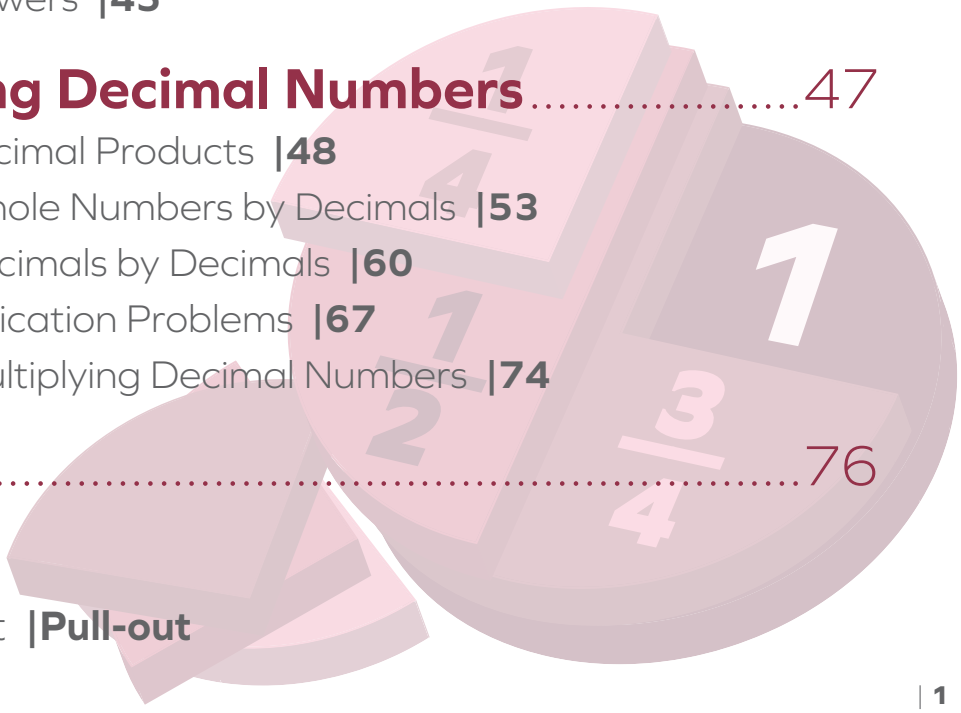
MATH 502
MULTIPLYING WHOLE NUMBERS AND DECIMALS



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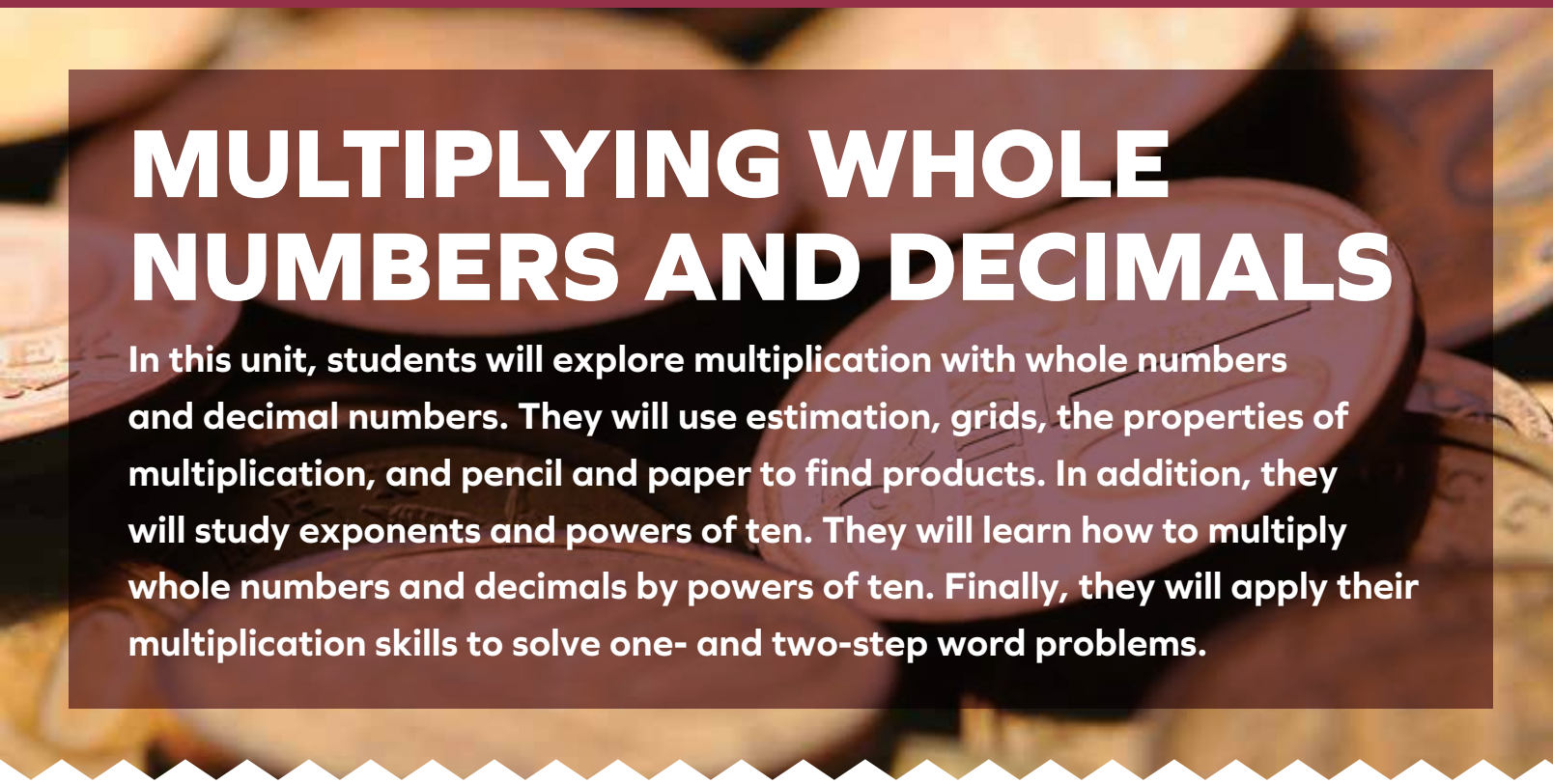


