0, so we have to borrow from the tens column. The 0 in the ones column becomes 10, and the 3 in the tens column becomes 2.

At the end of the day, Maya had $6.00 left. This amount is called a **difference** because it is the answer to a subtraction problem.

MULTIPLICATION AND DIVISION

Let's look at another example. In this one, we'll use multiplication and division to solve. In a multiplication problem, each number being multiplied is called a **factor**, and the answer is called a **product**. In a division problem, the number being divided (the first number) is called the **dividend**, and the number of parts being divided into (the second number) is called the **divisor**. The answer to a division problem is called a **quotient**.

factor	factor	product	dividend	divisor	quotient
4 × 3 =	12		12 ÷ 3 =	4	

Example:

Devon's football team is having a pizza party after their first game. His mom picked up six pizzas for the party. If each pizza has 12 slices, how many total slices are there?

Solution:

To find the total number of pizza slices, multiply 6 pizzas by 12 slices.

$6 \times 12 = 72$

The product of 6 and 12 is 72. So, there are 72 total slices of pizza.

If there are 16 players on the team, how many slices can each person have? Will there be any slices left over?

To find the number of slices each teammate can have, divide the 72 slices by 16 people.

```
   4 R8
16 )72
  -64
   8
```

16 goes into 72 four times. So, a 4 is written above the dividend. Then, 4 is multiplied by 16 to get 64, which is written below the dividend. Finally, 64 is subtracted from 72 to get a remainder of 8. The quotient is written as 4 R8.

Each teammate can have four slices of pizza. Notice in the division problem that there was a remainder of 8. That means that after each person has eaten four slices, there will be eight slices left over.

Let's look at a couple of more examples that use one of the four operations to solve. In the first one, we'll first estimate the answer and then find the exact answer. Why is an estimate useful? An estimate gives us an idea of what the exact answer should be. If the exact answer is close to the estimate, then the answer is reasonable, or makes sense. If the exact answer and the estimate are not close, then there may be something wrong with our calculation. Take a look.

Example:

Find the sum of 1,287 and 895. First, round each addend to the nearest hundred and estimate the sum. Then, find the exact answer.

This might help!

To round a number to the hundreds place value, look at the digit in the tens place. If it is 5 or larger, round the hundreds place up. If the digit is less than 5, keep the hundreds place the same. Then, change all digits to the right of the hundreds place to zero.

Solution:

A sum is the answer to an addition problem, so we need to add these two numbers together. To estimate the sum, round each addend to the nearest hundred before adding.

1,300 + 900 = 2,200

$$\begin{array}{r} {\scriptstyle 1\,1\,1} \\ 1287 \\ +\ \ 895 \\ \hline 2182 \end{array}$$

Our estimate of this sum is 2,200. Our exact answer should be close to this estimate. To find the exact answer, line up the digits in the ones column and add vertically from right to left.

The sum of 1,287 and 895 is 2,182. The exact sum is close to our estimate, so our answer makes sense.

Example:

Find the product of 14 and 325.

Solution:

$$\begin{array}{r} {\scriptstyle 1\,2} \\ 325 \\ \times\ \ 14 \\ \hline 1300 \\ 325 \\ \hline 4{,}550 \end{array}$$

Let's Review!

Before going on to the practice problems, make sure you understand the main points of this lesson.

- ✓ The answers to addition, subtraction, multiplication, and division problems have special names.
- ✓ Addition, subtraction, multiplication, and division can be used to solve real life problems.

Answer true or false.

1.12 _____ In the problem 12 + 58 = 70, 12 and 58 are called factors.

Match the following items.

1.13 For the following problem, match each value to its name. 84 ÷ 7 = 12

_____	84	a.	divisor
_____	7	b.	quotient
_____	12	c.	dividend

Circle each correct answer.

1.14 Jake went on a road trip with his family this summer. On Monday, they drove 629 miles. Tuesday, they drove 215 miles. On Wednesday, they only drove 111 miles. And, on Thursday, they drove 588 miles. What is the total number of miles that Jake's family traveled?

a. 1,523 b. 1,543 c. 1,423 d. 1,643

1.15 Daniel had $224.00 in his bank account before he wrote a check for $85.00. How much is in his account now?

a. $39.00 b. $161.00 c. $139.00 d. $149.00

1.16 Mrs. Blue has eight packages of pencils that she wants to distribute evenly between her sixth grade students. If there are 24 pencils in each package, how many total pencils does she have?

a. 172 b. 3 c. 162 d. 192

1.17 Mrs. Blue has eight packages of pencils that she wants to distribute evenly between her sixth grades students. There are 24 pencils in each package, and she has 22 students. How many pencils will be left over after Mrs. Blue has given each student the same number of pencils?

a. 16 b. 2 c. 8 d. 14

REAL NUMBER PROPERTIES

In this lesson, we'll be exploring some of the properties, or characteristics, that the whole numbers have. Remember that the **whole numbers** include zero and the counting numbers, or 1, 2, 3, and so on.

PROPERTIES OF REAL NUMBERS

Find the sum of 12 and 23. Then, find the sum of 23 and 12. In either order, the answer is the same: 35. Find the product of 4 and 11. It is the same in either order: $4 \times 11 = 44$ and $11 \times 4 = 44$.

This is called the **commutative property**. It says that you can add or multiply two numbers, in either order, and get the same value. Here are a few more examples.

COMMUTATIVE PROPERTY OF ADDITION

$18 + 7 = 25$ $\qquad$ $3 + 4 + 16 = 23$

$7 + 18 = 25$ $\qquad$ $16 + 4 + 3 = 23$

COMMUTATIVE PROPERTY OF MULTIPLICATION

$8 \times 9 = 72$ $\qquad$ $3 \times 13 = 39$

$9 \times 8 = 72$ $\qquad$ $13 \times 3 = 39$

Another property of whole numbers is called the **associative property**. Like the commutative property, it is only true for addition and multiplication. The associative property says that in an addition or multiplication problem, the way that you group the addends or factors can change without changing the answer. Take a look at an example where the problem 3+7+6 is solved in two different ways.

ASSOCIATIVE PROPERTY OF ADDITION

$(3 + 7) + 6$

$10 + 6$ Add the numbers in the

16 parentheses first.

$3 + (7 + 6)$

$3 + 13$ Add the numbers in the parentheses first.

16

This might help!

Notice that for each problem, the order of the addends is the same, they are just grouped differently. Always work with the numbers in parentheses first.

Either way the addends were grouped, the sum was the same! The associative property works for multiplication, too.

ASSOCIATIVE PROPERTY OF MULTIPLICATION

$(2 \times 7) \times 3$
14×3 Multiply the numbers in the
42 parentheses first.

$2 \times (7 \times 3)$
2×21 Multiply the numbers in the parentheses first.
42

This might help!

Notice that either way the factors are grouped, the product of the three numbers is the same.

You may be wondering why these properties are useful. These properties help us when we're trying to solve problems—especially mental math problems. The properties work for all the whole numbers, so knowing them can make solving whole number problems easier. Let's look at an example.

Connections

Another reason that it's important to list these properties is because they *don't* work for all the operations. The commutative and associative properties only work for addition and multiplication. They do not work for subtraction and division.

Example:

Find the sum using mental math and the whole number properties.

$11 + (18 + 39)$

Solution:

Look at the ones column of each number to see if there are any pairs of numbers that add up to 5 or 10. That will make your problem easier to work with. In this problem, 11 and 39 have ones columns that add up to 10. Since those two numbers are not grouped together right now, we'll need to use the whole number properties to move them so that they can be added first.

$11 + (18 + 39)$
$11 + (39 + 18)$ Use the commutative property of addition to switch the order of the addends.
$(11 + 39) + 18$ Use the associative property of addition to switch the grouping of the addends.
$50 + 18$ Add the numbers inside the parentheses.
68 Add.

