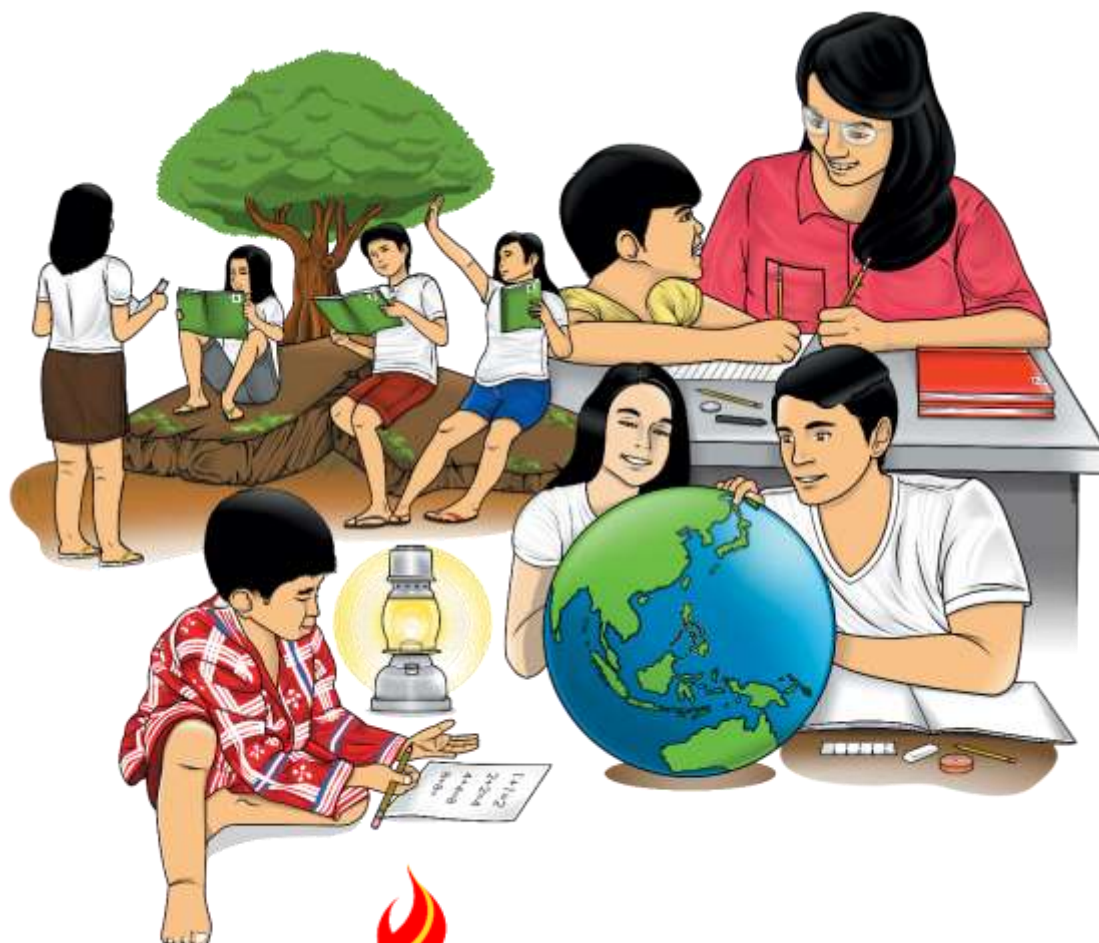


Mathematics

Quarter 1 – Module 2: Divisibility Rules for 3, 6, and 9



Mathematics – Grade 5
Alternative Delivery Mode
Quarter 1 – Module 2: Divisibility Rules for 3, 6, and 9
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Secretary: Leonor Magtolis Briones
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Development Team of the Module

Writer: Eunilaine M. Serrato

Editors: Zosimo M. Miñoza Jr., Cristian L. Senolos, Ronald R. Cabigon,
Miguel V. Dumas, Ramil R. Magdua, Joseph Randolp Palattao, Lala Lyra,
Bernadeth Daran

Reviewers: Renato S. Cagomoc, Rolando Lacbo, Joshua Sherwin T. Lim,
Jose J. Sagadal, Jr.

Layout Artist: Angel T. Porlares, Ryan R. Tiu

Management Team:

Ramir B. Uytico
Arnulfo M. Balane
Rosemarie M. Guino
Joy B. Bihag
Ryan R. Tiu
Sarah S. Cabaluna
Thelma Cabadsan-Quitalig
Elena S. de Luna
Renato S. Cagomoc
Noel E. Sagayap
Geraldine P. Sumbise
Joshua Sherwin T. Lim

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Department of Education – Region VIII

Office Address: Government Center, Candahug, Palo, Leyte

Telefax: 053 – 323-3156

E-mail Address: region8@deped.gov.ph

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Introductory Message

For the Facilitator:

Welcome to the Mathematics Grade 5 Alternative Delivery Mode (ADM) Module 2 on Divisibility Rules for 3, 6, and 9!