MULTIPLYING WHOLE NUMBERS AND DECIMALS

In this unit, students will explore multiplication with whole numbers and decimal numbers. They will use estimation, grids, the properties of multiplication, and pencil and paper to find products. In addition, they will study exponents and powers of ten. They will learn how to multiply whole numbers and decimals by powers of ten. Finally, they will apply their multiplication skills to solve one- and two-step word problems.

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:

- Estimate whole number and decimal products.
- Use the properties of multiplication.
- Multiply whole numbers and decimals by powers of ten.
- Multiply whole numbers and decimal numbers.
- Solve multiplication word problems.

1. MULTIPLYING WHOLE NUMBERS

Is Nutmeg right? Pepper was going to add 5 eight times. Is that the same as just multiplying 5 and 8? Yes! In this lesson, we'll begin looking at multiplication. We'll also estimate the product of two or more numbers.

Objectives

Read these objectives. When you have completed this section, you should be able to:

- Review basic math facts.
- Estimate the product of two numbers.
- Know the Commutative, Associative, and Identity Properties of Multiplication.
- Know the Zero Property of Multiplication.
- Use the Distributive Property to multiply numbers mentally.
- Multiply whole numbers using a pencil and paper.

Vocabulary

Study these new words. Learning the meanings of these words is a good study habit and will improve your understanding of this LIFEPAC.

Associative Property of Multiplication. A property of numbers that states that how numbers are grouped in a product does not change the value of the product.

Commutative Property of Multiplication. A property of numbers that states that the order in which numbers are multiplied does not change the value of the product.

Distributive Property. A number multiplied by a sum is the same as the sum of the number multiplied by each addend; $a(b + c) = ab + ac$.

factor. A number to be multiplied.

Identity Property of Multiplication. A property of numbers that states that multiplying a number by 1 does not change the value of the number.

overestimate. An estimate that is higher than the actual value.

partial product. The product of one digit of a factor and one digit of the other factor.

product. The result of multiplying two or more numbers.

underestimate. An estimate that is lower than the actual value.

Zero Property of Multiplication. A property of numbers that states that the product of any number and zero is zero.

Note: *All vocabulary words in this LIFEPAC appear in* **boldface** *print the first time they are used. If you are unsure of the meaning when you are reading, study the definitions given.*

Review: Basic Math Facts

As we saw in the cartoon, multiplication is just repeated addition. Nutmeg and Pepper had two different ways to find the same answer.

Pepper:	$5 + 5 + 5 + 5 + 5 + 5 + 5 + 5 = 40$	Adding 5 eight times.
Nutmeg:	$5 \times 8 = 40$	Multiplying 5 and 8.

Both methods get the same result, but multiplying is usually much faster (and takes less bark!). Nutmeg's answer is called a **product**. A product is the result of multiplying two or more numbers, which are called **factors**. You're probably very good at finding the product of two factors that are each 12 or less. Take a look at the following multiplication table to help you review your math facts.