IDENTITIES AND DISTRIBUTIVE PROPERTY

The next set of properties has to do with the identity of a number. An identity describes what something is. For example, *your* identity is who you are—your personality, characteristics, and all the other unique things that make up *you*. Your identity doesn't change each day—you are who you are.

Zero is called the **additive identity** because you can add it to any number, and the value of that number doesn't change. The number keeps its identity. Here are a couple of examples.

IDENTITY PROPERTY OF ADDITION

$5 + 0 = 5$

$0 + 127 = 127$

Multiplication has an identity, too. When a number is multiplied by 1, the number doesn't change. It maintains its value, or identity. So, 1 is called the **multiplicative identity**.

IDENTITY PROPERTY OF MULTIPLICATION

$14 \times 1 = 14$

$1 \times 65 = 65$

The last property we'll look at is called the **distributive property**. The distributive property is really helpful for multiplying two numbers using mental math. For example, let's try multiplying 4 and 31 in our heads. The distributive property says that we can split the number 31 into the sum 30 + 1 and multiply 4 by each addend. Take a look.

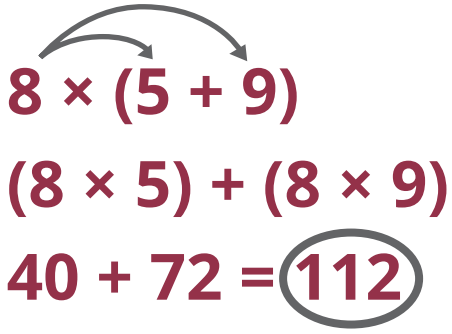
DISTRIBUTIVE PROPERTY

4×31	
$4 \times (30 + 1)$	Split 31 into the sum 30 + 1.
$(4 \times 30) + (4 \times 1)$	Multiply 4 by each addend.
$120 + 4$	Simplify each set of parentheses.
124	Add.

Let's Review!

Before going on to the practice problems, make sure you understand the main points of this lesson.

- ✓ The commutative property can be used to change the order of addends and factors.
- ✓ The associative property can be used to change the grouping of addends and factors.
- ✓ The additive identity is when the sum of any number and zero results in the number itself.



- ✓ The multiplicative identity is when the product of any number and one results in the number itself.
- ✓ The distributive property can be used to simplify a product by breaking it into parts.

Circle the correct answer.

1.18 The associative property changes the _____ of three addends or factors.

a. order b. value c. grouping

1.19 The _____ identity is 1.

a. multiplicative b. additive c. distributive

1.20 The commutative property changes the _____ of two addends or factors.

a. grouping b. value c. order

Circle each correct answer.

1.21 Darcy is finding the product of 11 and 17 using the distributive property. She set up the problem as 11 × (10 + 7). What would she do next?

a. (11 × 10) + 7
b. (11 + 10) × (11 + 7)
c. (11× 7) + 10
d. (11 × 10) + (11 × 7)

1.22 Which of the following number sentences is an example of the commutative property of multiplication?

a. 27 + 3 = 3 + 27
b. 4 × 5 = 10 × 2
c. 18 × 1 = 1 × 18
d. 2 × (9 × 14) = (2 × 9) × 14

1.23 Which of the following number sentences is an example of the associative property of multiplication?

a. (12 × 3) × 8 = 12 (3 × 8)
b. 6 × 1 = 6
c. 4 × 5 = 5 × 4
d. 20 × (10 + 6) = (20 × 10) + (20 × 6)

1.24 Which of the following number sentences is an example of the identity property of addition?

a. $16 \times 0 = 0$ b. $8 + 0 = 8$ c. $1 \times 4 = 4$ d. $1 + 11 = 11 + 1$

1.25 Randy wants to use the distributive property to help him find the product of 8 and 19. How should he set up the problem?

a. $8 + (10 + 9)$ b. $19 \times 2 \times 4$ c. $8 \times (10 + 9)$ d. $8 \times (10 \times 9)$

Place a check mark next to each correct answer (you may select more than one answer).

1.26 Which properties did Jacques use to solve the following problem?

$1 \times (6 + 28)$
$(1 \times 6) + (1 \times 28)$
$6 + 28$
34

- ☐ distributive property
- ☐ identity property of addition
- ☐ associative property of addition
- ☐ identity property of multiplication

1.27 Which properties did Carmen use to solve the following problem?

$17 + (45 + 23)$
$17 + (23 + 45)$
$(17 + 23) + 45$
$40 + 45$
85

- ☐ distributive property
- ☐ identity property of addition
- ☐ associative property of addition
- ☐ commutative property of addition

TEACHER CHECK _____ initials _____ date

Review the material in this section in preparation for the Self Test. The Self Test will check your mastery of this particular section. The items missed on this Self Test will indicate specific areas where restudy is needed for mastery.

SELF TEST 1: WHOLE NUMBERS AND THEIR PROPERTIES

Answer true or false (each answer, 6 points).

1.01 _____ In the following number, the 8 is in the hundreds place.
15,829

1.02 _____ The multiplicative identity states that any number multiplied by 0 is the number itself.

Circle each correct answer (each answer, 7 points).

1.03 The _____ of 14 and 7 is 7.
a. sum b. difference c. product d. quotient

1.04 In the problem 100 ÷ 25 = 4, the _____ is 100.
a. dividend b. divisor c. quotient

1.05 Which of the following numbers is read, "six thousand, nine hundred seven"?
a. 9,670 b. 6,970 c. 6,907 d. 6,097

1.06 Round 14,883 to the underlined place value.
a. 14,000 b. 15,000 c. 14,900 d. 10,000

1.07 Round each number to the nearest hundred and then estimate the answer.
349 + 1,978
a. 2,200 b. 2,300 c. 2,400 d. 2,500

1.08 Each month, Terrance spends $128.00 on his car payment, $63.00 for car insurance, and $45.00 on gas. Round each amount to the nearest ten and estimate the amount of money Terrance spends each month to own a vehicle.
a. $230.00 b. $220.00 c. $210.00 d. $240.00

1.09 Each month, Terrance spends $128.00 on his car payment, $63.00 for car insurance, and $45.00 on gas. What is the exact amount of money Terrance spends each month to own a vehicle?
a. $236.00 b. $226.00 c. $126.00 $238.00

1.010 Which multiplicative property is being illustrated below?
1 × 2 × 4 = 2 × 1 × 4
a. commutative b. associative c. identity

1.011 Which addition property is being illustrated below?
(6 + 7) + 1 = 6 + (7 + 1)
a. commutative b. associative

Write the correct answer on the blank (each answer, 7 points).

1.012 Use the distributive property to evaluate the following expression:

$9 \times (4 + 9) =$ _____

Circle the correct answer (each answer, 6 points).

1.013 Which property is illustrated below?
$1 + 7 = 7 + 1$

a. identity property of addition
b. commutative property of addition
c. associative property of addition
d. distributive property

1.014 Which of the following number sentences illustrates the associative property of multiplication?

a. $(3 \times 8) \times 6 = 3 \times (8 \times 6)$
b. $2 \times (1 \times 9) = (2 \times 1) \times (2 \times 9)$
c. $1 \times 15 = 15$
d. $8 \times 9 = 9 \times 8$

1.015 April wants to multiply 6 and 42 using the distributive property. Which of the following number sentences shows how she could do it?

a. $6 \times 42 = 42 \times 6$
b. $6 \times (40 + 2) = (6 \times 40) + 2$
c. $(6 \times 42) \times 1 = 6 \times (42 \times 1)$
d. $6 \times (40 + 2) = (6 \times 40) + (6 \times 2)$

80/100 **SCORE** _____ **TEACHER** _____ _____
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