This module was collaboratively designed, developed and reviewed by educators both from public and private institutions to assist you, the teacher or facilitator in helping the learners to meet the standards set by the K to 12 Curriculum while overcoming their personal, social, and economic constraints in schooling.

This learning resource hopes to engage the learners into guided and independent learning activities at their own pace and time. Furthermore, this also aims to help learners acquire the needed 21st century skills while taking into consideration their needs and circumstances.

In addition to the material in the main text, you will also see this box in the body of the module:



Notes to the Teacher

This contains helpful tips or strategies that will help you in guiding the learners.

As a Facilitator, you are expected to orient the learners on how to use this module. You also need to keep track of the learners' progress while allowing them to manage their own learning. Furthermore, you are expected to encourage and assist the learners as they do the tasks included in the module.

For the Learner:

Welcome to the Mathematics 5 Alternative Delivery Mode (ADM) Module 2 on Divisibility Rules for 3, 6, and 9!

This module was designed to provide you with fun and meaningful opportunities for guided and independent learning at your own pace and time. You will be enabled to process the contents of the learning resource while being an active learner.

This module has the following parts and corresponding icons:



What I Need to Know

This will give you an idea of the skills or competencies you are expected to learn in the module.



What I Know

This part is composed of a 10-item activity to check what you already know about the lesson to take. If you get all the answers correct (100%) you may decide to skip this module.



What's In

This is a brief drill or review to help you link the current lesson with the previous one.



What's New

In this portion, the new lesson will be introduced to you in various ways: a story, a song, a poem, a problem opener, an activity, or a situation.



What is It

This section provides a brief discussion of the lesson. This aims to help you discover and understand new concepts and skills.



What's More

This comprises activities for independent practice to solidify your understanding and skills of the topic. You may check the answers to the exercises using the Answer Key at the end of the module.



What I Have Learned

This includes questions or fill in the blank sentence/paragraph to process what you learned from the lesson.



What I Can Do

This section provides an activity that will help you transfer your new knowledge or skill in real-life situations or concerns.



Assessment

This is another 10-item task that aims to evaluate your level of mastery in achieving the learning competency.



Additional Activities

In this portion, another activity will be given to you to enrich your knowledge or skill on the lesson learned.



Answer Key

This contains answers to all activities in the module.

At the end of this module you will also find:

References

This is a list of all sources used in developing this module.

The following are some reminders in using this module:

1. Use the module with care. Do not put unnecessary mark/s on any part of the module. Use a separate sheet of paper in answering the exercises.
2. Don't forget to answer *What I Know* before moving on to the other activities included in the module.
3. Read the instructions carefully before doing each task.
4. Observe honesty and integrity in doing the tasks and checking your answers.
5. Finish the task at hand before proceeding to the next.
6. Return this module to your teacher/facilitator once you are through with it.

Should encounter any difficulty in answering the tasks in this module, do not hesitate to consult your teacher or facilitator. Always bear in mind that you are not alone.

We hope that through this material, you will experience meaningful learning and gain a deep understanding of the relevant competencies. You can do it!



What I Need to Know

This module was designed to help you understand the divisibility rules for 3, 6 and 9 to find common factors of numbers. The activities and exercises are arranged to follow the standard sequence of a lesson.

After going through this module, you are expected to:

1. identify numbers that are divisible by 3, 6 and 9;
2. use divisibility rules for 3, 6 and 9 to find common factors of numbers; and
3. appreciate the use of divisibility rules to find common factors of numbers.



What I Know

Try to solve the test below. Find out if you still can recall previous lessons.

Directions: Choose the letter of the best answer. Write the chosen letter on a separate sheet of paper.

- 1) Which of the following is NOT divisible by 3?
A. 24 B. 42 C. 47 D. 78
- 2) One of the following numbers is divisible by 6. Which one is it?
A. 72 B. 52 C. 37 D. 16
- 3) Which of the numbers below is divisible by 9?
A. 347 B. 346 C. 215 D. 153
- 4) 3 is a factor of ____.
A. 136 B. 453 C. 541 D. 623
- 5) 6 is a factor of ____.
A. 153 B. 244 C. 324 D. 531
- 6) Which of the following can be divided by both 3 and 6?
A. 163 B. 516 C. 602 D. 700
- 7) ____ is a factor of 93.
A. 3 B. 6 C. 9 D. both 3 and 6

- 8) Which of the following is both divisible by 3 and 9?
 A. 75 B. 95 C. 135 D. 145
- 9) All the following are divisible by both 6 and 9 EXCEPT ____
 A. 36 B. 216 C. 342 D. 536
- 10) The common factors of 18, 27, and 54 are ____
 A. 3 and 6 B. 1, 3, and 9 C. 6 and 9 D. 3, 6, and 9

Lesson

1

Divisibility Rules for 3, 6, and 9 to Find Common Factors

As you have learned in the previous lesson, divisibility rules can help us determine whether a number can be divided by another number without any remainder. The divisibility rules for 3, 6, and 9 are grouped together because they all require computing the sum of the digits of a given number.

We can also use these rules to find more common factors of numbers.



What's In

Directions: Determine whether the first number is divisible by the second number. Write **Yes** if it is divisible, and **No** if it is not. Examples are given below. You may answer this in your activity notebook.

Examples: 12; 6 $12 \div 6 = 2$ Yes
 12; 5 $12 \div 5 = 2.4$ No

- | | | | |
|-------------|-------|-------------|-------|
| 1) 41; 2 | _____ | 4) 8910; 10 | _____ |
| 2) 550; 5 | _____ | 5) 348; 2 | _____ |
| 3) 1256; 10 | _____ | | |



What's New

Divisibility Rules for 3, 6, and 9

A number is divisible by another number if there is no remainder.

Study the table below. Find out why the given numbers are divisible by 3, 6 or 9.

Numbers Divisible by		
3	6	9
2133	5244	702
78	81120	3654
112311	774	25803

Knowing the divisibility rules for 3, 6 and 9 will help you find the factors of a number just by examining the sum of all its digits.



What Is It

How do we know if a number is divisible by 3, 6 or 9?

Here is how:

☐ Divisibility Rule for 3

A number is divisible by 3 if the sum of all its digits is divisible by 3.

Example 1: 540 is divisible by 3 because $5 + 4 + 0 = 9$, and 9 is divisible by 3. To check, 540 divided by 3 is 180.

☐ Divisibility Rule for 6

A number is divisible by 6 if the number is divisible by both 2 and 3.

Example 2: 822 is an even number, hence it is divisible by 2.

Likewise, 822 is divisible by 3 because $8 + 2 + 2 = 12$, and 12 is divisible by 3. Therefore, 822 is divisible by 6 since it is divisible by both 2 and 3.

❑ Divisibility Rule for 9

A number is divisible by 9 if the sum of all its digits is divisible by 9 or a multiple of 9.

Example 3: 8253 is divisible by 9 because $8 + 2 + 5 + 3 = 18$, and 18 is divisible or a multiple of 9.

Now, using the divisibility rules for 3, 6 and 9, let us find the common factors of 36 and 54.

STEP 1: Let us try if 36 and 54 are both divisible by 3, 6, and 9.

❑ Divisible by 3;

$3 + 6 = 9$ 9 is a multiple of 3. Therefore, 36 is divisible by 3.

$5 + 4 = 9$ 9 is a multiple of 3. Therefore, 54 is divisible by 3.

❑ Divisible by 6;

36 and 54 are even numbers. Therefore, 36 and 54 are both divisible by 2.

The sums of the digits of 36 and 54 are multiples of 3. So, both are divisible by 3. Therefore, 36 and 54 are both divisible by 6.

❑ Divisible by 9;

$3 + 6 = 9$ 9 is a multiple of 9. Therefore, 36 is divisible by 9.

$5 + 4 = 9$ 9 is a multiple of 9. Therefore, 54 is divisible by 9.

STEP 2: Get the factors of 36 and 54.

To get the factors of 36, divide 36 by 3, 6, and 9. The divisor, quotient, 1, and the number itself are the factors.

$$36 \div 3 = 12$$

$$36 \div 6 = 6$$

$$36 \div 9 = 4$$

So, the factors of 36 are **1, 3, 4, 6, 9, 12, and 36.**

To get the factors of 54, divide 54 by 3, 6, and 9. The divisor, quotient, 1, and the number itself are the factors.

$$54 \div 3 = 18$$

$$54 \div 6 = 9$$

$$54 \div 9 = 6$$

So, the factors of 54 are **1, 3, 6, 9, 18, and 54.**

Therefore, we have:

Factors of 36: 1 3 4 6 9 12 36
Factors of 54: 1 3 6 9 18 54

The common Factors of 36 and 54 are **1, 3, 6, and 9.**



What's More

Get moving! