



What Is This Module About?

How many eggs do you usually buy at a time? How do you find out how much all the eggs that you bought cost?

Or do you buy eggs by dozens? If you sell the eggs, how would you know how much each egg costs?

There are some problems that you cannot solve even if you know how to count, add or subtract. You need to know how to multiply and divide numbers too.

In this module, you will learn how to multiply and divide numbers. You will also learn how to solve simple problems using multiplication and division.

This module is made up of two lessons:

Lesson 1—*Multiplication*

Lesson 2—*Division*

But before studying this module, make sure that you've already studied the module entitled, *Addition and Subtraction*.



What Will You Learn From This Module?

After studying this module, you should be able to:

- ◆ multiply two-digit numbers by one-to-two-digit multipliers;
- ◆ divide two-digit numbers by one-digit divisors; and
- ◆ solve simple problems using multiplication and division.



Let's See What You Already Know

Before studying this module, take this simple test first to find out what you already know about the topic.

A. Multiply the following:

1. $3 \times 6 =$ _____

6. $9 \times 3 =$ _____

2. $7 \times 8 =$ _____

7. $8 \times 2 =$ _____

3. $2 \times 9 =$ _____

8. $4 \times 4 =$ _____

4. $5 \times 0 =$ _____

9. $6 \times 9 =$ _____

5. $6 \times 1 =$ _____

10. $7 \times 7 =$ _____

B. Divide the following:

1. $56 \div 8 =$ _____

6. $40 \div 8 =$ _____

2. $9 \div 9 =$ _____

7. $36 \div 6 =$ _____

3. $8 \div 1 =$ _____

8. $24 \div 3 =$ _____

4. $45 \div 5 =$ _____

9. $35 \div 7 =$ _____

5. $72 \div 9 =$ _____

10. $28 \div 4 =$ _____

Compare your answers with those in the *Answer Key* on pages 34 and 35 to find out.

Well, how was it? Do you think you fared well? 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 items in the test and a lot more! Are you ready?

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

Multiplication

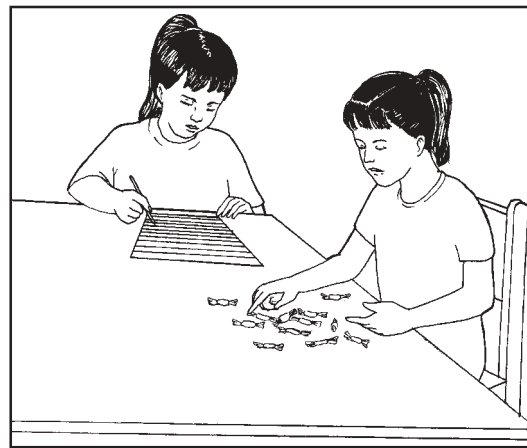
Are you familiar with the expression “times”? What comes to your mind when you hear it? If something is *multiplied* several *times*, does it increase or decrease? Read on to find out.



Let's Read

Aling Belen brought *pasalubong* for her twin daughters. She brought them three packs of ube candies. Each pack has six candies. To find out how many candies they have in all, one of the twins opened each pack and counted all the candies. The other twin, on the other hand, added:

$$\begin{array}{r} 6 \\ 6 \\ + 6 \\ \hline 18 \end{array}$$

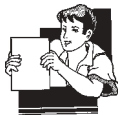


Although they used different methods, the twins got the same answer.



Let's Think About This

Which method do you find easier? Adding the numbers is a shorter method compared to counting each item, right? But do you know that there is a method which is even shorter than addition? You can save time using this method, especially when dealing with bigger numbers. To learn more about it, continue reading.



Let's Learn

Recall the story of the twins. One of them used addition.

$$6 + 6 + 6 = 18$$

How many 6s are there? There are three 6s, right? The addends are all the same. We can find the same answer in a shorter way using another method. Do you know what multiplication is? **Multiplication** means increasing a number several times. It is just the shortcut of repeated addition.

6		6	multiplicand
6	←————→	6	multiplier
+ 6		× 3	product
18		18	product

} factors

We read the given equation as: 6 multiplied by 3 is equal to 18. We may also read it as 6: times 3 equals 18.

A multiplication sentence has three parts, namely: multiplicand, multiplier and product. The **multiplicand** is the number which is multiplied by a second number. The **multiplier** is the number indicating how many times the multiplicand is being multiplied. The number you get after multiplying the multiplicand by the multiplier is called the **product**.

Nowadays, usually the word **factor** to refer to both the multiplicand and the multiplier. In the given equation, 6 is the multiplicand and 3 is the multiplier. Both 6 and 3 are factors of 18. What is the product in our given example? If you say it's 18, you're right! The product is always bigger than any of the multiplicand and the multiplier.



Let's Try This

Write **MD** if the number inside the box is the multiplicand, **MR** if it is the multiplier or **P** if it is the product.

_____ 1. $\boxed{9} \times 8 = 72$

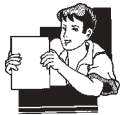
_____ 2. $7 \times 6 = \boxed{42}$

_____ 3. $8 \times \boxed{5} = 40$

_____ 4. $\boxed{4} \times 3 = 12$

_____ 5. $7 \times \boxed{7} = 49$

Compare your answers with those in the *Answer Key* on page 35.



Let's Learn

What if we write 6×3 this way: 3×6 ? Will the product change? No, it won't. Changing the order of the factors does not affect the product.

The multiplication table below can help you multiply numbers. But it is best that you know the multiplication facts by heart. Study the table below and see if you can memorize it.

x	0	1	2	3	4	5	6
0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6
2	0	2	4	6	8	10	12
3	0	3	6	9	12	15	18
4	0	4	8	12	16	20	24
5	0	5	10	15	20	25	30
6	0	6	12	18	24	30	36
7	0	7	14	21	28	35	42
8	0	8	16	24	32	40	48
9	0	9	18	27	36	45	54
10	0	10	20	30	40	50	60

Notice that any number multiplied by zero (0) is equal to 0. Also, any number multiplied by 1 is equal to that number.

Do you know how to use the multiplication table? Get a number from the first column on the left and another number from the first row. These two numbers are the multiplicand and the multiplier or factors. Point your finger to the number in the first column. Then, move your finger to the right. When you reach the column of the number you chose on the first row, stop.