×	1	2	3	4	5	6	7	8	9	10	11	12
1	1	2	3	4	5	6	7	8	9	10	11	12
2	2	4	6	8	10	12	14	16	18	20	22	24
3	3	6	9	12	15	18	21	24	27	30	33	36
4	4	8	12	16	20	24	28	32	36	40	44	48
5	5	10	15	20	25	30	35	40	45	50	55	60
6	6	12	18	24	30	36	42	48	54	60	66	72
7	7	14	21	28	35	42	49	56	63	70	77	84
8	8	16	24	32	40	48	56	64	72	80	88	96
9	9	18	27	36	45	54	63	72	81	90	99	108
10	10	20	30	40	50	60	70	80	90	100	110	120
11	11	22	33	44	55	66	77	88	99	110	121	132
12	12	24	36	48	60	72	84	96	108	120	132	144

Estimating Larger Multiplication Products

Because you already have your multiplication facts for smaller numbers mastered, we're going to learn how to multiply with larger numbers. In this lesson, we'll learn how to estimate products. Remember that an estimate is a value that is close to the actual value. Estimates are easier to make than the actual calculation, and they're useful for making a prediction or checking if an answer is reasonable.

Let's try making some estimates. To estimate a product, round two-digit factors to the nearest ten, and round three-digit factors to the nearest hundred. One-digit factors stay the same. Then, multiply the rounded numbers.

Example:

Estimate. 3×37

Solution:

Round 37 to the nearest ten, which is 40. Now, multiply.

$3 \times 40 = 120$

Example:

Estimate. 23×81

Solution:

Round 23 to the nearest ten, which is 20. Round 81 to the nearest ten, which is 80. Now, multiply.

$20 \times 80 = 1{,}600$

Example:

Estimate. 78×114

Solution:

Round 78 to the nearest ten, which is 80. Round 114 to the nearest hundred, which is 100. Now, multiply.

$80 \times 100 = 8{,}000$

Are you noticing a pattern for multiplying large numbers that end in zeros? Multiply the front digits together. Then, count the total number of zeros in the factors. That same number of zeros will be in the product. Take a look again at the examples we just did:

$3 \times 4\mathbf{0} = 12\mathbf{0}$ One zero is in the factors, so one zero is in the product.

$2\mathbf{0} \times 8\mathbf{0} = 1{,}6\mathbf{00}$ Two zeros are in the factors, so two zeros are in the product.

$8\mathbf{0} \times 1\mathbf{00} = 8{,}\mathbf{000}$ Three zeros are in the factors, so three zeros are in the product.

Let's try another one.

Example:

Estimate. 345×278

Solution:

Round 345 to the nearest hundred, which is 300. Round 278 to the nearest hundred, which is also 300. Now, multiply.

$3\mathbf{00} \times 3\mathbf{00} = 9\mathbf{0},\mathbf{000}$

This might help!

3 multiplied by 3 is 9. And, there are a total of four zeros in the factors. So, the product is 9 with four zeros, or 90,000.

When estimating, it is very helpful to determine whether our estimate is higher than the actual value or lower than the actual value. When the estimate is higher than the actual value, it's called an **overestimate**. When the estimate is lower than the actual value, it's called an **underestimate**.

S-T-R-E-T-C-H

Can you think of a situation where it would be better to have an overestimate, rather than an underestimate? Or, where it would be better to have an underestimate, rather than an overestimate?

How do you know if an estimate is an overestimate or underestimate? If factors are only rounded up, then the estimate is an overestimate. If factors are only rounded down, then the estimate is an underestimate. When some factors are rounded up and some are rounded down, it is harder to tell whether the estimate is an overestimate or an underestimate.

Let's look back at a couple of our earlier examples. In the first example, we had to estimate the product of 3×37. We left the factor 3 alone and rounded 37 up to 40. So, our estimate was 3×40, or 120. Since we only rounded factors up, 120 is an overestimate. That means that we would expect the actual product of 3×37 to be a little less than 120.

In the second example, we had to estimate the product of 23×81. We rounded 23 down to 20 and 81 down to 80. So, our estimate was 20×80, or 1,600. Since we only rounded factors down, 1,600 is an underestimate. That means that we would expect the actual product of 23×81 to be a little more than 1,600.

Example:

Mrs. June is buying Christmas gifts for her five grandchildren. She found a movie for each grandchild. If each movie is $19, about how much will it cost for all five? Is this an overestimate or an underestimate?

Solution:

We need to estimate the product of 5 × $19. Leave the factor 5 alone. Round $19 to the nearest ten, which is $20. Now, estimate.

$$5 \times \$2\mathbf{0} = \$10\mathbf{0}$$

So, Mrs. June can expect to pay about $100 for the five movies. Since we only rounded factors up, this estimate is an overestimate. The actual total will be a little less than $100.

This might help!

Notice that the product of 5 and 2 is 10, which already has one zero. Then, since there is one zero in the factors, *another* zero is in the product. If the product of the front digits has a zero in it, make sure to include that first!

Let's Review!

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

- ✓ Multiplication is another way to represent repeated addition.
- ✓ To estimate a product, round the factors and then multiply.
- ✓ An overestimate is greater than the actual value. An underestimate is less than the actual value.

Complete this activity.

1.1 Match the terms with their definitions.

a. _____ factor

b. _____ overestimate

c. _____ product

d. _____ underestimate

1. the result of multiplying two or more numbers
2. a number to be multiplied
3. an estimate that is lower than the actual value
4. an estimate that is higher than the actual value

Find the product.

1.2 7×4 _____

1.3 9×6 _____

1.4 6×3 _____

1.5 4×9 _____

1.6 5×7 _____

1.7 3×8 _____

1.8 2×12 _____

1.9 10×11 _____

1.10 11×5 _____

Fill in the blank.

1.11 Multiplication is a faster way to do repeated _____ .

Answer *true* or *false*.

1.12 _____ The product of 80 and 700 will have four zeros.

Circle the correct letter and answer.

1.13 Clara estimates that the product of 32 and 41 is about 1,200. Her estimate is an _____ .

a. underestimate b. overestimate

1.14 Mei estimates that the product of 7 and 178 is about 1,400. Her estimate is an _____ .

a. underestimate b. overestimate

1.15 Estimate the product. 509 × 36

a. 15,000 b. 24,000 c. 20,000 d. 2,000

1.16 Estimate the product. 110 × 298

a. 30,000 b. 40,000 c. 2,000 d. 3,000

1.17 Estimate the product. 8 × 572

a. 4,000 b. 4,800 c. 48,000 d. 40,000

1.18 Ricardo can type 39 words per minute. Estimate the number of words he can type in 18 minutes.

a. 300
b. 400
c. 600
d. 800

Estimate the product.

1.19 73 × 64 _____

1.20 3 × 92 _____

1.21 51 × 688 _____

Circle the correct letter and answer.

1.22 Round each factor in order to estimate. 96 × 25

a. 90 × 20 b. 100 × 20 c. 90 × 30 d. 100 × 30

1.23 Using your rounded factors, estimate the product.

a. 3,000 b. 1,800 c. 2,000 d. 2,700

1.24 Is your estimate an overestimate or an underestimate?

a. undersestimate b. overestimate

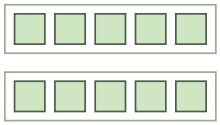
Properties of Multiplication

Do you remember the whole number properties for addition? They were the Commutative Property of Addition, the Associative Property of Addition, and the Identity Property of Addition. These three properties work for multiplication, too! In this lesson, we'll explore the whole number properties for multiplication. We'll also look at a new property—the Distributive Property.

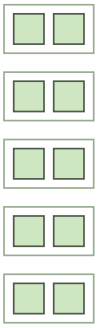
Commutative Property

For addition, the commutative property says that the order in which numbers are added does not change the value of the sum. The **Commutative Property of Multiplication** is similar. It says that the order in which numbers are multiplied does not change the value of the *product*. For example, 3 × 4 is the same as 4 × 3. They both have a product of 12.

2 × 5 = 10



5 × 2 = 10



Let's look at a picture of this. One way to think of the multiplication sign is as "groups of." So, 2 × 5 can be read as two groups of 5. The commutative property says that 2 × 5 has the same product as 5 × 2, or five groups of 2. Take a look at the diagram.

Associative Property

The **Associative Property of Multiplication** says that the way in which factors are grouped does not change the value of the product. Let's look at two ways to group the multiplication problem 2 × 5 × 3. Either way should give us the same product. Remember to always multiply inside the parentheses first.

$(2 \times 5) \times 3$

10×3

30

$2 \times (5 \times 3)$

2×15

30

Did you know?

Remember that the Associative Property of Addition says that the way in which *addends* are grouped does not change the value of the sum.

Example:

Find the product.

$20 \times (7 \times 5)$

This might help!

Why change the order and grouping of the factors? Multiplying 20 and 5 first will give us 100, which is a nice number to work with.

Solution:

Use the commutative and associative properties to make this multiplication problem easier. With the Commutative Property of Multiplication, we can change the order of the factors inside the parentheses.

$20 \times (5 \times 7)$

With the Associative Property of Multiplication, we can change the way the factors are grouped.

$(20 \times 5) \times 7$

Now we can easily find the product in our heads. Multiply inside the parentheses first.

$100 \times 7 = 700$

Identity Property

The Identity Property of Addition says that we can add zero to any number without changing the value of the number. What can we *multiply* a number by without changing the number's value? The number 1. So, the **Identity Property of Multiplication** says that we can multiply any number by 1 without changing the value of the number.

Examples:

$14 \times 1 = 14$

$1 \times 8 = 8$

Zero Property

The **Zero Property of Multiplication**, sometimes called the Zero Product Property, says that the product of zero and any number is equal to zero. Here are some examples.

Examples:

$9 \times 0 = 0$

$0 \times 24 = 0$

Distributive Property

There's one more property for us to look at. The **Distributive Property** combines multiplication and addition. It says that multiplying a number by a sum is the same as multiplying the number by each addend and adding the products together. Here's an example:

$8 \times (5 + 9)$

Using the Distributive Property, we can multiply 8 and the sum of 5 and 9 by multiplying 8 by each part of the sum. Then, we'll add the two products together to get the final product.

Start by multiplying 8 by 5, and then 8 by 9.

$$(8 \times 5) + (8 \times 9)$$

8 × 5 is 40, and 8 × 9 is 72.
The sum of 40 and 72 is 112.

So the value of the original problem is 112.

The Distributive Property can be very helpful for finding the product of two numbers. Take a look:

| Distribute the load with multiplication and addition

Example:

Use the Distributive Property to multiply 6 and 23.

Solution:

Remember that in expanded form, 23 is the same as 20 + 3. So, another way to represent 6 × 23 is 6 × (20 + 3). The Distributive Property says that multiplying 6 by (20 + 3) is the same as multiplying 6 by 20 and 6 by 3, and then adding the two products.

6 × 23	• original problem
6 × (20 + 3)	• Write 23 in expanded form.
(6 × 20) + (6 × 3)	• Multiply 6 by each addend.
120 + 18	• Multiply.
138	• Add.

So, the product of 6 and 23 is 138.

Let's Review!

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

- ✓ The Commutative Property of Multiplication says that changing the order of factors does not change the value of the product.
- ✓ The Associative Property of Multiplication says that changing how factors are grouped does not change the value of the product.

- ✓ The Identity Property of Multiplication says that multiplying a number by 1 does not change the value of the product.
- ✓ The Distributive Property says that a number multiplied by a sum is the same as the sum of the number multiplied by each addend.

Complete this activity.

1.25 Match the terms with their definitions.

a. _____ Associative Property of Addition

b. _____ Commutative Property of Addition

c. _____ Identity Property of Addition

1. $12 + 8 = 8 + 12$
2. $5 + 0 = 5$
3. $9 + (11 + 7) = (9 + 11) + 7$

1.26 Match the terms with their definitions.

a. _____ Associative Property of Multiplication

b. _____ Commutative Property of Multiplication

c. _____ Distributive Property

d. _____ Identity Property of Multiplication

e. _____ Zero Property of Multiplication

1. a property of the whole numbers that states that the order in which numbers are multiplied does not change the value
2. a number multiplied by a sum is the same as the sum of the number multiplied by each addend; $a(b + c) = ab + ac$
3. a property of the whole numbers that states that multiplying a number by 1 does not change the value of the number
4. a property of the whole numbers that states that how numbers are grouped in a product does not change the value
5. a property of the whole numbers that states that the product of any number and zero is zero

Circle the correct letter and answer.

1.27 Which whole number property is represented by $10 \times 4 = 4 \times 10$?

a. Associative Property of Multiplication
b. Commutative Property of Multiplication
c. Identity Property of Multiplication
d. Zero Property of Multiplication

Answer *true* or *false*.

1.28 _____ The commutative and associative properties work for both addition and multiplication.

Circle the correct letter and answer.

1.29 Which whole number property is represented by $(8 \times 2) \times 6 = 8 \times (2 \times 6)$?

a. Associative Property of Multiplication
b. Commutative Property of Multiplication
c. Identity Property of Multiplication
d. Distributive Property

Answer *true* or *false*.

1.30 _____ The Identity Property of Multiplication says that multiplying a number by zero does not change the value of the number.

Find the product.

1.31 0×95 _____

Circle the correct letter and answer.

1.32 Which whole number property is represented by $5 \times (10 + 7) = (5 \times 10) + (5 \times 7)$?

a. Associative Property of Multiplication
b. Commutative Property of Multiplication
c. Identity Property of Multiplication
d. Distributive Property

1.33 Use the Distributive Property to multiply 9 and 37 in your head. How would you represent 9×37 by writing 37 in expanded form?

a. $9 \times 3 \times 7$ b. $9 \times (30 \times 7)$ c. $9 \times (30 + 7)$ d. $9 + (30 + 7)$

1.34 Use the Distributive Property to multiply 9 and 37 in your head. After 37 is in expanded form, multiply 9 by each addend. Which choice best demonstrates this step?

a. $(9 \times 30) + (9 \times 7)$ b. $(9 \times 30) + 7$
c. $30 + (9 \times 7)$ d. $9 \times 30 \times 7$

1.35 Use the Distributive Property to multiply 9 and 37 in your head. What is the answer?

a. $270 + 7 = 277$ b. $27 + 63 = 90$
c. $30 + 63 = 93$ d. $270 + 63 = 333$

1.36 Use the Distributive Property to multiply 8 and 45 in your head. What is the answer?

a. $32 + 40 + 72$ b. $40 + 40 = 80$
c. $320 + 40 = 360$ d. $320 + 5 = 325$

Complete this activity.

1.37 The Distributive Property was used to multiply 7×62. Put the steps in the correct order by writing the numbers 1 through 5 on the blanks.

a. _____ $(7 \times 60) + (7 \times 2)$

b. _____ 434

c. _____ 7×62

d. _____ $420 + 14$

e. _____ $7 \times (60 + 2)$

Circle the correct letter and answer.

1.38 Which property is shown by $9 \times 3 = 3 \times 9$?

a. Associative Property of Multiplication
b. Commutative Property of Multiplication
c. Identity Property of Multiplication
d. Distributive Property

1.39 Which number sentence uses the Identity Property of Multiplication?

a. $8 \times 5 = 5 \times 8$
b. $4 \times 11 = 44$
c. $7 \times 1 = 7$
d. $2 \times (9 \times 4) = (2 \times 9) \times 4$

1.40 Use the Distributive Property to rewrite $8 \times (10 + 3)$.

a. $(8 \times 10) + (8 \times 3)$
b. $8 \times 10 \times 3$
c. $(8 \times 10) + (10 \times 3)$
d. $(8 \times 10) + 3$

1.41 Use the Distributive Property to find the value of $8 \times (10 + 3)$.

a. 34 b. 240 c. 104 d. 83

Multiplying Whole Numbers

Do you remember the Distributive Property? It says that multiplying a number by a sum is the same as multiplying the number by each part of the sum and adding the partial products together. The Distributive Property is very useful for multiplying numbers in our heads. For example, let's multiply 3 times 18. To start, rewrite 18 in expanded form as 10 + 8. Then, multiply 3 by each addend.

3×18

$3 \times (10 + 8)$

$(3 \times 10) + (3 \times 8)$

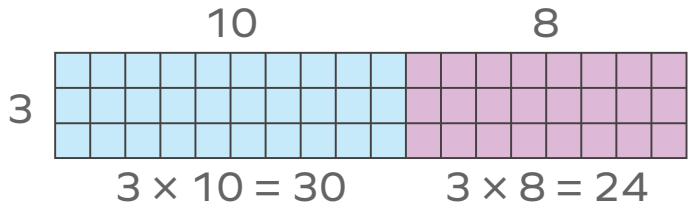
$30 + 24$

54

Vocabulary

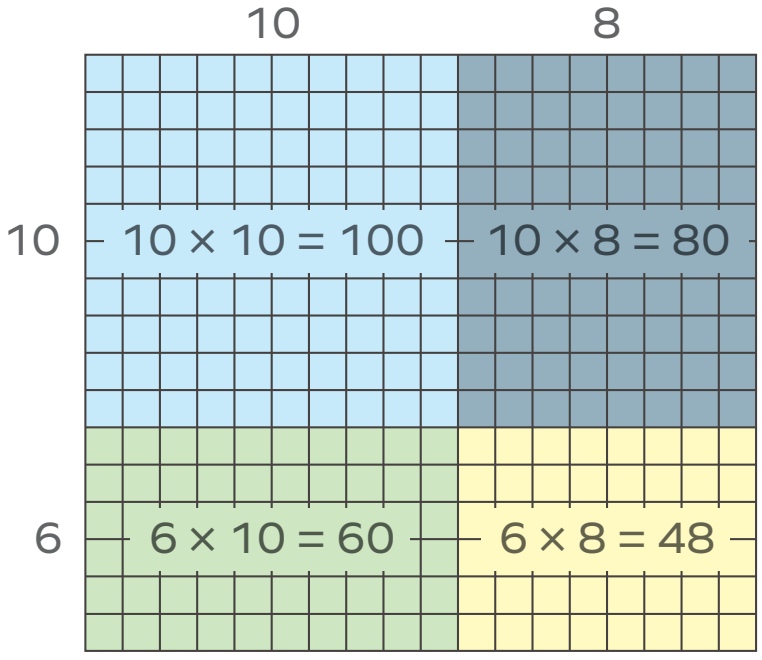
In this example, 30 and 24 are called **partial products**. They each represent the product of one factor and one digit of the other factor. Partial products get added together to find the total product.

Another way to show this uses a grid. Represent 18 on a grid and multiply it by 3.



In this lesson, we'll continue to multiply whole numbers. Rather than just finding the products in our head, we'll also learn how to multiply larger numbers using a pencil and paper!

At the beginning of this lesson, we used a grid to represent a multiplication problem. We can use a grid to multiply larger numbers too. Instead of multiplying 3 by 18, let's multiply 16 by 18. Just like the previous example, each side of the grid will represent one factor. Remember that 18 is the same as 10 + 8. And, 16 is the same as 10 + 6. Each section of the grid represents a partial product. To find the total product, add the partial products together.



$16 \times 18 = 100 + 80 + 60 + 48 = 288$

Multiplying Using Pencil and Paper

Grids are helpful for seeing how to multiply numbers together. But drawing a grid every time we want to multiply numbers isn't very practical. And our grid could get really big for large numbers! That's why we have a way to multiply numbers using pencil and paper. Just like the grid, in this method, each digit of one factor gets multiplied by each digit in the other factor. Then, the partial products get added together. Let's look at multiplying 16 and 18 together. Begin by lining up the digits on the right.

$$\begin{array}{r} 18 \\ \times\ 16 \\ \hline \end{array}$$

Begin by multiplying the ones digit in the bottom factor (6) by each digit in the top factor. Carry if you have to. You know that 6 multiplied by 8 is 48. So, write an 8 below the line and carry the 4.

$$\begin{array}{r} {\scriptstyle 4} \\ 18 \\ \times\ 16 \\ \hline 8 \end{array}$$

Then, 6 multiplied by 1 is 6. And, 6 plus the carried 4 is 10. Because there are no other places to carry to, write 10 below the line.

$$\begin{array}{r} {\scriptstyle 4} \\ 18 \\ \times\ 16 \\ \hline 108 \end{array}$$

Keep in mind...

Remember that multiplication is commutative. That means it doesn't matter which order the factors are in—the product will be the same. The easiest way to multiply it is to put the smaller number on the bottom.

Now, multiply the tens digit in the bottom factor (1) by each digit in the top factor. Write this second partial product below the first partial product. Also, because we're multiplying by a tens digit, write a zero as a placeholder in the ones place. Take a look:

$$\begin{array}{r} 18 \\ \times\ 16 \\ \hline 108 \\ 0 \end{array}$$

1 multiplied by 8 is 8. So, write an 8 below the line.

$$\begin{array}{r} 18 \\ \times\ 16 \\ \hline 108 \\ 80 \end{array}$$

Key point!

Always write a zero in the ones place of the second partial product! The zero acts as a placeholder.

Finally, 1 times 1 is 1.

$$\begin{array}{r} 18 \\ \times\ 16 \\ \hline 108 \\ 180 \end{array}$$

Now, add the partial products.

$$\begin{array}{r} 18 \\ \times\ 16 \\ \hline 108 \quad \text{partial product} \\ 180 \quad \text{partial product} \\ \hline 288 \end{array}$$

Using the grid *or* pencil and paper, the product of 16 and 18 is 288.

Example:

Multiply.

9×873

Solution:

Let's first estimate the product. Round 873 to the nearest hundred, which is 900. Then, multiply.

$9 \times 900 = 8{,}100$

Because we only rounded factors up, our estimate is an overestimate. The exact product should be less than 8,100. Let's find it. Line up the numbers vertically. Write the smaller number as the second factor.

$$\begin{array}{r} {\scriptstyle 6\ 2} \\ 873 \\ \times\ \ 9 \\ \hline 7{,}857 \end{array}$$

Our answer is reasonable because 7,857 is close to, but less than, our estimate of 8,100.

This might help!

Remember that to multiply with numbers that end in zero, first multiply the front digits. Then, count the total number of zeros in the factors and write that same number of zeros in the product.

Example:

Multiply.

28×61

Solution:

Estimate the product by rounding each factor to the nearest ten and multiplying.

$30 \times 60 = 1{,}800$

Now, line up the numbers vertically and multiply.

$$\begin{array}{r} 61 \\ \times\ 28 \\ \hline 488 \\ 1220 \\ \hline 1{,}708 \end{array}$$

Example:

Multiply.

381×40

Solution:

Line up the numbers vertically and multiply.

$$\begin{array}{r} {\scriptstyle 3} \\ 381 \\ \times\ 40 \\ \hline 000 \\ 15240 \\ \hline 15{,}240 \end{array}$$

Keep in mind...

The Zero Property of Multiplication says that zero multiplied by any number is zero. Also, a good estimate for this product would be 400×40, or 16,000. So, our answer is reasonable.

Think about it!

What about multiplying numbers that have lots of digits? A pencil or paper is definitely an option. But, you may find that a calculator is the best method for multiplying *really* big numbers. For this lesson, we'll stick to problems that can be easily answered using a paper and pencil.

We've looked at several different ways to multiply numbers. Estimation can be used to find an approximate answer when an exact product isn't needed. A grid, or the Distributive Property, can be used when the factors have only one or two digits. And, pencil and paper are useful for multiplying numbers that have two or three digits.

Let's Review!

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

- ✓ Two- and three-digit numbers can be multiplied using a paper and pencil.
- ✓ In the second partial product, make sure to write a zero in the ones place to act as a placeholder.
- ✓ Partial products are added together to find the total product.

Complete these activities.

1.42 $3 \times 18 = 3 \times (10 + 8)$ is an example of the _____ .

a. Commutative Property of Multiplication
b. Associative Property of Multiplication
c. Distributive Property
d. Identity Property of Multiplication

1.43 Multiply.

a. $\begin{array}{r} 36 \\ \times\ 7 \\ \hline \end{array}$ b. $\begin{array}{r} 877 \\ \times\ 4 \\ \hline \end{array}$ c. $\begin{array}{r} 63 \\ \times\ 45 \\ \hline \end{array}$ d. $\begin{array}{r} 70 \\ \times\ 58 \\ \hline \end{array}$ e. $\begin{array}{r} 526 \\ \times\ 19 \\ \hline \end{array}$

1.44 Multiply 19×642. What is the value of the first partial product?

a. 5,468 b. 5,768 c. 5,478 d. 5,778

1.45 Multiply 19×642. What is the value of the second partial product?

a. 952 b. 6,420 c. 6,520 d. 642

1.46 Multiply 19×642. What is the value of the total product?

a. 12,198 b. 6,420 c. 5,310 d. 11,198

Review the material in this section to prepare for the Self Test. The Self Test will check your understanding of this section. Any items you miss on this test will show you what areas you will need to restudy in order to prepare for the unit test.

SELF TEST 1: MULTIPLYING WHOLE NUMBERS

Each numbered question = 6 points

Write *true* or *false*.

1.01 _____ If all factors are rounded up before estimating, then the estimate is an underestimate.

1.02 _____ The Associative Property of Multiplication says that the way in which factors are grouped does not change the value of the product.

Circle the correct letter and answer.

1.03 Multiply. 1×15

a. 1 b. 15 c. 115 d. 0

1.04 Multiply. 36×0

a. 360 b. 36 c. 1 d. 0

1.05 How many zeros will the product of 700 and 300 have?

a. 1 b. 2 c. 3 d. 4

1.06 Katrina has 12 more car payments that are each $178. About how much money does she have left to pay?

a. $200 b. $2,000 c. $1,000 d. $4,000

1.07 Which of the following shows the Commutative Property of Multiplication?

a. $4 \times 5 = 5 \times 4$ b. $4 \times (5 + 8) = (4 \times 5) + (4 \times 8)$

c. $(3 \times 2) \times 7 = 3 \times (2 \times 7)$ d. $9 \times 7 = 63$

1.08 Brandon wants to use the Distributive Property to solve the problem $8 \times (10 + 7)$. What should be his next step?

a. $(8 \times 10) + 7$ b. $(8 + 10) \times (8 + 7)$

c. $(8 \times 10) + (8 \times 7)$ d. $10 + (8 \times 7)$

1.09 Multiply 26×107. What is the value of the first partial product?

a. 642 b. 624 c. 702 d. 602

1.010 Multiply 26×107. What is the value of the second partial product?

a. 2,240 b. 224 c. 2,140 d. 234

1.011 Multiply 26 × 107. What is the value of the final product?

a. 856 b. 2,782 c. 2,882 d. 2,742

Complete these activities.

1.012 Estimate.

91 × 47 _____

1.013 Multiply.

$$\begin{array}{r} 91 \\ \times\ 47 \\ \hline \end{array}$$

1.014 Estimate.

56 × 324 _____

1.015 Multiply.

$$\begin{array}{r} 324 \\ \times\ 56 \\ \hline \end{array}$$

Teacher check: Initials _____

Score _____ Date _____

72/90