



What Is This Module About?

How much is your weekly budget? It is probably more than ₱100. To be able to handle your money well, you should know how to count, add, subtract, multiply and divide three-digit numbers.

In *Multiplication and Division 1*, you learned how to multiply and divide numbers up to two digits. With patience, you can count, add or subtract these repeatedly. But to do this with three-digit numbers is really a waste of time. It will be more worthwhile to study multiplication and division. In this module, you will learn how to solve simple problems involving multiplication and division of three-digit numbers.

This module is made up of two lessons:

Lesson 1—*Multiplication of Three-Digit Numbers*

Lesson 2—*Division of Three-Digit Numbers*

Before studying this module, make sure you have already studied *Multiplication and Division 1*. Understanding the concepts in that module, after all, is key to understanding this module.



What Will You Learn From This Module?

After studying this module, you should be able to:

- ◆ multiply three-digit multiplicands by one-digit multipliers;
- ◆ multiply three-digit multiplicands by two-digit multipliers;
- ◆ divide three-digit numbers by one-digit divisors; and
- ◆ solve word problems using multiplication and division.



Let's See What You Already Know

Before studying this module, take this simple test first to find out how much you already know about the topics to be discussed.

A. Find the products of the following numbers. Show your solutions.

$$\begin{array}{r} 1. \quad 651 \\ \times \quad 9 \\ \hline \end{array}$$

$$\begin{array}{r} 2. \quad 981 \\ \times \quad 8 \\ \hline \end{array}$$

$$\begin{array}{r} 3. \quad 465 \\ \times 15 \\ \hline \end{array}$$

$$\begin{array}{r} 4. \quad 206 \\ \times 24 \\ \hline \end{array}$$

B. Find the quotients of the following numbers. Show your solutions.

1. $7 \overline{)574}$

2. $9 \overline{)612}$

3. $5 \overline{)585}$

4. $6 \overline{)294}$

Well, how was it? Do you think you fared well? Compare your answers with those in the *Answer Key* on pages 27 to 33 to find out.

If all your answers are correct, very good! This shows that you already know much about the topics in this module. You may still study the module to review what you already know. Who knows, you might learn a few more new things as well.

If you got a low score, don't feel bad. This only means that this module is for you. It will help you understand some important concepts that you can apply in your daily life. If you study this module carefully, you will learn the answers to all the items in the test and a lot more! Are you ready?

You may now go to the next page to begin Lesson 1.

Multiplication of Three-Digit Numbers

There are situations in the market wherein it would not be wise to do repeated addition. It can be very difficult especially if you do not have a pen and a piece of paper or a calculator with you. There is an easier way to find the total cost of several units of the same item after all. It would take you less time and effort if you use multiplication instead. To learn more about this operation, read on.



Let's Read

Mang Pilo harvested eggplants from the vegetable plots in his backyard. He filled each basket with 240 eggplants. After harvesting all the eggplants, he counted all the baskets he was able to fill. He found out that there were eight baskets in all with 240 eggplants each.

To know how many eggplants he harvested in all, he added:

$$\begin{array}{r}
 3 \\
 240 \\
 240 \\
 240 \\
 240 \\
 240 \\
 240 \\
 240 \\
 240 \\
 240 \\
 + 240 \\
 \hline
 \mathbf{1920}
 \end{array}$$

Mang Pilo was, therefore, able to harvest 1920 eggplants in all.



Let's Think About This

Adding the contents of each basket is easier to do than counting all the eggplants that Mang Pilo harvested, right? But as you have learned in *Multiplication and Division 1*, there is an even easier way of doing this. If Mang Pilo knew how to multiply, he could skip doing repeated addition. Do you want to learn more about this? Read on then.



Let's Study and Analyze

There are two ways by which you can go about multiplication. You can use either the expanded form method or the short method. Let us discuss these two methods in more detail.

Using the given in Mang Pilo's problem, let us find out how many eggplants he harvested in all using the expanded form method first.

We know that Mang Pilo was able to harvest eight baskets with 240 eggplants each. Knowing this, we then have to multiply 8 by 240 to get the total number of eggplants.

But let us first review the mathematical terms we used in multiplying given numbers from the previous module.

240 = the first number (usually the larger one) is the **multiplicand**, the number which we will add to itself n times (depending on the multiplier)

8 = the second number (usually the smaller one) is the **multiplier**, the number of times we will add the multiplicand to itself

Keep in mind though that both the multiplicand and multiplier are **factors** or numbers that we multiply to get a **product**, the answer you get in multiplication.

STEP 1 Write the given numbers in expanded form.

$$240 = 200 + 40 + 0$$

$$\times 8 = \times \underline{\hspace{2cm}} 8$$

STEP 2 Multiply the multiplier, 8, by 0 (ones digit of the multiplicand).

$$240 = 200 + 40 + 0$$

$$\times 8 = \times \underline{\hspace{2cm}} 8$$

$$0 = 8 \times 0$$

STEP 3 Multiply 8 by 40 (tens digit).

$$240 = 200 + 40 + 0$$

$$\times 8 = \times \underline{\hspace{2cm}} 8$$

$$0 = 8 \times 0$$

$$320 = 8 \times 40$$

STEP 4 Multiply 8 by 200 (hundreds digit).

$$240 = 200 + 40 + 0$$

$$\begin{array}{r} \times 8 \\ \hline \end{array}$$

$$0 = 8 \times 0$$

$$320 = 8 \times 40$$

$$1600 = 8 \times 200$$

STEP 5 Add the partial products to get the final product.

$$240 = 200 + 40 + 0$$

$$\begin{array}{r} \times 8 \\ \hline \end{array}$$

$$0 = 8 \times 0$$

$$320 = 8 \times 40$$

$$+ 1600 = 8 \times 200$$

$$\hline 1920$$

Notice that we got the same answer as when Mang Pilo repeatedly added 240 to itself eight times. So you see how easy it is to do multiplication than repeated addition.

Now let us try using the short method on the same example.

STEP 1 Write the given numbers that you are asked to multiply.

$$240$$

$$\begin{array}{r} \times 8 \\ \hline \end{array}$$

STEP 2 Multiply the multiplier, 8, by the ones digit of the multiplicand, 0, first.

$$\begin{array}{r} 240 \\ \times 8 \\ \hline \end{array}$$

0—Since any number multiplied by 0 is equal to 0.

STEP 3 Multiply 8 by the tens digit, 4.

$$\begin{array}{r} 3 \\ 240 \\ \times 8 \\ \hline \end{array}$$

20— $8 \times 4 = 32$. Write 2 below the tens digit, 4, then regroup 3 to the hundreds place.

STEP 4 Multiply 8 by the hundreds digit, 2.

$$\begin{array}{r} 3 \\ 240 \\ \times 8 \\ \hline \end{array}$$

1920— $8 \times 2 = 16$. Add the number you regrouped to the hundreds place earlier, 3 to the product, 16. So, you will get $16 + 3 = 19$. You will then get the final answer, 1920 when you multiply 240 by 8.

Notice that we still got the same answer, 1920, just like when we applied repeated addition and used the expanded form method in multiplying the given numbers. Now, that wasn't so hard, was it? You may choose which of the two methods you prefer to use.



Let's Try This

Multiply the following sets of numbers using the methods indicated. Show your solutions.

1. 436
 $\times 2$ using the expanded form method

2. 328
 $\times 3$ using the short method

Compare your answers with those in the *Answer Key* on page 33.



Let's Study and Analyze

Now that you know how to multiply three-digit multiplicands by one-digit multipliers, you can go one step further. Let us now study how to multiply three-digit multiplicands by two-digit multipliers.

Let us first use the expanded form method to get the product of 123 and 12.

STEP 1 Express the given numbers in expanded form.

$$\begin{array}{l} 123 = 100 + 20 + 3 \\ \times 12 = \times \quad 10 + 2 \end{array}$$

STEP 5 Add the partial products.

$$123 = 100 + 20 + 3$$

$$\begin{array}{r} \times 12 = \times \quad \quad \quad 10 \\ \quad \quad \quad \quad \quad \quad 30 = 10 \times 3 \\ \quad \quad \quad \quad \quad \quad 200 = 10 \times 20 \\ \quad \quad \quad \quad \quad \quad + 1000 = 10 \times 100 \\ \hline \quad \quad \quad \quad \quad 1230 \text{---product of multiplier 10} \end{array}$$

STEP 6 To get the final answer, add the products of the two multipliers.

$$\begin{array}{r} 1230 \\ + 246 \\ \hline 1476 \end{array}$$

Therefore, the product of 123 and 12 is 1476.

Using the short method, we will have:

STEP 1 Write the given numbers.

$$\begin{array}{r} 123 \\ \times 12 \\ \hline \end{array}$$

STEP 2 Multiply each of the digits of the multiplicand, 123, by the ones digit of the multiplier, 2, from right to left. Make sure you align each of the digits of your answer according to its place value.

$$\begin{array}{r} 123 \\ \times 12 \\ \hline 246 \end{array}$$

STEP 3 Multiply each of the digits of the multiplicand by the tens digit of the multiplier, 1. Make sure you align each of the digits of your answer according to its place value.

$$\begin{array}{r} 123 \\ \times 12 \\ \hline 246 \\ 123 \end{array}$$

STEP 4 Add the partial products together to get the final answer.

$$\begin{array}{r} 123 \\ \times 12 \\ \hline 246 \\ +123 \\ \hline 1476 \end{array}$$

Notice that we got the same answer as when we used the expanded form method.



Let's Try This

Multiply the following sets of numbers using the methods indicated. Show your solutions.

1. $\begin{array}{r} 345 \\ \times 23 \end{array}$ using the expanded form method
2. $\begin{array}{r} 576 \\ \times 14 \end{array}$ using the short method

Compare your answers with those in the *Answer Key* on page 34.

Let's See What You Have Learned

Solve the following problems. Show your solutions.

1. Aling Olga bought six T-shirts for her twin sons. Each shirt costs ₱198. How much did the shirts cost in all?



2. Aling Toyang sells boiled eggs at the cockpit. She bought 13 trays of eggs. Each tray costs ₱165. How much did the eggs cost in all.



$$\begin{array}{r} 3. \quad 277 \\ \times 8 \\ \hline \end{array}$$

$$\begin{array}{r} 4. \quad 228 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 5. \quad 169 \\ \times 35 \\ \hline \end{array}$$

Compare your answers with those in the *Answer Key* on pages 35 to 38.



Let's Remember

- ◆ Multiplication is the process or operation of increasing a number several times. It is the shortcut for repeated addition.
- ◆ The multiplicand is the number that we add to itself n times (depending on the multiplier).
- ◆ The multiplier is the number that indicates the number of times we add the multiplicand to itself.
- ◆ The multiplicand and the multiplier are called factors.
- ◆ The number that results from multiplying two numbers by each other is called the product.
- ◆ When adding partial products to each other, make sure that the digits having the same place value are aligned first.

Division of Three-Digit Numbers

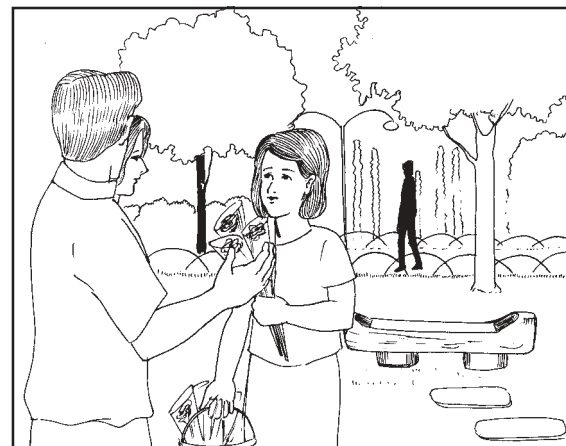
In the previous lesson, you learned how to multiply three-digit numbers. With the knowledge you gained from the lesson, you can now skip doing repeated addition. Division is the shortcut for repeated subtraction. By doing division instead of repeated subtraction, you can make working with big (three-digit) numbers easy. Are you ready to learn how? Read on then.



Let's Read

Marita sells roses at the park. Every day, she gets 12 dozen roses from her dealer. She, therefore, has 144 roses each day. She wants to find out how many sets of three roses there are in 12 dozens.

$$\begin{array}{r}
 144 \\
 \underline{- 3} \\
 141 \\
 \underline{- 3} \\
 138 \\
 \underline{- 3} \\
 135 \\
 \underline{- 3} \\
 132 \\
 \underline{- 3} \\
 129 \text{ and so on and forth.}
 \end{array}$$



Every time someone buys a set of roses, Marita subtracts it from the total number of roses. She can continue to subtract until all her roses are sold before she can say how many sets of threes make up 12 dozens or 144 roses.



Let's Think About This

What does this mean then? This means that Marita may not be able to determine the answer to her question unless she sells all the roses. But if she knew how to divide, her task would be so much easier, don't you think so?



Let's Study and Analyze

You learned about division in the previous module. You learned how to divide two-digit dividends by one-digit divisors. In this lesson, you will learn how to divide three-digit dividends by one-digit divisors.

Using division, for example, find out how many 3s make up 144. How?

First, let us review the terms we use in division.

144 = the **dividend**, the number we divide n times (depending on the divisor)

3 = the **divisor**, the number that divides the dividend

The answer you get to any division problem is called the **quotient**.

Now we are ready to solve Marita's problem.

STEP 1 Consider the leftmost digit of the dividend. How many 3s are there in 1? Notice that you cannot divide a smaller number by a bigger one.

$$3 \overline{)144}$$

STEP 2 So, take the next digit together with the first. You will then have the number, 14. How many 3s are there in 14? Think of a number which when multiplied by 3 gives you a number close if not equal in value to 14. Write this number on top of 14. Make sure they are aligned according to their respective place values.

$$\begin{array}{r} 4 \\ 3 \overline{)144} \end{array}$$

STEP 3 That number is 4 because $4 \times 3 = 12$. Multiply the quotient you got, 4, by 3. Subtract the answer from 14. Write the difference below 12 making sure that they are aligned properly.

$$\begin{array}{r} 4 \\ 3 \overline{)144} \\ -12 \\ \hline 2 \end{array}$$

STEP 4 Bring down the last digit of the dividend, 4. You will then have the next dividend, 24.

$$\begin{array}{r} 4 \\ 3 \overline{)144} \\ -12 \\ \hline 24 \end{array}$$

STEP 5 How many 3s are there in 24? Think of a number which when multiplied by 3 will give you 24. Write this number as the next part of the quotient.

$$\begin{array}{r} 48 \\ 3 \overline{)144} \\ -12 \\ \hline 24 \end{array}$$

STEP 6 That number is $\boxed{8}$ because $8 \times 3 = 24$. Multiply the quotient you got, 8, by 3. Subtract the answer from 24. Write the difference below 24 making sure that they are properly aligned.

$$\begin{array}{r} 48 \\ 3 \overline{)144} \\ \underline{-12} \\ 24 \\ \underline{-24} \\ 0 \end{array}$$

Since there is no more remainder, you can now stop and identify your final answer. That is, there are 48 sets of three roses each in 12 dozens.

To check if our answer is correct, you can multiply the quotient by the divisor. If you get an answer similar to the dividend, then your answer is correct!

$$\begin{array}{r} 48 \\ \times 3 \\ \hline 144 \end{array}$$

Notice that we got an answer similar to our dividend. The quotient we got is therefore correct. Now, that wasn't so hard, was it?



Let's Solve This Problem

Try solving the following problem on your own by following the steps indicated below.

Divide 455 by 5.

STEP 1 Consider the leftmost digit of the dividend. How many 5s are there in 4? Notice that you cannot divide a smaller number by a bigger one.

$$5 \overline{)455}$$

STEP 2 So, take the next digit together with the first. You will then have the number, 45. How many 5s are there in 45? Think of a number which when multiplied by 5 gives you a number close if not equal in value to 45. Write this number on top of 45. Make sure they are aligned according to their respective place values.

STEP 3 Your answer should be 9 because $9 \times 5 = 45$. Multiply the quotient you got, 9, by 5. Subtract the answer from 45. Write the difference below 45 making sure that they are aligned properly.

STEP 4 Bring down the last digit of the dividend, 5. You will then have the next dividend, 5.

STEP 5 How many 5s are there in 5? Think of a number which when multiplied by 5 will give you 5. Write this number as the next part of the quotient.

STEP 6 That number is 1 because $\boxed{1} \times 5 = 5$. Multiply the quotient you got, 1, by 5. Subtract the answer from 5. Write the difference below 5 making sure that they are properly aligned.

Since there is no more remainder, you can now stop and identify your final answer. Your answer should be 91. Did you get it right?



Let's Review

Now, let us try dividing 282 by 6 without showing each of the steps we discussed earlier.

$$\begin{array}{r} 6 \overline{)282} \end{array}$$

Since dividing 2 by 6 is not possible, let us consider the next digit of the dividend, 8. Then divide 28 by 6.

$$\begin{array}{r} 4 \\ 6 \overline{)282} \end{array}$$

Multiply the partial quotient, 4, by 6. Then subtract the answer from 28 making sure that they are properly aligned.

$$\begin{array}{r} 4 \\ 6 \overline{)282} \\ \underline{-24} \\ 42 \end{array}$$

Bring down the last digit of the dividend. You will then have 42 as the next number to be divided by 6. Write the answer beside the first partial quotient you got earlier, 4.

$$\begin{array}{r} 47 \\ 6 \overline{)282} \\ \underline{-24} \\ 42 \\ \underline{-42} \\ 0 \end{array}$$

Multiply the partial quotient you got, 7, by 6. Then subtract the answer from 42.

You can stop dividing now. Check your answer by multiplying 47 by 6.

$$\begin{array}{r} 4 \\ 47 \\ \times 6 \\ \hline 282 \end{array}$$

Since you got an answer similar to your original dividend, the final quotient you arrived at, 47, is therefore correct.



Let's Try This

Divide the following sets of numbers. Show your solutions.

1. $9 \overline{)891}$

2. $8 \overline{)744}$

Compare your answers with those in the *Answer Key* on page 38.



Let's See What You Have Learned

Solve the following problems. Show your solutions.

1. If Simon has 123 marbles and he wants to divide them into three so he and his two friends will have the same number of marbles, how many marbles would each of them have?

2. There are 240 employees in Timmy's office. If he plans to give each of his officemates a slice of pizza as a treat on his birthday, how many pizzas should he buy if there are eight slices in each pizza?

3. $5\overline{)680}$

4. $7\overline{)504}$

5. $6\overline{)786}$

Compare your answers with those in the *Answer Key* on pages 39 and 40.



Let's Remember

- ◆ Division is the process or operation of dividing numbers. Its purpose is to find out how many times a number is contained in a bigger number. It is the shortcut for repeated subtraction.
- ◆ The dividend is the number being divided. It is the biggest number in a division sentence.
- ◆ The divisor is the number that divides the dividend.
- ◆ The number that we get after division is called the quotient. Just like the divisor, it is always smaller than the dividend.
- ◆ Division is the inverse of multiplication. So, to check if you got the right quotient, you may multiply it by the divisor. If you get an answer similar to the dividend, then your answer is correct.

You have reached the end of this module. Congratulations! Your perseverance and eagerness to learn have paid off. Did you learn a lot from this module? Did you have fun reading it?

The following is a summary of the module's main points to help you remember them better.



Let's Sum Up

This module tells us that:

- ◆ Multiplication is the process or operation of increasing a number several times. It is the shortcut for repeated addition.
- ◆ The multiplicand is the number that we add to itself n times (depending on the multiplier).
- ◆ The multiplier is the number that indicates the number of times we add the multiplicand to itself.
- ◆ The multiplicand and the multiplier are called factors.
- ◆ The number that results from multiplying two numbers is called the product.

- ◆ When adding partial products to each other, make sure that the digits having the same place value are aligned first.
- ◆ Division is the process or operation of dividing numbers. Its purpose is to find out how many times a number is contained in a bigger number. It is the shortcut for repeated subtraction.
- ◆ The dividend is the number being divided. It is the biggest number in a division sentence.
- ◆ The divisor is the number that divides the dividend.
- ◆ The number that we get after division is called the quotient. Just like the divisor, it is always smaller than the dividend.
- ◆ Division is the inverse of multiplication. So, to check if you got the right quotient, you may multiply it by the divisor. If you get an answer similar to the dividend, then your answer is correct.



What Have You Learned?

Solve the following word problems. Show your solutions.

1. Maribel bought three dresses for her goddaughters on Christmas. Each skirt costs ₱285. How much did she spend on all the skirts? (You may use any method for this.)



Answer Key

A. Let's See What You Already Know (pages 2–3)

$$\begin{array}{r} \text{A. 1. } 651 \\ \times 9 \\ \hline \end{array}$$

Using the expanded form method:

STEP 1 Write the given numbers in expanded form.

$$\begin{array}{r} 651 = 600 + 50 + 1 \\ \times 9 = \times \quad \quad \quad 9 \\ \hline \end{array}$$

STEP 2 Multiply the multiplier, 9, by 1 (ones digit of the multiplicand).

$$\begin{array}{r} 651 = 600 + 50 + 1 \\ \times 9 = \times \quad \quad \quad 9 \\ \hline 9 = 9 \times 1 \end{array}$$

STEP 3 Multiply 9 by 50 (tens digit).

$$\begin{array}{r} 651 = 600 + 50 + 1 \\ \times 9 = \times \quad \quad \quad 9 \\ \hline 9 = 9 \times 1 \\ 450 = 9 \times 50 \end{array}$$

STEP 4 Multiply 9 by 600 (hundreds digit).

$$\begin{array}{r} 651 = 600 + 50 + 1 \\ \times 9 = \times \quad \quad \quad 9 \\ \hline 9 = 9 \times 1 \\ 450 = 9 \times 50 \\ 5400 = 9 \times 600 \end{array}$$

STEP 5 Add the partial products to get the final product.

$$\begin{array}{r} 651 = 600 + 50 + 1 \\ \times 9 = \times \quad \quad \quad 9 \\ \hline 9 = 9 \times 1 \\ 450 = 9 \times 50 \\ + 5400 = 9 \times 600 \\ \hline 5859 \end{array}$$

Therefore, $651 \times 9 = 5859$.

Using the short method:

STEP 1 Write the given numbers that you are asked to multiply.

$$\begin{array}{r} 651 \\ \times 9 \\ \hline \end{array}$$

STEP 2 Multiply the multiplier, 9, by the ones digit of the multiplicand, 1, first.

$$\begin{array}{r} 651 \\ \times 9 \\ \hline \end{array}$$

9—Since any number multiplied by 1 is equal to itself.

STEP 3 Multiply 9 by the tens digit, 5.

$$\begin{array}{r} 4 \\ 651 \\ \times 9 \\ \hline \end{array}$$

59— $9 \times 5 = 45$. Write 5 below the tens digit, 5, then regroup 4 to the hundreds place.

STEP 4 Multiply 9 by the hundreds digit, 6.

$$\begin{array}{r} 4 \\ 651 \\ \times 9 \\ \hline \end{array}$$

5859— $9 \times 6 = 54$. Add the number you regrouped to the hundreds place earlier, 4, to the product, 54. So, you will get $54 + 4 = 58$. You will then get the final answer, 5859, when you multiply 651 by 9.

2.
$$\begin{array}{r} 981 \\ \times 8 \\ \hline \end{array}$$

Using the expanded form method:

$$\begin{array}{r} 981 = 900 + 80 + 1 \\ \times 8 = \times \underline{\hspace{2cm}8} \\ 8 = 8 \times 1 \\ 640 = 8 \times 80 \\ + 7200 = 8 \times 900 \\ \hline 7848 \end{array}$$

Using the short method:

$$\begin{array}{r} 6 \\ 981 \\ \times 8 \\ \hline 7848 \end{array}$$

$$3. \quad \begin{array}{r} 465 \\ \times 5 \\ \hline \end{array}$$

Using the expanded form method:

$$\begin{array}{r} 465 = 400 + 60 + 5 \\ \times 15 = \times \underline{\quad 5} \\ \quad 25 = 5 \times 5 \\ \quad 300 = 5 \times 60 \\ \quad \underline{+ 2000 = 5 \times 400} \\ \quad 2325 \end{array}$$

$$\begin{array}{r} 465 = 400 + 60 + 5 \\ \times 15 = \times \underline{\quad 10} \\ \quad 50 = 10 \times 5 \\ \quad 600 = 10 \times 60 \\ \quad \underline{+ 4000 = 10 \times 400} \\ \quad 4650 \end{array}$$

$$\begin{array}{r} 2325 \\ + 4650 \\ \hline 6975 \end{array}$$

Using the short method:

$$\begin{array}{r} 2 \\ 465 \\ \times 15 \\ \hline 2325 \\ + 465 \\ \hline 6975 \end{array}$$

$$4. \quad \begin{array}{r} 206 \\ \times 24 \\ \hline \end{array}$$

Using the expanded form method:

$$\begin{array}{r} 206 = 200 + 0 + 6 \\ \times 24 = \times \underline{\quad\quad\quad 4} \\ \quad\quad\quad 24 = 4 \times 6 \\ \quad\quad\quad 0 = 4 \times 0 \\ \quad\quad\quad \underline{+ 800 = 4 \times 200} \\ \quad\quad\quad 824 \end{array}$$

$$\begin{array}{r} 206 = 200 + 0 + 6 \\ \times 20 = \times \underline{\quad\quad\quad 20} \\ \quad\quad\quad 120 = 20 \times 6 \\ \quad\quad\quad 0 = 20 \times 0 \\ \quad\quad\quad \underline{+ 4000 = 20 \times 200} \\ \quad\quad\quad 4120 \end{array}$$

$$\begin{array}{r} 4120 \\ + 824 \\ \hline 4944 \end{array}$$

Using the short method:

$$\begin{array}{r} 12 \\ 206 \\ \times 24 \\ \hline 824 \\ + 412 \\ \hline 4944 \end{array}$$

B. 1. $7 \overline{)574}$

How many 7s are there in 5? None, so the answer is 0. You don't have to write this anymore. Move on to the next digit, 7. Then ask, how many 7s there are in 57. Write the answer above 7. There are eight 7s in 57 because $8 \times 7 = 56$. Subtract 56 from 57. Write the answer below. Then bring down the next digit, 4.

$$\begin{array}{r} 8 \\ 7 \overline{)574} \\ - 56 \\ \hline 14 \end{array}$$

Ask, how many 7s are there in 14. Write the answer above the digit, 4. Then subtract the answer from 14.

$$\begin{array}{r} 82 \\ 7 \overline{)574} \\ - 56 \\ \hline 14 \\ - 14 \\ \hline 0 \end{array}$$

2. $9 \overline{)612}$

$$\begin{array}{r} 68 \\ 9 \overline{)612} \\ - 54 \\ \hline 72 \\ - 72 \\ \hline 0 \end{array}$$

$$\begin{array}{r}
 117 \\
 5 \overline{)585} \\
 \underline{-5} \\
 8 \\
 \underline{-5} \\
 35 \\
 \underline{-35} \\
 0
 \end{array}$$

$$\begin{array}{r}
 49 \\
 6 \overline{)294} \\
 \underline{-24} \\
 54 \\
 \underline{-54} \\
 0
 \end{array}$$

B. Lesson 1

Let's Try This (page 4)

$$\begin{array}{r}
 1. \quad 436 = 400 + 30 + 6 \\
 \quad \times 2 = \times \underline{2} \\
 \qquad \qquad \qquad 12 = 2 \times 6 \\
 \qquad \qquad \qquad 60 = 2 \times 30 \\
 \qquad \qquad \qquad \underline{+ 800 = 2 \times 400} \\
 \qquad \qquad \qquad 872
 \end{array}$$

$$\begin{array}{r}
 2. \quad 2 \\
 \quad 328 \\
 \quad \times 3 \\
 \quad \hline
 \quad 984
 \end{array}$$

Let's Try This (page 12)

1. $345 = 300 + 40 + 5$
 $\times 23 = \times \underline{\quad\quad\quad} 3$

$$\begin{aligned} 15 &= 3 \times 5 \\ 120 &= 3 \times 40 \\ + 900 &= 3 \times 300 \\ \hline 1035 &\text{—product of multiplier 3} \end{aligned}$$

$$\begin{array}{r} 300 + 40 + 5 \\ \times \quad \quad \quad 20 \\ \hline \end{array}$$

$$\begin{aligned} 100 &= 20 \times 5 \\ 800 &= 20 \times 40 \\ + 6000 &= 20 \times 300 \\ \hline 6900 &\text{—product of multiplier 20} \end{aligned}$$

$$\begin{array}{r} 1035 \\ + 6900 \\ \hline 7935 \end{array}$$

2. $\begin{array}{r} 32 \\ 576 \\ \times 14 \\ \hline 2304 \\ + 576 \\ \hline 8064 \end{array}$

Let's See What You Have Learned (pages 13–14)

1. 198
× 6

Using the expanded form method:

$$\begin{aligned} 198 &= 100 + 90 + 8 \\ \times 6 &= \times \underline{\quad\quad\quad 6} \\ &\quad\quad\quad 48 = 6 \times 8 \\ &\quad\quad\quad 540 = 6 \times 90 \\ &\quad\quad\quad + \underline{600 = 6 \times 100} \\ &\quad\quad\quad 1188 \end{aligned}$$

Using the short method:

$$\begin{array}{r} 54 \\ 198 \\ \times 6 \\ \hline 1188 \end{array}$$

2. 165
×13

Using the expanded form method:

$$\begin{aligned} 165 &= 100 + 60 + 5 \\ \times 13 &= \times \underline{\quad\quad\quad 3} \\ &\quad\quad\quad 15 = 3 \times 5 \\ &\quad\quad\quad 180 = 3 \times 60 \\ &\quad\quad\quad + \underline{300 = 3 \times 300} \\ &\quad\quad\quad 495\text{—product of multiplier 3} \end{aligned}$$

$$\begin{array}{r}
 165 = 100 + 60 + 5 \\
 \times 13 = \times \underline{\quad\quad\quad 10} \\
 \quad\quad\quad 50 = 10 \times 5 \\
 \quad\quad\quad 600 = 10 \times 60 \\
 \quad\quad \underline{+1000} = 10 \times 100 \\
 \quad\quad 1650 \text{—product of multiplier 1}
 \end{array}$$

Add the products of the two multipliers.

$$\begin{array}{r}
 1 \\
 1650 \\
 + \underline{495} \\
 \hline
 2145
 \end{array}$$

Using the short method:

$$\begin{array}{r}
 1 \\
 165 \\
 \times \underline{13} \\
 1495 \\
 165 \\
 \hline
 2145
 \end{array}$$

3.
$$\begin{array}{r}
 277 \\
 \times 8 \\
 \hline
 \end{array}$$

Using the expanded form method:

$$\begin{array}{r}
 277 = 200 + 70 + 7 \\
 \times 8 = \times \underline{\quad\quad\quad 8} \\
 \quad\quad\quad 56 = 8 \times 7 \\
 \quad\quad\quad 560 = 8 \times 70 \\
 \quad\quad \underline{+1600} = 8 \times 200 \\
 \quad\quad 2216
 \end{array}$$

Using the short method:

$$\begin{array}{r} 65 \\ 277 \\ \times 8 \\ \hline 2216 \end{array}$$

4. $\begin{array}{r} 228 \\ \times 4 \\ \hline \end{array}$

Using the expanded form method:

$$\begin{array}{r} 228 = 200 + 20 + 8 \\ \times 4 = \times \underline{\hspace{2cm} 4} \\ 32 = 4 \times 8 \\ 80 = 4 \times 20 \\ + 800 = 4 \times 200 \\ \hline 912 \end{array}$$

Using the short method:

$$\begin{array}{r} 13 \\ 228 \\ \times 4 \\ \hline 912 \end{array}$$

5. $\begin{array}{r} 169 \\ \times 35 \\ \hline \end{array}$

Using the expanded form method:

$$\begin{array}{r} 169 = 100 + 60 + 9 \\ \times 35 = \times \underline{\hspace{2cm} 5} \\ 45 = 5 \times 9 \\ 300 = 5 \times 60 \\ + 500 = 5 \times 100 \\ \hline 845 \text{—product of multiplier 5} \end{array}$$

$$\begin{array}{r} 100 + 60 + 9 \\ \times \underline{\hspace{2cm} 30} \\ 270 = 30 \times 9 \\ 1800 = 30 \times 60 \\ 3000 = 30 \times 100 \\ \hline 5070 \text{—product of multiplier 30} \end{array}$$

Add the products of the two multipliers.

$$\begin{array}{r} 1 \\ 5070 \\ + 845 \\ \hline 5915 \end{array}$$

Using the short method:

$$\begin{array}{r} 22 \\ 34 \\ 169 \\ \times 35 \\ 845 \\ + 507 \\ \hline 5915 \end{array}$$

C. Lesson 2

Let's Try This (pages 21–22)

1.

$$\begin{array}{r} 99 \\ 9 \overline{)891} \\ \underline{-81} \\ 81 \\ \underline{-81} \\ 0 \end{array}$$

2.

$$\begin{array}{r} 93 \\ 8 \overline{)744} \\ \underline{-72} \\ 24 \\ \underline{-24} \\ 0 \end{array}$$

Let's See What You Have Learned (pages 22–23)

$$\begin{array}{r} 41 \\ 3 \overline{)123} \\ \underline{-12} \\ 3 \\ \underline{-3} \\ 0 \end{array}$$

$$\begin{array}{r} 30 \\ 8 \overline{)240} \\ \underline{-24} \\ 0 \\ \underline{-0} \\ 0 \end{array}$$

$$\begin{array}{r} 136 \\ 5 \overline{)680} \\ \underline{-5} \\ 18 \\ \underline{-15} \\ 30 \\ \underline{-30} \\ 0 \end{array}$$

$$\begin{array}{r} 72 \\ 7 \overline{)504} \\ \underline{-49} \\ 14 \\ \underline{-14} \\ 0 \end{array}$$

$$\begin{array}{r}
 5. \quad \begin{array}{r}
 131 \\
 6 \overline{)786} \\
 \underline{-6} \\
 18 \\
 \underline{-18} \\
 6 \\
 \underline{-6} \\
 0
 \end{array}
 \end{array}$$

D. What Have You Learned? (pages 25–26)

$$\begin{array}{r}
 1. \quad \text{P}285 \\
 \times \quad 3 \\
 \hline
 \end{array}$$

Using the expanded form method:

$$\begin{array}{r}
 \text{P}285 = 200 + 80 + 5 \\
 \times \quad 3 = \times 3 \\
 15 = 3 \times 5 \\
 240 = 3 \times 80 \\
 \underline{+ 600} = 3 \times 200 \\
 \text{P}855
 \end{array}$$

Using the short method:

$$\begin{array}{r}
 21 \\
 \text{P}285 \\
 \times \quad 3 \\
 \hline
 \text{P}855
 \end{array}$$

Therefore, Maribel spent ₱855 in all.

$$2. \quad \begin{array}{r} 275 \\ \times 11 \\ \hline \end{array}$$

Using the expanded form method:

$$\begin{array}{r} 275 = 200 + 70 + 5 \\ \times 11 = \times \underline{\quad\quad\quad 1} \\ \quad\quad\quad 5 = 1 \times 5 \\ \quad\quad\quad 70 = 1 \times 70 \\ \quad\quad\quad \underline{+ 200 = 1 \times 200} \\ \quad\quad\quad 275 \end{array}$$

$$\begin{array}{r} 275 = 200 + 70 + 5 \\ \times 11 = \times \underline{\quad\quad\quad 10} \\ \quad\quad\quad 50 = 10 \times 5 \\ \quad\quad\quad 700 = 10 \times 70 \\ \quad\quad\quad \underline{+ 2000 = 10 \times 200} \\ \quad\quad\quad 2750 \end{array}$$

$$\begin{array}{r} 11 \\ 2750 \\ \underline{+ 275} \\ 3025 \end{array}$$

Therefore, Mang Manuel earns ₱3025 a day.

Using the short method:

$$\begin{array}{r} 275 \\ \times 11 \\ \hline \overset{1}{2}75 \\ + \overset{1}{2}75 \\ \hline 3025 \end{array}$$

$$\begin{array}{r}
 3. \quad \quad \quad 35 \\
 5 \overline{)175} \\
 \underline{-15} \\
 25 \\
 \underline{-25} \\
 0
 \end{array}$$

Therefore, each member of Norman's group sold 35 raffle tickets.

$$\begin{array}{r}
 4. \quad \quad \quad 65 \\
 5 \overline{)325} \\
 \underline{-30} \\
 25 \\
 \underline{-25} \\
 0
 \end{array}$$

Therefore, each T-shirt costs ₱65.



References

South Australia Education Department. *Mathematics Teacher Support Material: Module 13*. South Australia: D.J. Woolman, 1982.

South Australia Education Department. *Mathematics Teacher Support Material: Module 19*. South Australia: D.J. Woolman, 1982.