For example, let's choose 8 on the first column and 6 on the first row. Point your finger on 8 and move it to the right until you reach column 6. Stop on that number. What is it? It's 48. See how fast you can multiply numbers using the table? Choose other pairs of numbers and look for their product using the multiplication table.

x	0	1	2	3	4	5	6
0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6
2	0	2	4	6	8	10	12
3	0	3	6	9	12	15	18
4	0	4	8	12	16	20	24
5	0	5	10	15	20	25	30
6	0	6	12	18	24	30	36
7	0	7	14	21	28	35	42
8	0	8	16	24	32	40	48
9	0	9	18	27	36	45	54
10	0	10	20	30	40	50	60

We mentioned earlier that changing the order of the factors does not affect the product. Let's use the multiplication table to check this. Now, let's choose 6 on the first column and 8 on the first row. Point your finger on 6 and move it to the right. When you reach column 8, stop. Did you stop at 48? Therefore, $6 \times 8 = 48$.

x	0	1	2	3	4
0	0	0	0	0	0
1	0	1	2	3	4
2	0	2	4	6	8
3	0	3	6	9	12
4	0	4	8	12	16
5	0	5	10	15	20
6	0	6	12	18	24
7	0	7	14	21	28
8	0	8	16	24	32
9	0	9	18	27	36
10	0	10	20	30	40

But how would you multiply if you don't have a copy of the multiplication table? You may use skip counting instead. How is it done? For example, to find the product of 5×3 , count by 5's and stop on the third number: 5, 10, 15. 15 is the product of 5 and 3. Let's multiply 2 by 4 using this method. So, we count; 2, 4, 6, 8. 8 is the fourth number. Therefore, $2 \times 4 = 8$.



Let's Try This

Using the multiplication table, answer the following:

1. $7 \times 5 = \underline{\quad}$

6. $4 \times 6 = \underline{\quad}$

2. $6 \times 6 = \underline{\quad}$

7. $7 \times 3 = \underline{\quad}$

3. $9 \times 8 = \underline{\quad}$

8. $5 \times 1 = \underline{\quad}$

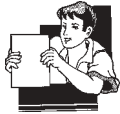
4. $3 \times 7 = \underline{\quad}$

9. $7 \times 6 = \underline{\quad}$

5. $2 \times 9 = \underline{\quad}$

10. $0 \times 2 = \underline{\quad}$

Compare your answers with those in the *Answer Key* on pages 35 and 36.



Let's Learn

Do you still recall what we said about zero (0)? Any number multiplied by 0 is equal to 0, right? Because of this, we can easily multiply numbers ending with 0. Look at the examples below.

$$4 \times 1 = 4 \quad \longrightarrow \quad 4 \times 10 = 40$$

$$3 \times 2 = 6 \quad \longrightarrow \quad 3 \times 20 = 60$$

$$2 \times 4 = 8 \quad \longrightarrow \quad 2 \times 40 = 80$$

We just added 0 to the right side of the product of the nonzero digits.



Let's Try This

Give the products of the following:

1. $1 \times 9 = 9$ \longrightarrow $10 \times 9 =$ _____

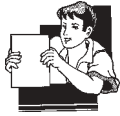
2. $4 \times 2 = 8$ \longrightarrow $4 \times 20 =$ _____

3. $7 \times 1 = 7$ \longrightarrow $7 \times 10 =$ _____

4. $3 \times 3 = 9$ \longrightarrow $30 \times 3 =$ _____

5. $8 \times 1 = 8$ \longrightarrow $8 \times 10 =$ _____

Compare your answers with those in the *Answer Key* on page 36.



Let's Learn

Multiplying Without Regrouping

Do you think you can now multiply numbers with more than one digit? It's not as hard as you might think. We can multiply numbers in two ways: expanded form and short method. Look at the following examples and study them carefully.

EXAMPLE 1 Find the product of 72×4 .

Expanded Form	Short Method
<p>STEP 1 Write the multiplicand in expanded form.</p> $\begin{array}{r} 72 \longrightarrow 70 + 2 \\ \times 4 \qquad \times 4 \end{array}$ <p>STEP 2 Multiply the ones digit by 4.</p> $\begin{array}{r} 70 + 2 \\ \times 4 \\ \hline 8 \longleftarrow 4 \times 2 \end{array}$ <p>STEP 3 Multiply the tens digit by 4.</p> $\begin{array}{r} 70 + 2 \\ \times 4 \\ \hline 8 \qquad 4 \times 2 \\ 320 \longleftarrow 4 \times 70 \end{array}$	<p>STEP 1 Write the factors in column form.</p> $\begin{array}{r} 72 \\ \times 4 \end{array}$ <p>STEP 2 Multiply the ones digit.</p> $\begin{array}{r} 72 \\ \times 4 \\ \hline 8 \longleftarrow 4 \times 2 \end{array}$ <p>STEP 3 Multiply the tens digit.</p> $\begin{array}{r} 72 \\ \times 4 \\ \hline 328 \longleftarrow 4 \times 2 \\ \longleftarrow 4 \times 7 \end{array}$

Expanded Form	Short Method
<p>STEP 4 Add the products of the ones and tens digits.</p> $\begin{array}{r} 70 + 2 \\ \times 4 \\ \hline 8 \\ \hline 320 \\ \hline 328 \end{array}$ <p>Therefore, $72 \times 4 = 320$</p>	<p>So, the product of 72×4 is 328.</p>

Did we get the same answer? Which method do you find easier?

EXAMPLE 2 Multiply 91×6 .

Expanded Form	Short Method
<p>STEP 1 Write the multiplicand in expanded form.</p> $\begin{array}{r} 91 \longrightarrow 90 + 1 \\ \times 6 \qquad \times 6 \end{array}$ <p>STEP 2 Multiply the ones digit by 4.</p> $\begin{array}{r} 90 + 1 \\ \times 6 \\ \hline 6 \longleftarrow 6 \times 1 \end{array}$	<p>STEP 1 Write the factors in column form.</p> $\begin{array}{r} 91 \\ \times 6 \end{array}$ <p>STEP 2 Multiply the ones digit.</p> $\begin{array}{r} 91 \\ \times 6 \\ \hline 6 \longleftarrow 6 \times 1 \end{array}$

Expanded Form	Short Method
<p>STEP 3 Multiply the tens digit by 4.</p> $\begin{array}{r} 90 + 1 \\ \times \quad 6 \\ \hline 6 \quad \leftarrow 6 \times 1 \\ 540 \quad \leftarrow 6 \times 90 \end{array}$ <p>STEP 4 Add the products of the ones and tens digits.</p> $\begin{array}{r} 90 + 1 \\ \times \quad 6 \\ \hline 6 \\ + 540 \\ \hline 546 \end{array}$ <p>Therefore, $91 \times 6 = 546$</p>	<p>STEP 3 Multiply the tens digit .</p> $\begin{array}{r} 91 \\ \times \quad 6 \\ \hline 546 \quad \leftarrow 6 \times 1 \\ \quad \quad \leftarrow 6 \times 9 \end{array}$ <p>So, the product of 91 and 6 is 546.</p>



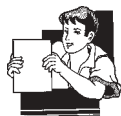
Let's Try This

Find the products of the following. Use the expanded form for number 1 and the short method for number 2.

$$\begin{array}{r} 1. \quad 32 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 2. \quad 54 \\ \times 2 \\ \hline \end{array}$$

Compare your answers with those in the *Answer Key* on pages 36 to 38.



Let's Learn

Multiplying With Regrouping

There are cases when you have to use regrouping to find the product of two numbers. Study the following examples.

EXAMPLE 1 Multiply 28 by 5.

STEP 1 Multiply the ones digit.

$$\begin{array}{r} 4 \\ 28 \\ \times 5 \\ \hline 0 \end{array}$$

$$8 \times 5 = 40$$

Write 0 below the ones column and regroup 4 in the tens place.

STEP 1 Multiply the tens digit and add the regrouped number to the product.

$$\begin{array}{r} 4 \\ 28 \\ \times 5 \\ \hline 140 \end{array}$$

_____ $2 \times 5 = 10 + 4 = 14$
Therefore, $28 \times 5 = 140$.

Now let's see how you can multiply a two-digit number by a two-digit number.

EXAMPLE 2 Multiply 35 by 13.

STEP 1 Multiply the ones digit of the multiplicand by the ones digit of the multiplier.

$$\begin{array}{r} 1 \\ 35 \\ \times 13 \\ \hline 5 \end{array}$$

$5 \times 3 = 15$; write 5 below the ones column and regroup 1 in the tens place.

STEP 2 Multiply the tens digit of the multiplicand by the ones digit of the multiplier.

$$\begin{array}{r} 1 \\ 35 \\ \times 13 \\ \hline 105 \end{array}$$

$3 \times 3 = 9$; add 1: $9 + 1 = 10$
Therefore, the first partial product is 105.

STEP 3 Next, multiply the ones digit of the multiplicand by the tens digit of the multiplier.

$$\begin{array}{r} 35 \\ \times 13 \\ \hline 105 \\ 5 \end{array} \quad 5 \times 1 = 5; \text{ write } 5 \text{ in the tens column below the first partial product.}$$

STEP 4 Multiply the tens digit of the multiplicand by the tens digit of the multiplier

$$\begin{array}{r} 35 \\ \times 13 \\ \hline 105 \\ 35 \end{array} \quad 3 \times 1 = 3; \text{ write } 3 \text{ in the hundreds place below the first partial product. Hence, the second partial product is } 35.$$

STEP 5 Add the two partial products.

$$\begin{array}{r} 35 \\ \times 13 \\ \hline 105 \\ 35 \\ \hline 455 \end{array}$$

Therefore, the product of 35 and 13 is 455.



Let's Try This

Get the products of the following.

$$\begin{array}{r} 1. \quad 39 \\ \times 7 \\ \hline \end{array}$$

$$\begin{array}{r} 2. \quad 27 \\ \times 6 \\ \hline \end{array}$$

$$\begin{array}{r} 3. \quad 84 \\ \times 43 \\ \hline \end{array}$$

Compare your answers with those in the *Answer Key* on pages 38 to 40.



Let's See What You Have Learned

A. Give the products of the following:

$$1. \quad 8 \times 4 = \underline{\hspace{2cm}}$$

$$2. \quad 6 \times 5 = \underline{\hspace{2cm}}$$

$$3. \quad 0 \times 7 = \underline{\hspace{2cm}}$$

$$4. \quad 5 \times 3 = \underline{\hspace{2cm}}$$

$$5. \quad 1 \times 8 = \underline{\hspace{2cm}}$$

B. Find the products of the following:

1. $1 \times 5 = 5$ \longrightarrow $10 \times 5 = \underline{\hspace{2cm}}$

2. $3 \times 1 = 3$ \longrightarrow $3 \times 10 = \underline{\hspace{2cm}}$

3. $2 \times 2 = 4$ \longrightarrow $20 \times 2 = \underline{\hspace{2cm}}$

4. $1 \times 2 = 2$ \longrightarrow $10 \times 2 = \underline{\hspace{2cm}}$

5. $3 \times 1 = 3$ \longrightarrow $6 \times 10 = \underline{\hspace{2cm}}$

C. Solve the following word problems using any method. Show your solutions.

1. Aling Dolor bought 4 packs of *calamansi*. Each pack has 12 pieces of calamansi. How many calamansi did Aling Dolor buy in all?
2. Aling Nora sells *tuyo*. Each pack of tuyo costs ₱4. If she sold 23 packs of tuyo, how much did she earn?
3. Amelia has 13 pots of roses. Each pot of roses has 7 flowers. How many roses does Amelia have in all?
4. Mrs. Perez has 3 sons. She gave them ₱15 each. How much in all did she give them?

5. There are 12 groups joining a dance competition. Each group has 5 members. How many are joining the competition?

Compare your answers with those in the *Answer Key* on pages 40 to 43. Did you get everything right? If you did, that's very good. If you did not, that's okay. Just review the parts of the lesson you did not understand well before moving on to Lesson 2.



Let's Remember

- ◆ **Multiplication** means increasing a number several times. It is just the shortcut of repeated addition.
- ◆ The \times sign is the multiplication sign. It is often read as “times.”
- ◆ The multiplicand is the number which is multiplied by a second number.
- ◆ The multiplier is the number indicating by how many times the multiplicand is multiplied.
- ◆ The **factors** are the numbers that are multiplied by each other.
- ◆ The number you get after multiplying a set of numbers is called the **product**. It is always bigger than any of the factors.
- ◆ Changing the order of the factors does not affect the product.
- ◆ Any number multiplied by 0 is equal to 0.
- ◆ Any number multiplied by 1 is equal to that number.
- ◆ When multiplying numbers ending with zero, multiply the nonzero digits first. Then add 0 to the product.

Division

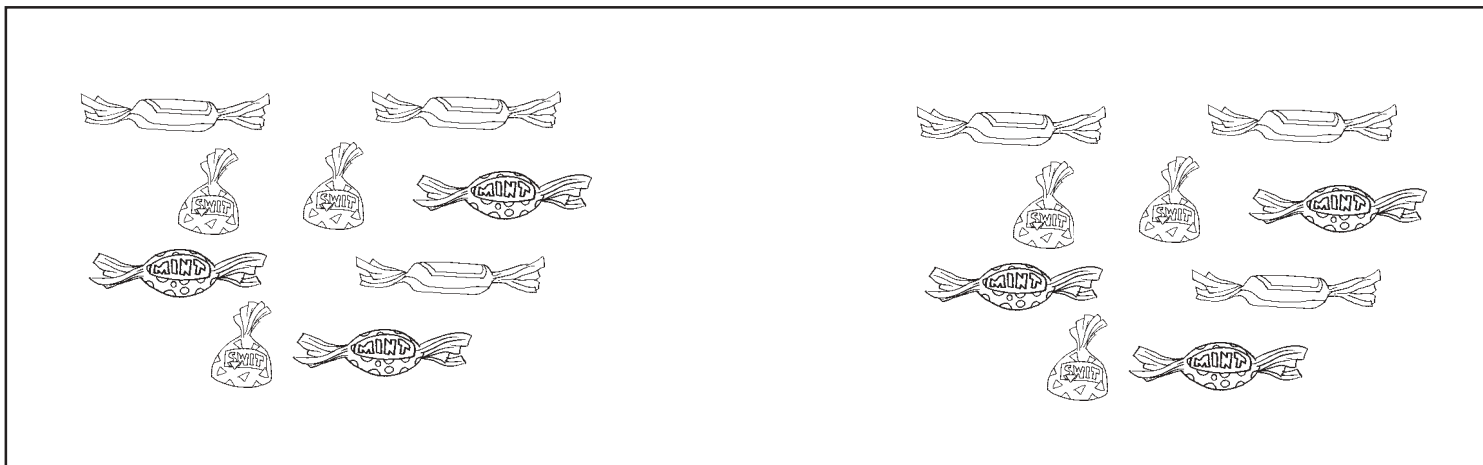
Do you have children? Do they get equal shares when you bring home something? How do you divide your pasalubong among them?

In this lesson, you will learn a method that you will find useful in similar situations.



Let's Read

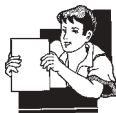
Do you still recall the story of the twins in the previous lesson? They had 18 candies in all, right? Can you guess how many candies each of them got? Look at the candies below.





Let's Think About This

The twins grouped their candies into two. The twins may not be aware of it but what they did involved math. Do you want to know how to group objects and numbers too? Read on to learn more.



Let's Learn

Do you know how to divide? Guess whether a number increases or decreases when we divide it. If you said it decreases, you're right! The twins had 18 candies in all. But since they divided the candies, each of them only got 9 candies. Eighteen is greater than 9, right?

We may also write what the twins did this way:

$$18 \div 2 = 9$$

Labels: 18 is the dividend, \div is the division sign, 2 is the divisor, and 9 is the quotient.

or

$$\begin{array}{r} 9 \\ 2 \overline{)18} \end{array}$$

Labels: 9 is the quotient, 2 is the divisor, and 18 is the dividend.

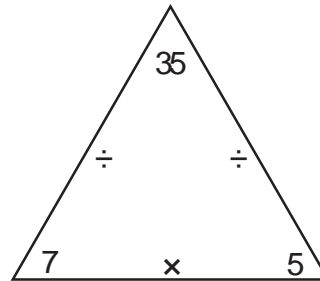
The \div sign is the division sign. It is used whenever numbers are divided. $\overline{\hspace{1cm}}$ and $\overline{\hspace{1cm}}$ separating the dividend and the divisor may also be used in place of the \div sign. Thus, $18 \div 2$ can also be written as $2 \overline{)18}$ or $\frac{18}{2}$.

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 you get after division is called **quotient**. It is always smaller than the dividend.

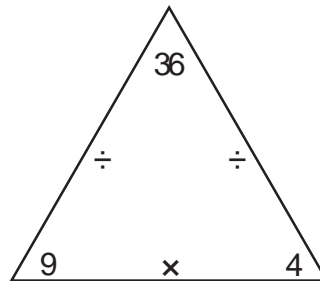
Division means dividing a number to find out how many times a smaller number is contained in it. Division is the opposite of multiplication. We may also look at a sentence in terms of multiplication.

$$18 \div 2 = 9 \longleftrightarrow 2 \times 9 = 18$$

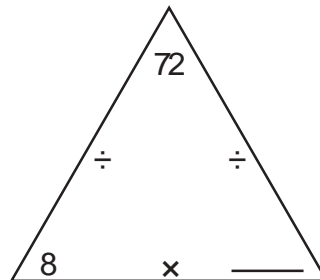
Study the triangle below. Notice that 35 is the product of 7 and 5. When you divide 35 by 7, the answer is 5. When you divide 35 by 5, the answer is 7.



This triangle shows that 36 is the product of 9 and 4. When you divide 36 by 9, the quotient is 4. When you divide 36 by 4, the quotient is 9.



Let's try this next triangle.



What number do you multiply by 8 to get 72? If you answer 9, you're right. Therefore, $72 \div 8 = \underline{\quad}$ and $72 \div 9 = \underline{\quad}$. If you say $72 \div 8 = 9$ and $72 \div 9 = 8$, that's very good!



Let's Try This

Divide the given sets of numbers below. Practice your skill in multiplication.

1. $49 \div 7 =$ _____

6. $60 \div 6 =$ _____

2. $16 \div 8 =$ _____

7. $15 \div 3 =$ _____

3. $12 \div 3 =$ _____

8. $18 \div 2 =$ _____

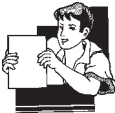
4. $25 \div 5 =$ _____

9. $14 \div 7 =$ _____

5. $72 \div 8 =$ _____

10. $6 \div 3 =$ _____

Compare your answers with those in the *Answer Key* on page 43.



Let's Learn

In the previous lesson, we learned how to multiply numbers that end with 0. Do you want to know how to divide them, too? Look at the examples below.

$4 \div 4 = 1$: _____ \rightarrow $40 \div 4 = 10$

$6 \div 2 = 3$: _____ \rightarrow $60 \div 2 = 30$

$8 \div 4 = 2$: _____ \rightarrow $80 \div 4 = 20$



Let's Try This

Give the quotients of the following:

1. $9 \div 1 = 9$ \longrightarrow $90 \div 9 = \underline{\quad}$

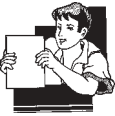
2. $8 \div 2 = 4$ \longrightarrow $80 \div 2 = \underline{\quad}$

3. $7 \div 1 = 7$ \longrightarrow $70 \div 7 = \underline{\quad}$

4. $9 \div 3 = 3$ \longrightarrow $90 \div 3 = \underline{\quad}$

5. $80 \div 1 = 80$ \longrightarrow $80 \div 8 = \underline{\quad}$

Compare your answers with those in the *Answer Key* on page 43.



Let's Learn

You are now ready to learn the long process of division. In this section of the lesson you will apply your skills in subtraction, multiplication, and division. We will perform the operation step by step so that you will not get confused.

EXAMPLE 1 Divide 96 by 3.

STEP 1 Divide the tens digit of the dividend by the divisor.

$$\begin{array}{r} 3 \\ 3 \overline{)96} \end{array}$$

$9 \div 3 = 3$; write the digit 3 above the digit 9 in the dividend.

STEP 2 Multiply the first partial quotient by the divisor.

$$\begin{array}{r} 3 \\ 3 \overline{)96} \\ \underline{9} \end{array}$$

$3 \times 3 = 9$; write 9 below digit 9 of the dividend and draw a line just below it. Subtract: $9 - 9 = 0$; there's no need to write 0.

STEP 3 Bring down the ones digit of the dividend and divide by the divisor.

$$\begin{array}{r} 32 \\ 3 \overline{)96} \\ \underline{-9} \\ 6 \end{array}$$

$6 \div 3 = 2$; write 2 above the digit 6 in the dividend.

STEP 4 Multiply the second quotient by the divisor.

$$\begin{array}{r} 32 \\ 3 \overline{)96} \\ \underline{-9} \\ 6 \\ \underline{-6} \\ 0 \end{array}$$

$2 \times 3 = 6$; write 6 below the digit 6 and draw a line; subtract: $6 - 6 = 0$, write 0 just below the line.

STEP 5 Check the answer. Multiply the quotient by the divisor. The product should be equal to the dividend.

$$\begin{array}{r} 32 \\ \times 3 \\ \hline 96 \end{array}$$

Therefore, the quotient is correct.

EXAMPLE 2 Divide 84 by 2.

STEP 1 Divide the tens digit of the dividend by the divisor.

$$\begin{array}{r} 4 \\ 2 \overline{)84} \end{array} \quad 8 \div 2 = 4; \text{ write digit 4 above the digit 8 in the dividend.}$$

STEP 2 Multiply the first partial quotient by the divisor.

$$\begin{array}{r} 4 \\ 2 \overline{)84} \\ \underline{-8} \end{array} \quad \begin{array}{l} 4 \times 2 = 8, \text{ write 8 below digit 8 of the dividend and draw a line} \\ \text{below it. Subtract: } 8 - 8 = 0; \text{ there's no need to write 0.} \end{array}$$

STEP 3 Bring down the ones digit of the dividend and divide by the divisor.

$$\begin{array}{r} 42 \\ 2 \overline{)84} \\ \underline{8} \\ 4 \end{array} \quad 4 \div 2 = 2; \text{ write 2 above the digit 4.}$$

STEP 4 Multiply the second quotient by the divisor.

$$\begin{array}{r} 42 \\ 2 \overline{)84} \\ \underline{8} \\ 4 \\ \underline{4} \\ 0 \end{array} \quad 2 \times 2 = 4; \text{ write 4 below the digit 4 and subtract. } 4 - 4 = 0.$$

STEP 5 Check the answer. Quotient \times Divisor = Dividend

$$\begin{array}{r} 42 \\ \times 2 \\ \hline 84 \end{array}$$

Therefore, the quotient is correct.

EXAMPLE 3 Divide 68 by 2.

STEP 1 Divide the tens digit of the dividend by the divisor.

$$\begin{array}{r} \square \\ 2 \overline{)68} \end{array} \quad 6 \div 2 = \square; \text{ write } \square \text{ above 6 in the dividend.}$$

STEP 2 Multiply the first partial quotient by the divisor.

$$\begin{array}{r} \square \\ 2 \overline{)68} \\ \underline{-6} \end{array} \quad \begin{array}{l} \square \times 2 = 6; \text{ write 6 below digit 6 of the dividend and draw a line} \\ \text{below it. Subtract: } 6 - 6 = 0. \end{array}$$

STEP 3 Bring down the ones digit of the dividend and divide by the divisor.

$$\begin{array}{r} \square \square \\ 2 \overline{)68} \\ \underline{6} \\ 8 \end{array} \quad 8 \div 2 = \square; \text{ write } \square \text{ above the digit 8.}$$

STEP 4 Multiply the second quotient by the divisor.

$$\begin{array}{r} \square \square \\ 2 \overline{)68} \\ \underline{6} \\ 8 \\ \underline{-8} \\ 0 \end{array} \quad \square \times 2 = 8; \text{ write 8 below the digit 8 of the dividend and subtract. } 8 - 8 = 0.$$

STEP 5 Check the answer. Quotient \times Divisor = Dividend

$$\begin{array}{r} \square \square \\ \times 2 \\ \hline 68 \end{array}$$

What is your answer? The quotient is 34.

Here is how the quotient was found.

STEP 1 Divide the tens digit of the dividend by the divisor.

$$\begin{array}{r} \boxed{3} \\ 2 \overline{)68} \end{array} \quad 6 \div 2 = \boxed{}; \text{ write } \boxed{} \text{ above 6 in the dividend.}$$

STEP 2 Multiply the first partial quotient by the divisor.

$$\begin{array}{r} \boxed{3} \\ 2 \overline{)68} \\ \underline{-6} \end{array} \quad \boxed{3} \times 2 = 6; \text{ write 6 below digit 6 of the dividen and draw a line} \\ \text{below it. Subtract: } 6 - 6 = 0.$$

STEP 3 Bring down the ones digit of the dividend and divide by the divisor.

$$\begin{array}{r} \boxed{3}\boxed{4} \\ 2 \overline{)68} \\ \underline{6} \\ 8 \end{array} \quad 8 \div 2 = \boxed{4}; \text{ write } \boxed{4} \text{ above the digit 8.}$$

STEP 4 Multiply the second quotient by the divisor.

$$\begin{array}{r} \boxed{3}\boxed{4} \\ 2 \overline{)68} \\ \underline{6} \\ 8 \\ \underline{-8} \\ 0 \end{array} \quad \boxed{4} \times 2 = 8; \text{ write 8 below the digit 8 of the dividend and subtract. } 8 - 8 = 0.$$

STEP 5 Check the answer. Quotient \times Divisor = Dividend

$$\begin{array}{r} \boxed{3}\boxed{4} \\ \times 2 \\ \hline 68 \end{array}$$

Did you get it right? If you did, that's very good!



Let's Try This

Divide the following sets of numbers. Show your solutions.

1. $4 \overline{)48}$

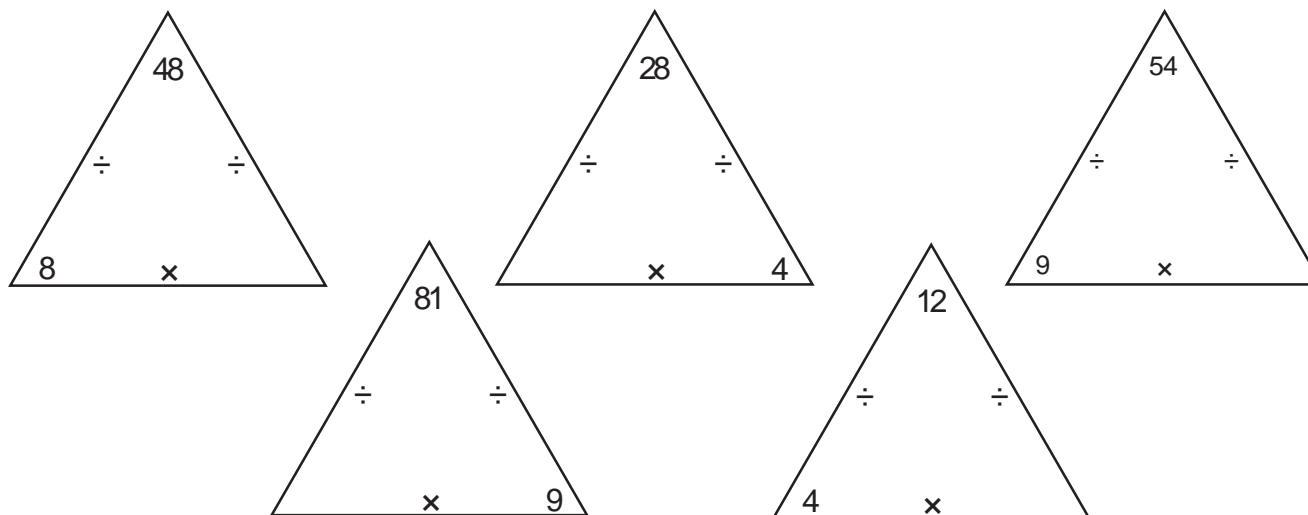
2. $5 \overline{)85}$

Compare your answers with those in the *Answer Key* on pages 44 and 45.



Let's See What You Have Learned

A. Write the missing number in each triangle.



B. Solve the following word problems. Show your solutions.

1. Twenty men from Barangay Mapayapa volunteered as *barangay tanods*. Baragay Mapayapa is divided into 5 *puroks*. How many tanods did each purok have?
2. When Lolo Ambo died, he left his land to his four sons. If Lolo Ambo had 32 hectares, how many hectares did each son get?
3. Aling Marta fried 12 pieces of *galunggong* for her 6 children. How many pieces of galunggong did each of them get?
4. Karen has 4 nieces. She brought 16 chocolate bars for them. How many bars did each of them get?
5. Aling Carmen sells mangoes. Each bag has 5 mangoes. One bag costs ₱30. How much does each mango cost?

Compare your answers with those in the *Answer Key* on page 46. Did you get everything right? If you did, that's very good. If you did not, that's okay. Just review the parts of the lesson you did not understand before moving on to the next part of the module.



Let's Remember

- ◆ **Division** means dividing a number to find out how many times a smaller number is contained in it.
- ◆ **Division** is the opposite of multiplication. We can also look at division problems using multiplication terms.
- ◆ The \div sign is the division sign. It is used whenever numbers are being divided. $\overline{)$ and --- separating the dividend and the divisor may also be used in place of the \div sign.
- ◆ 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 you get after division is called the **quotient**. It is always smaller than the dividend.

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** means increasing a number several times. It is the shortcut of repeated addition.
- ◆ The \times sign is the multiplication sign. It is often read as "times."
- ◆ The **factors** are the numbers that are being multiplied.
- ◆ The number you get after multiplying numbers is called the **product**. It is always bigger than any of the factors.

- ◆ Changing the order of the factors does not affect the product.
- ◆ Any number multiplied by 0 is equal to 0.
- ◆ Any number multiplied by 1 is equal to that number.
- ◆ When multiplying numbers ending with zero, multiply the nonzero digits first. Then, add the number of zeros to the product.
- ◆ **Division** means dividing a number to find out how many times a smaller number is contained in it.
- ◆ **Division** is the opposite of multiplication. We can also look at division problems using multiplication terms.
- ◆ The \div sign is the division sign. It is used whenever numbers are being divided. $\overline{)$ and $\overline{\hspace{1cm}}$ separating the dividend and the divisor may also be used in place of the \div sign.
- ◆ The **dividend** is the number being divided. It is the bigger number in a division problem.
- ◆ The **divisor** is the number that divides the dividend. It is the smaller number in a division problem.
- ◆ The number that you get in division is called a **quotient**. It is always smaller than the dividend.



What Have You Learned?

Solve the following word problems. Show your solutions.

1. Mang Nestor is a jeepney driver. His jeepney can carry 18 passengers. Each passenger pays ₱4. How much does Mang Nestor earn in one trip?



Answer Key

A. Let's See What You Already Know (page 2)

A. 1. 18

2. 56

3. 18

4. 0

5. 6

6. 27

7. 16

8. 16

9. 54

10. 49

You can see the products in the multiplication table below.

×	0	1	2	3	4	5	6
0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6
2	0	2	4	6	8	10	12
3	0	3	6	9	12	15	18
4	0	4	8	12	16	20	24
5	0	5	10	15	20	25	30
6	0	6	12	18	24	30	36
7	0	7	14	21	28	35	42
8	0	8	16	24	32	40	48
9	0	9	18	27	36	45	54
10	0	10	20	30	40	50	60

B. Using the multiplication table, we can also find the answers to the given division problems. Look at Problem 1. The number **56** is found inside the box in the same row as **8** and the same column as **7**. You can also see **56** inside the box in the same row as **7** and the same column as **8**.

- | | |
|------|-------|
| 1. 7 | 6. 5 |
| 2. 1 | 7. 6 |
| 3. 8 | 8. 8 |
| 4. 9 | 9. 5 |
| 5. 8 | 10. 7 |

B. Lesson 1

Let's Try This (page 6)

1. MD
2. P
3. MR
4. MD
5. MR

Let's Try This (page 9)

The products can be found inside boxes in the same rows as one of the factors and the same columns as the other factors.

- | | |
|-------|-------|
| 1. 35 | 6. 24 |
| 2. 36 | 7. 21 |
| 3. 72 | 8. 5 |

4. 21

9. 42

5. 18

10. 0

Let's Try This (page 10)

1. 90

2. 80

3. 70

4. 90

5. 80

Let's Try This (page 14)

1.
$$\begin{array}{r} 36 \\ \times 2 \\ \hline \end{array}$$

STEP 1 Write the multiplication problem in expanded form.

$$\begin{array}{r} 36 \\ \times 2 \\ \hline \end{array} \longrightarrow \begin{array}{r} 30 + 6 \\ \times 2 \\ \hline \end{array}$$

STEP 2 Multiply the ones digit.

$$\begin{array}{r} 30 + 6 \\ \times 2 \\ \hline 12 \end{array} \longrightarrow 2 \times 6$$

STEP 3 Multiply the tens digit.

$$\begin{array}{r} 30 + 6 \\ \times \quad 2 \\ \hline 12 \quad \longrightarrow \quad 2 \times 6 \\ 60 \quad \longrightarrow \quad 2 \times 30 \end{array}$$

STEP 3 Add the products of the ones and the tens digits.

$$\begin{array}{r} 30 + 6 \\ \times \quad 2 \\ \hline 12 \\ + \quad 60 \\ \hline \mathbf{72} \end{array}$$

Therefore, $36 \times 2 = 72$

2. **STEP 1** Write the factors in column form.

$$\begin{array}{r} 54 \\ \times \quad 2 \\ \hline \end{array}$$

STEP 2 Multiply the ones digit.

$$\begin{array}{r} 54 \\ \times \quad 2 \\ \hline 8 \quad \longleftarrow \quad 2 \times 4 \end{array}$$

STEP 3 Multiply the tens digit.

$$\begin{array}{r} 54 \\ \times 2 \\ \hline 108 \end{array}$$

└──────────┘ 2×5

Therefore, $54 \times 2 = 108$.

Let's Try This (page 17)

1. **STEP 1** Multiply the ones digit .

$$\begin{array}{r} 6 \\ 39 \\ \times 7 \\ \hline 3 \end{array}$$

$9 \times 7 = 63$; write 3 below the ones column and regroup 6 in the tens place.

STEP 2 Multiply the tens digit and add the regrouped number to the product.

$$\begin{array}{r} 6 \\ 39 \\ \times 7 \\ \hline 273 \end{array}$$

$3 \times 7 = 21 + 6 = 27$

Therefore, $39 \times 7 = 273$

$$\begin{array}{r}
 2. \quad 4 \\
 \quad 27 \\
 \times 6 \\
 \hline
 162
 \end{array}$$

3. **STEP 1** Multiply the ones digit of the multiplicand by the ones digit of the multiplier.

$$\begin{array}{r}
 1 \\
 84 \\
 \times 43 \\
 \hline
 2
 \end{array}$$

$4 \times 3 = 12$; Write 2 below the ones column and regroup 1 in the tens place.

- STEP 2** Multiply the tens digit of the multiplicand by the ones digit of the multiplier.

$$\begin{array}{r}
 1 \\
 84 \\
 \times 43 \\
 \hline
 252
 \end{array}$$

Add the regrouped number to the product.

$$8 \times 3 = 24 + 1 = 25$$

- STEP 3** Next, multiply the ones digit of the multiplicand by the tens digit of the multiplier

$$\begin{array}{r}
 1 \\
 84 \\
 \times 43 \\
 \hline
 252 \\
 6
 \end{array}$$

$4 \times 4 = 16$; write 6 in the tens column below the first partial product and regroup 1 in the tens place.

STEP 4 Multiply the tens digit of the multiplicand by the tens digit of the multiplier.
Add the regrouped number to the product.

$$\begin{array}{r} 1 \\ 84 \\ \times 43 \\ \hline 252 \\ 336 \end{array}$$

$8 \times 4 = 32 + 1 = 33$; write 33 to the left of digit 6. 336 is the second partial product.

STEP 5 Add the two partial products.

$$\begin{array}{r} 84 \\ \times 43 \\ \hline 252 \\ + 336 \\ \hline 3612 \end{array}$$

Therefore, $84 \times 42 = 3612$

Let's See What You Have Learned (pages 17–19)

- A. 1. 32
2. 30
3. 0
4. 15
5. 8

- B. 1. 50
 2. 30
 3. 40
 4. 20
 5. 60

C. 1.

Expanded Form	Short Method
<p>STEP 1 Write the multiplicand in expanded form.</p> $\begin{array}{r} 12 \longrightarrow 10 + 2 \\ \times 4 \qquad \times 4 \end{array}$ <p>STEP 2 Multiply the ones digit by 4.</p> $\begin{array}{r} 10 + 2 \\ \times 4 \\ \hline 8 \longleftarrow 4 \times 2 \end{array}$ <p>STEP 3 Multiply the tens digit.</p> $\begin{array}{r} 10 + 2 \\ \times 4 \\ \hline 8 \qquad 4 \times 2 \\ 40 \longleftarrow 4 \times 10 \end{array}$	<p>STEP 1 Write the factors in column form.</p> $\begin{array}{r} 12 \\ \times 4 \end{array}$ <p>STEP 2 Multiply the ones digit.</p> $\begin{array}{r} 12 \\ \times 4 \\ \hline 8 \longleftarrow 4 \times 2 \end{array}$ <p>STEP 3 Multiply the tens digit .</p> $\begin{array}{r} 12 \\ \times 4 \\ \hline 48 \longleftarrow 4 \times 2 \\ \longleftarrow 4 \times 1 \end{array}$

Expanded Form	Short Method
<p>STEP 4 Add the products of the ones and tens digits.</p> $\begin{array}{r} 10 + 2 \\ \times 4 \\ \hline 8 \\ + 40 \\ \hline 48 \end{array}$ <p>Therefore, $12 \times 4 = 48$</p>	<p>Therefore, $12 \times 4 = 48$</p>

2.

$$\begin{array}{r} 1 \\ 23 \\ \times P4 \\ \hline 92 \end{array}$$

Aling Nora earned P92.

3.

$$\begin{array}{r} 2 \\ 13 \\ \times 7 \\ \hline 91 \end{array}$$

Amelia has 91 roses in all.

4.

$$\begin{array}{r} 1 \\ P15 \\ \times 3 \\ \hline P45 \end{array}$$

Mrs. Perez gave P45 in all to her sons.

$$\begin{array}{r} 5. \quad 12 \\ \times \quad 5 \\ \hline 60 \end{array}$$

There are 60 people joining the competition.

C. Lesson 2

Let's Try This (page 23)

1. 7
2. 2
3. 4
4. 5
5. 9
6. 10
7. 5
8. 9
9. 2
10. 2

Let's Try This (page 24)

1. 10
2. 40
3. 10
4. 30
5. 10

Let's Try This (page 29)

1. **STEP 1** Divide the tens digit of the dividend by the divisor.

$$\begin{array}{r} 1 \\ 4 \overline{)48} \end{array} \quad 4 \div 4 = 4; \text{ write 1 above 4 in the dividend.}$$

- STEP 2** Multiply the first partial quotient by the divisor.

$$\begin{array}{r} 1 \\ 4 \overline{)48} \\ \underline{-4} \end{array} \quad \begin{array}{l} 1 \times 4 = 4, \text{ write 4 below the digit 4 of the dividend and draw a line} \\ \text{below it. Subtract: } 4 - 4 = 0. \end{array}$$

- STEP 3** Bring down the ones digit of the dividend and divide by the divisor.

$$\begin{array}{r} 12 \\ 4 \overline{)48} \\ \underline{-4} \\ 8 \end{array} \quad 8 \div 4 = 2; \text{ write 2 above the digit 8 of the dividend.}$$

- STEP 4** Multiply the second partial quotient by the divisor.

$$\begin{array}{r} 12 \\ 4 \overline{)48} \\ \underline{-4} \\ 8 \\ \underline{-8} \\ 0 \end{array} \quad 2 \times 4 = 8; \text{ write 8 below the digit 8 and subtract. } 8 - 8 = 0.$$

- STEP 5** Check the answer. Quotient \times Divisor = Dividend

$$\begin{array}{r} 12 \\ \times 4 \\ \hline 48 \end{array}$$

Therefore, $48 \div 4 = 12$

2. **STEP 1** Divide the tens digit of the dividend by the divisor.

$$\begin{array}{r} . \\ 5 \overline{)85} \end{array}$$

There is no number that, when multiplied by 5, will give exactly 8. Therefore, just think of how many 5s there are in 8. There's only one 5 in 8, so write 1 above 8 in the dividend.

- STEP 2** Multiply the first partial quotient by the divisor.

$$\begin{array}{r} . \\ 5 \overline{)85} \\ -5 \\ \hline 3 \end{array}$$

$1 \times 5 = 5$; write 5 below 8 and subtract.

$8 - 5 = 3$; write 3 below the line.

- STEP 3** Bring down the ones digit of the dividend and divide the resulting number by the divisor.

$$\begin{array}{r} . \\ 5 \overline{)85} \\ -5 \\ \hline 35 \end{array}$$

$35 \div 5 = 7$; write 7 above the digit 5 of the dividend.

- STEP 4** Multiply the second partial quotient by the divisor.

$$\begin{array}{r} . \\ 5 \overline{)85} \\ -5 \\ \hline 35 \\ -35 \\ \hline 0 \end{array}$$

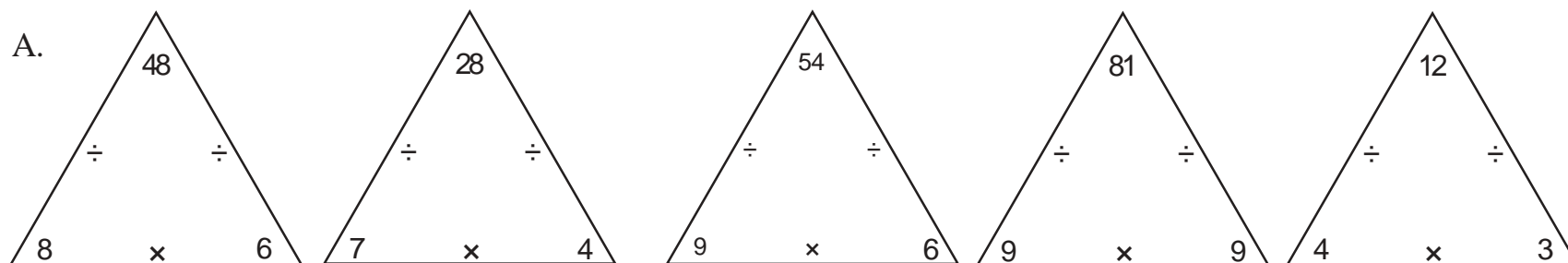
$7 \times 5 = 35$; write 35 below 35 and subtract. $35 - 35 = 0$.

- STEP 5** Check the answer. Quotient \times Divisor = Dividend

$$\begin{array}{r} 17 \\ \times 5 \\ \hline 85 \end{array}$$

Therefore, $85 \div 5 = 17$.

Let's See What You Have Learned (pages 29–30)



B. 1. $20 \div 5 = 4$

Each purok had **4** tanods.

2. $32 \div 4 = 8$

Each son got **8** hectares.

3. $12 \div 6 = 2$

Each child got 2 pieces of galunggong.

4. $16 \div 4 = 4$

Each niece got 4 chocolate bars.

5. $30 \div 5 = 6$

Each mango costs 6 pesos.

D. What Have You Learned? (pages 32–33)

1. Get the product of 18 and 4.

STEP 1 Multiply the ones digit.

$$\begin{array}{r} 3 \\ 18 \\ \times 4 \\ \hline 2 \end{array}$$

$$8 \times 4 = 32$$

Write 2 below the ones column and regroup 3 in the tens place.

STEP 2 Multiply the tens digit and add the regrouped number to the product.

$$\begin{array}{r} 3 \\ 18 \\ \times 4 \\ \hline 72 \end{array}$$

$$1 \times 4 = 4 + 3 = 7$$

Therefore, Mang Nestor earns ₱72 for every trip he makes.

2. $24 \div 4 = 6$

It will take **6** trips to transport all of Mang Cario's harvest.

3. Multiply 37 by 21.

STEP 1 Multiply the ones digit of the multiplicand by the ones digit of the multiplier.

$$\begin{array}{r} 37 \\ \times 21 \\ \hline 7 \end{array}$$

$7 \times 1 = 7$; write 7 below the ones column.

STEP 2 Multiply the tens digit of the multiplicand by the ones digit of the multiplier.

$$\begin{array}{r} 37 \\ \times 21 \\ \hline 7 \end{array}$$

$3 \times 1 = 3$ write 3 below the tens column.
Therefore, the first partial product is 37.

STEP 3 Multiply the ones digit of the multiplicand by the tens digit of the multiplier.

$$\begin{array}{r} 1 \\ 37 \\ \times 21 \\ \hline 37 \\ 4 \end{array}$$

$7 \times 2 = 14$; write 4 in the tens column below the first partial product and regroup 1 in the tens place.

STEP 4 Multiply the tens digit of the multiplicand by the tens digit of the multiplier.

Add the regrouped number to the product.

$$\begin{array}{r} 1 \\ 37 \\ \times 21 \\ \hline 37 \\ 74 \\ \hline \end{array}$$

$3 \times 2 = 6 + 1 = 7$
Therefore, the second partial product is 740.

STEP 5 Add the two partial products.

$$\begin{array}{r} 37 \\ \times 21 \\ \hline 74 \\ 777 \\ \hline \end{array}$$

Therefore, $37 \times 21 = 777$

4. **STEP 1** Divide the tens digit of the dividend by the divisor.

$$\begin{array}{r} 2 \\ 3 \overline{)78} \end{array}$$

Since no number multiplied by 3 will give 7 exactly, think of how many 3s there are in 7. $3 \times 2 = 6$, so there are two 3s.

STEP 2 Multiply the first partial quotient by the divisor.

$$\begin{array}{r} 2 \\ 3 \overline{)78} \\ \underline{-6} \\ 1 \end{array}$$

$2 \times 3 = 6$, write 6 below 7 and subtract.
 $7 - 6 = 1$; write 1 below the line.

STEP 3 Bring down the ones digit of the dividend and divided by the divisor.

$$\begin{array}{r} 26 \\ 3 \overline{)78} \\ \underline{6} \\ 18 \end{array}$$

$18 \div 3 = 6$; write 6 above 8 in the dividend.

STEP 4 Multiply the second quotient by the divisor.

$$\begin{array}{r} 26 \\ 3 \overline{)78} \\ \underline{6} \\ 18 \\ \underline{-18} \\ 0 \end{array} \quad \begin{array}{l} 6 \times 3 = 18; \text{ write 18 below the number 18 and subtract.} \\ 18 - 18 = 0 \end{array}$$

STEP 5 Check the answer. Quotient \times Divisor = Dividend

$$\begin{array}{r} 26 \\ \times 3 \\ \hline 78 \end{array}$$

Therefore, $78 \div 3 = 26$.

5. Get the product of 29 and 3.

STEP 1 Check the answer

$$\begin{array}{r} 2 \\ 29 \\ \times 3 \\ \hline 7 \end{array} \quad 9 \times 3 = 27; \text{ write 7 below the ones column and regroup 2 in the tens place.}$$

5. Multiply the ones digit and then, the tens digit. Add the regrouped number in the tens place to the product.

$$\begin{array}{r} 2 \\ 29 \\ \times 3 \\ \hline 87 \end{array} \qquad 2 \times 3 = 6 + 2 = 8$$

Therefore, $29 \times 3 = 87$.



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.