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This programed mathematics textbook is for student use in vocational education courses. It was developed as part of a programed series covering 21 mathematical competencies which were identified by university researchers through task analysis of several occupational clusters. The development of a sequential content structure was also based on these mathematics competencies. After completion of this program the student should be able to correctly use the commutative law of addition and multiplication and should know that it does not hold for subtraction and division. The material is to be used by individual students under teacher supervision. Twenty-six other programed texts and an introductory volume are available as VT 006 882-VT 006 909, and VT 006 975. (EM)

FINAL REPORT
Project No. OE7-0031
Contract No. OEG-4-7-070031-1626
Report No. 16-Q

Occupational Mathematics

COMMUTATIVE LAW

June 1968

U.S. DEPARTMENT OF
HEALTH, EDUCATION AND WELFARE

Office of Education
Bureau of Research

Occupational Mathematics

COMMUTATIVE LAW

Project No. OE7-0031
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OBJECTIVES

1. The student should be able to correctly use the commutative law of addition.

2. The student should be able to correctly use the commutative law of multiplication.

3. The student should know that the commutative law does not hold for subtraction and division.

Greetings! You are about to begin improving your knowledge of basic mathematics. There are many important uses for the mathematics you are learning.

This booklet is not like your ordinary books. It is designed to help you learn as an individual. On the following pages you will find some information about mathematics. After the information is presented, you will be asked a question. Your answers to these questions will determine how you proceed through this booklet. When you have selected your answer to the question, turn to the page you are told to.

Do not write in this booklet. You may wish to have a pencil and some paper handy so you can write when you want to.

Remember this is not an ordinary book.

1. Study the material on the page.
2. Read the question on the page (you may want to restudy the material on the page).
3. Select the answer you believe is correct.
4. Turn to the page indicated by your answer.

Are you ready to begin?

(a) Yes — Turn to page 1

(b) No — Turn to page C

(c) HELP — Go see your teacher

Your answer was (b) No.

Well, this booklet is a little different.

Go back and read page B again. After you have read it, you will probably be ready to begin.

In this unit you will study the COMMUTATIVE LAW in three sections. They are:

Section I: the commutative law for addition

Section II: the commutative law for multiplication

Section III: the commutative law as it applies to subtraction and division.

Just what is the commutative law? We can illustrate the <u>commutative law for addition</u> by the following examples:

(a) 3 + 4 = 4 + 3

(b) 5 + 1/9 = 1/9 + 5

(c) 1/7 + 2/7 = 2/7 + 1/7

(d) .407 + 4 = 4 + .407

(e) .3 + 1.3 = 1.3 + .3

(f) 1/2 + .5 = .5 + 1/2

From these examples we can see that the COMMUTATIVE LAW for ADDITION means: In all addition processes the order of the numbers being added does not change the sum.

Turn to page 2

Which of the statements below best illustrates the commutative law for addition of integers?

(a) $4 \cdot 2 = 2 \cdot 4$ Turn to page 4

(b) $1/3 + 2/3 = 2/3 + 1/3$ Turn to page 6

(c) $2 + 15 = 15 + 2$ Turn to page 8

Good!

Does the commutative law for addition allow us to write: 1/10 + 1/11 = A = 1/11 + 1/10?

(a) Yes Turn to page 8

(b) No Turn to page 10

Incorrect.

The question asked for an example of the commutative law for addition. The example you chose is for multiplication.

Return to page 2 and make another choice.

Wrong.

The problem asked if 0 + 5 = 5 + 0. The commutative law for addition tells us that the order of the addition does not affect the sum. Thus, if we add 0 + 5 and get 5 as the sum or dd 5 + 0 and get 5 as the sum, we see that the order does not change the sum.

Return to page 1 and study the examples again before continuing.

No.

The question asked for an example that would illustrate the commutative law for addition of integers.

Your answer was an example of the commutative law for fractions. Remember that integers are numbers such as 0, 1, 2, 3, ----------

Be alert.

The commutative law for addition means that if 7 + 5 = 12, then 5 + 7 = 12 also. The statement is:

(a) True   Turn to page 3

(b) False   Turn to page 10

Incorrect.

It doesn't matter whether we are adding a fraction to an integer or just two fractions. The commutative law holds for <u>all</u> addition.

Does the sum of 9 + 1/2 equal the sum of 1/2 + 9?

(a) Yes Turn to page 16

(b) No Turn to page 10

Correct.

Work this one.

We know that $3/7 + 1/7 = 4/7$ and $2/7 + 2/7 = 4/7$.
Then the commutative law for addition tells us we can write: $3/7 + 1/7 = 2/7 + 2/7$. The statement is:

(a) True Turn to page 14

(b) False Turn to page 12

You said you were not sure what to do. Let's take a look at an example.

The commutative law for addition tells us that the order of addition does not affect the sum. Thus, if 1.1 + 6 is equal to C, then

6 + 1.1 will also be equal to C.

Okay? Let's continue.

We know that the sum of .04 and 3 is 3.04. What is the sum of 3 and .04?

(a)	3.04	Turn to page 11
(b)	.34	Turn to page 20
(c)	.07	Turn to page 22

Incorrect.

Remember that the commutative law for addition said we could add the numbers in any order and obtain the same sum.

Thus, if $4 + 5 = 9$, then $5 + 4 = 9$ also. We can then write this as: $4 + 5 = 9 = 5 + 4$.

What about this one?

Does $0 + 5 = 5 + 0$?

(a) Yes Turn to page 3

(b) No Turn to page 5

Good! Your answer was correct.

If $4 + .007 = A$, then $.007 + 4 = ?$

(a) 4.007 Turn to page 13

(b) A Turn to page 15

(c) Not sure what to do Turn to page 9

Excellent! Let's continue.

All the commutative law for addition tells us is that the order of the addition does not change the sum.

If 3.41 + 6 = B, then 6 + 3.41 = B. The statement is:

(a) True Turn to page 15

(b) False Turn to page 19

Ooops!

Although the sum of the two numbers is 4.007, you didn't need to add them. I gave you A as the sum of the two numbers. Thus, the commutative law for addition tells us that the sum of .007 + 4 will also be equal to A.

Try this one.

We know that the sum of .04 and 3 is 3.04. What is the sum of 3 and .04?

(a) 3.04 Turn to page 11

(b) .34 Turn to page 20

(c) .07 Turn to page 22

Incorrect.

Although the equation 3/7 + 1/7 = 2/7 + 2/7 is true, the statement said, "the commutative law for addition tells us...." which makes the statement "false."

All the commutative law tells us is that we can switch the order of addition without changing the sum. For example, 1/2 + 2/3 = 2/3 + 1/2.

The statement 1/3 + 4 = 4 + 1/3 illustrates the commutative law of addition.

(a) True Turn to page 16

(b) False Turn to page 7

Your answer was correct!

You have now seen that the commutative law for addition is true for integers, fractions, and decimals. In fact, it holds true for the addition of all numbers.

Since letters just represent numbers, the commutative law for addition works for letters also.

Applying the principle of the commutative law, what is a + b?

(a) ab Turn to page 23

(b) b + a Turn to page 17

(c) They cannot be added Turn to page 28

Good, you are back on the right track!

Try this one.

Is the following statement true or false? If $1/8 + 8 = E$, then $8 + 1/8 = E$ also.

(a) True Turn to page 12

(b) False Turn to page 10

Good!

We are now finished with the first section of our study of the commutative law--the commutative law for addition.

Now, let's look at Section II. The COMMUTATIVE LAW for MULTIPLICATION states:

> In all multiplication processes, the order of the numbers being multiplied does not change the product.

For example, (a) $3 \times 4 = 4 \times 3$

(b) $1/3 \times 2/3 = 2/3 \times 1/3$

(c) $4.1 \times 5.4 = 5.4 \times 4.1$

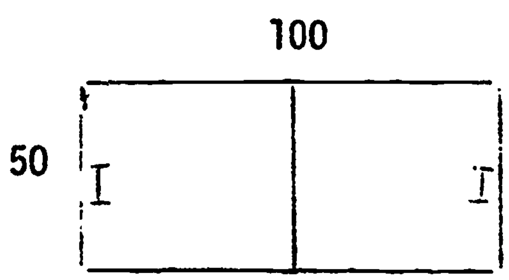
(d) $2 \cdot .5 = .5 \cdot 2$

(e) $1/8 \cdot 6 = 6 \cdot 1/8$

(f) $6.301 \times 1/4 = 1/4 \times 6.301$

Now turn to page 18 and continue

In the diagram below the rectangle represents a football field. The length of the field is 100 yards, and the width is 50 yards. To find the area of the field, we would multiply the length times width.



Area = length x width

Is the area of the field the same if we apply the commutative law for multiplication and state: Area = width x length?

(a) Yes Turn to page 21

(b) No Turn to page 32

Wrong.

The commutative law for addition tells us that if we add any two numbers, then we can add them in reverse order and obtain the same sum.

Thus, if $3.41 + 6 = B$

then $6 + 3.41 = B$ also.

Consider this problem.

Is the combined total of adding one cup of milk to three teaspoons of chocolate the same as adding three teaspoons of chocolate to one cup of milk?

(a) Yes Turn to page 11

(b) No Turn to page 24

No.

You didn't even have to add the numbers. Applying the commutative law to the problem, we see that if .04 + 3 = 3.04, then the sum will be the same if the order of addition is reversed to 3 + .04.

Return to page 1 and start over.

Correct!

Try this one.

We know that the product of the fractions $1/3 \cdot 1/4$ is $1/12$. We can also see that the product of $1/6 \cdot 1/2$ is equal to $1/12$. Then the commutative law for multiplication tells us we can write: $1/3 \cdot 1/4 = 1/6 \cdot 1/2$. This statement is:

(a) True Turn to page 14

(b) False Turn to page 12

No.

You didn't even have to add the numbers. Applying the commutative law to the problem, we see that if .04 + 3 = 3.04, then the sum will be the same if the order of addition is reversed to 3 + .04.

Return to page 1 and start over.

Oh, oh!

Since letters just represent numbers, let's take a look at what your answer would do.

You said that $a + b$ will equal ab. Putting in values of 4 and 3 for a and b respectively, your equation would look like this:

$4 + 3 = 4 \cdot 3$ or that $7 = 12$, which is not true.

The problem stated that you were to use the commutative law. We know that by the commutative law $4 + 3 = 3 + 4$. Using letters now, we see that $a + b = b + a$.

Try this one.

If the value of $c + d$ equals e, then $d + c = e$. This statement is:

(a) True Turn to page 31

(b) False Turn to page 33

Your answer was "no." Now wait a minute.

It doesn't make any difference whether the milk is added to the chocolate or the chocolate added to the milk. The result or sum is still a cup of hot chocolate.

The commutative law for addition works the same way. The sum is the same even if we add the numbers in reverse order.

Apply the principle of the commutative law to the following problem.

We know that the sum of .04 and 3 is 3.04. What is the sum of 3 and .04?

(a) 3.04 Turn to page 11

(b) .34 Turn to page 20

(c) .07 Turn to page 22

Very good!

If 8.117 x 3 = m, then 3 x 8.117 = m also. This statement is:

(a) True Turn to page 29

(b) False Turn to page 39

Good!

We are now finished with the first two sections. We have seen that the commutative law holds for all addition and multiplication of integers, fractions, and decimals.

However, the commutative law does <u>not</u> hold true for subtraction and division. We can prove this statement by just showing one example where the commutative law doesn't hold true. Our example:

$7 - 5 = 2$

$5 - 7 = -2$ thus $7 - 5 \neq 5 - 7$ since $2 \neq -2$

and the commutative law <u>fails</u> for subtraction.

We can show that the commutative law also fails for division by this example: $6 \div 3 = 2$

$3 \div 6 = 1/2$

thus $6 \div 3 \neq 3 \div 6$ since $2 \neq 1/2$.

Turn to page 27

Which one of the following statements is not a correct application of the commutative law?

(a) $a + b = b + a$ Turn to page 52

(b) $a - b = b - a$ Turn to page 30

(c) $ab = ba$ Turn to page 54

Incorrect.

The problem stated that you were to use the commutative law for addition. If this is done, the sum of $a + b$ is not needed. The commutative law says that $3 + 4 = 4 + 3$. Since letters just represent numbers, we can see that $a + b = b + a$.

Try this one.

If the value of $c + d$ equals e, then $d + c = e$. This statement is:

(a) True Turn to page 31

(b) False Turn to page 33

Correct!

We know that the commutative law for multiplication holds for integers, fractions, and decimals. Therefore, it will also hold for letters.

If $I \cdot R = E$, then does $R \cdot I = E$?

(a) Yes Turn to page 26

(b) No Turn to page 47

Correct!

Try this one.

The commutative law holds for ____________ of integers, fractions, and decimals.

(a) addition, subtraction, and multiplication
Turn to page 55

(b) addition, multiplication, and division
Turn to page 57

(c) multiplication and addition
Turn to page 34

(d) division and addition
Turn to page 59

Very good!

If $M + N = S$, what is the value of $N + M$?

(a) S Turn to page 17

(b) NM Turn to page 33

Incorrect.

You can see that the areas would be the same by working out the problem. Thus:

Area = length x width

= 100 x 50

= 5,000 square yards

Area = width x length

= 50 x 100

= 5,000 square yards

Therefore, we can see that the commutative law holds for multiplication.

Does the commutative law for multiplication mean that if $9 \cdot 7 = 63$, then $63 = 7 \cdot 9$ also?

(a) Yes Turn to page 36

(b) No Turn to page 38

Incorrect.

Don't let the letters bother you. Remember that they only represent numbers.

Let's look at an example:

We know that $7 + 3 = 3 + 7$ by the commutative law for addition. Since letters represent numbers, we can say that $A + B = C = B + A$.

If the value of $4 + d = f$, then $d + 4 = d4$. This statement is:

(a) True Turn to page 35

(b) False Turn to page 31

Congratulations! You have completed this Unit.
Let's review what you have done.

1. You learned that the COMMUTATIVE LAW for ADDITION is true for all integers, fractions, and decimals.

2. You learned that the COMMUTATIVE LAW for MULTIPLICATION is true for all integers, fractions, and decimals.

3. You learned that a Commutative Law for subtraction and division does NOT exist.

You are now ready to take a test on this Unit. Tell your teacher that you have finished Unit 16.

Incorrect.

You seem to be having trouble with problems that deal with letters.

Turn to page 19 and continue from there.

Good!

Dr the commutative law for multiplication allow us

.rite: 1/3 · 1/10 = B = 1/10 · 1/3?

(a) Yes Turn to page 21

(b) No Turn to page 38

Incorrect.

The commutative law of multiplication tells us that $1/3 \cdot 1/4 = 1/4 \cdot 1/3$ and that $1/2 \cdot 1/6 = 1/6 \cdot 1/2$. It does not tell us anything about the relationship of 1/3, 1/4, and 1/2, 1/6.

Continue.

The statement $6 \cdot 1/3 = 1/3 \cdot 6$ is:

(a) True Turn to page 43

(b) False Turn to page 41

Incorrect.

Remember that the commutative law for multiplication said we could multiply the numbers in any order and obtain the same product.

Thus, if $4 \cdot 5 = 20$, then $5 \cdot 4 = 20$ also. We can then write this as: $4 \cdot 5 = 20 = 5 \cdot 4$.

What about this one?

Does $0 \cdot 6 = 6 \cdot 0$?

(a) Yes Turn to page 36

(b) No Turn to page 40

Wrong.

The commutative law for multiplication tells us that if we multiply any two numbers, then we can multiply them in reverse order and obtain the same product.

Thus, if 8.117 x 3 = M

then 3 x 8.117 = M also.

Consider this problem.

We know that 4.07 x 4 = 16.28. We also know that 8.14 x 2 = 16.28. Therefore, does the commutative law for multiplication tell us we can write 4.07 x 4 = 8.14 x 2?

(a) Yes Turn to page 45

(b) No Turn to page 42

Wrong.

The problem asked if $0 \cdot 6 = 6 \cdot 0$. The commutative law for multiplication tells us that the order of the multiplication does not affect the product. Thus, $0 \cdot 6 = 0$ and $6 \cdot 0 = 0$ from which we can see that the order does not affect the product.

Return to page 17 and study the examples again before continuing.

Incorrect.

It doesn't matter whether we are multiplying a fraction to an integer or just two fractions. The commutative law holds for all multiplication.

Does the product of $8 \cdot 11/5$ equal the product of $11/5 \cdot 8$?

(a) Yes Turn to page 43

(b) No Turn to page 38

Good! Your answer is correct.

If 10 x .0801 = C, then the commutative law for multiplication allows us to say .0801 x 10 = ?

(a) .801 Turn to page 44

(b) C Turn to page 29

(c) Not sure what to do Turn to page 46

Good, you are back on the right track!

Try this one.

Is the following statement true or false? If

$2/9 \cdot 9 = B$, then $9 \cdot 2/9 = B$ also.

(a) True Turn to page 25

(b) False Turn to page 38

Oooops!

Although the product of the two numbers is .801, you didn't need to multiply them. I gave you c as the product of the two numbers. Thus, the commutative law for multiplication tells us that the product of .0801 x 10 will also be equal to c.

Try this one.

We know that the product of .601 and 3 is 1.803. What is the product of 3 and .601?

(a) 1.803 Turn to page 42

(b) .1803 Turn to page 50

(c) 18.03 Turn to page 48

Your answer was "yes." Now wait a minute.

All the commutative law for multiplication tells us is that the order of multiplication can be reversed with the product remaining the same.

In the last problem it is true that 4.07 x 4 = 16.28 and 8.14 x 2 = 16.28, but we cannot set them equal by use of the commutative law. What we can say by the commutative law is that:

$$4.07 \times 4 = 16.28 = 4 \times 4.07$$

or

$$8.14 \times 2 = 16.28 = 2 \times 8.14$$

We know that the product of .601 and 3 is 1.803. What is the product of 3 and .601?

(a)	1.803	Turn to page 42
(b)	.1803	Turn to page 50
(c)	18.03	Turn to page 48

You said you were not sure what to do. Let's take a look at an example.

The commutative law for multiplication tells us that the order of multiplication does not affect the product. Thus, if 2.1 x 2 is equal to D, then we know that

2 x 2.1 will also be equal to D without multiplying to get a numerical answer.

Okay? Let's continue.

We know that the product of .601 and 3 is 1.803. What is the product of 3 and .601?

(a) 1.803 Turn to page 42

(b) .1803 Turn to page 50

(c) 18.03 Turn to page 48

Incorrect.

Don't let the letters fool you. The letters only represent numbers, so we can treat them as such.

Thus, by the commutative law we know that:

$5 \times 8 = 8 \times 5$ or we can write this using letters as

$a \times b = b \times a$.

Try this one.

If the value of $7 \times f = h$, then $f \times 7 = (7 + f)/h$.

(a) Yes Turn to page 49

(b) No Turn to page 51

No.

You didn't even have to multiply the numbers. Applying the commutative law to the problem, we know that if .601 x 3 = 1.803, then the product will be the same if the order of multiplication is reversed to 3 x .601.

You seem a little shaky in this section.

Return to page 17 and study the examples before continuing.

Incorrect. You are making it much too difficult.

Let's look at an example. If we have the statement $c \times d = e$, then applying the commutative law, we also know $d \times c = e$ or that:

$$c \times d = e = d \times c.$$

If $M \times T = W$, what is the value of $T \times M$?

(a) W Turn to page 51

(b) $T + M$ Turn to page 53

No.

You didn't even have to multiply the numbers. Applying the commutative law to the problem, we know that if .601 x 3 = 1.803, then the product will be the same if the order of multiplication is reversed to 3 x .601.

You seem a little shaky in this section.

Return to page 17 and study the examples before continuing.

Very good! Your answer is correct.

Continue.

Is the following statement correct? If R x I = E, then RI = E = IR.

(a) Yes Turn to page 26

(b) No Turn to page 49

Now wait a minute!

You said that the commulative law does <u>not</u> hold for $a + b = b + a$. This statement, $a + b = b + a$, is an addition problem for which the commutative law <u>does</u> hold.

Select the choice which best fits your case.

(a) I don't understand the commutative law for addition Turn to page 1

(b) I understand the commutative law but made a careless mistake Turn to page 26

Incorrect.

You are having trouble with problems that deal with letters. Maybe more work with numbers will help you to understand.

Turn to page 25 and continue from there.

Now wait a minute!

You said that the commutative law does <u>not</u> hold for ab = ba. This statement, ab = ba, is a multiplication problem for which the commutative law is true.

Select the choice which best fits your case.

(a) I don't understand the commutative law for multiplication Turn to page 17

(b) I understand the commutative law but made a careless mistake Turn to page 26

How could you make this mistake? You chose: addition, subtraction, and multiplication.

The commutative law does work for addition and multiplication, but NOT for subtraction. Look at this example:

If the commutative law did hold for subtraction, then 6 - 3 would equal 3 - 6. However, 6 - 3 = 3 and 3 - 6 = -3. Are they equal? No, because 3 doesn't equal -3.

Does the commutative law hold for subtraction, such as A - B = B - A?

(a) Yes Turn to page 58

(b) No Turn to page 61

You answered "Yes." No! No!

I just finished showing you that the commutative law does NOT hold true for division.

Return to page 59 and carefully study the example before continuing.

Incorrect. You chuse: addition, multiplication, and division.

The commutative law does work for addition and multiplication, but <u>NOT</u> for division.

Look at this example: If the commutative law did hold for division, then $10 \div 5$ would equal $5 \div 10$. However, $10 \div 5 = 2$, and $5 \div 10 = 1/2$. Are they equal? No, because 2 doesn't equal 1/2.

Does the commutative law hold for division, such as $A \div B = B \div A$?

(a) Yes Turn to page 60

(b) No Turn to page 62

Oh, no!!

I just finished showing you that the commutative law does NOT hold true for subtraction.

Return to page 55 and carefully study the example to see why. Continue from page 55.

Incorrect. You chose: division and addition.

The commutative law does work for addition but NOT for division. Look at this example: If the commutative law did hold for division, then $10 \div 5$ would equal $5 \div 10$. However, $10 \div 5 = 2$, and $5 \div 10 = 1/2$. Are they equal? No, because 2 doesn't equal 1/2.

Does the commutative law hold for division, such as $A \div B = B \div A$?

(a) Yes Turn to page 56

(b) No Turn to page 62

You answered "Yes." No! No!

I just finished showing you that the commutative law does not hold true for division.

Return to page 57 and carefully study the example before continuing.

Good!

Let's continue.

The commutative law holds for ____________ of integers, fractions, and decimals.

(a) addition, multiplication, and division
Turn to page 57

(b) multiplication and addition
Turn to page 34

(c) division and addition
Turn to page 59

Very good!

Let's continue.

The commutative law holds for __________ of integers, fractions, and decimals.

(a) addition, subtraction, and multiplication
Turn to page 55

(b) multiplication and addition
Turn to page 34

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CAI MATHEMATICS

TEST QUESTIONS

UNIT 16 - COMMUTATIVE LAW

1. Which of the statements below best illustrates the Commutative Law for Addition of integers.

   a) 4.3=3.4

   b) 2+9 = 9 + 2

   c) 1/3 + 2/3 = 2/3 + 1/3

2. If area = length x width does the Commutative Law for Multiplication state that area = width x length

   a) yes

   b) no

3. The Commutative Law holds for ____________ of integers, fractions, and decimals.

   a) addition, subtraction, multiplication

   b) addition, division

   c) multiplication and addition

4. The Commutative Law of Addition means that if 3+5=8, then 5+3=8 also.

   a) true

   b) false

5. Does the Commutative Law for Multiplication mean that if 9.7 = 63, then 63/7=9

   a) yes

   b) no

6. If 10/5=C then the Commutative Law tells us that

   a) 5/10=C

   b) 10C=5

   c) neither

7. Does 0+5=5+0

a) yes

b) no

8. Does 0.6=6.0

a) yes

b) no

9. If the value 4+d=f then d+4= d4

a) true

b) false

10. Does the Commutative Law for Addition allow us to write: 1/10+1/11=A=11/1+1/10

a) yes

b) no

11. If 1/3.1/4=1/12 and 1/6.1/2=1/12, then the Commutative Law for Multiplication tells us that

a) 1/3.1/4=1/6.1/2

b) 1/4.1/3=1/2.1/6

c) neither

12. If 7-3=D then the Commutative Law tells us that

a) 7-3=4

b) 3-7=D

c) neither

13. We know that 3/5 +1/5=4/5 and 2/5+2/5=4/5 then the Commutative Law for Addition tells us we can write 3/5+1/5= 2/5+2/5

a) true

b) false

14. Does the Commutative Law for Multiplication allow us to write 1/3.1/10=B=10/1.1/3?

a) yes

b) no

15. If M/T = W What is the value of T/M

(a) W

(b) M x T

(c) Neither

16. The Commutative Law of Addition is illustrated by 1/5 + 4 = 4 + 1/5

(a) True

(b) False

17. If 8,117 x 3 = 3 = M Then 3 x 8.711 = M also
This statement is :

(a) True

(b) False

18. If R = I/E Then 1

(a) R = E/I

(b) R = I x E

(c) Neither

19. If 1/7 + 5 = E, Then 5 + 1/7 = E

(a) True

(b) False

20. If I. R = E, Then Does R. I = E P

(a) Yes

(b) No

21. If 3.33 + 6 = B Then 6 + 3.33 = B
The Statement is

(a) True

(b) False

22. Does the Commutative Law hold for subtraction such as A-B - B-A

(a) Yes

(b) No

23. If the value of 5 x a = b Then the Commutative Law says that F x 5 = (5+F)/H

(a) True

(b) False

24. Does the Commutative Law hold for division such as A/B = B/A

(a) Yes

(b) No

25 Applying the principle of the Commutative Law, what is A + B?

(a) They cannot be added

(b) ab

(c) b + a

ANSWER SHEET

UNIT 16 COMMUTATIVE LAW

1. b	11. c	21. a
2. a	12. c	22. b
3. c	13. b	23. b
4. a	14. b	24. b
5. b	15. c	25. c
6. c	16. a	
7. a	17. b	
8. a	18. c	
9. b	19. a	
10. b	20. a	

To the Instructor: The above problems are related to the objectives as follows:

OBJECTIVE

1:	1,4,7,10,13,16,19,21,25,
2:	2,5,8,11,14,17,20,23,
3:	3,6,9,12,15,18,22,24,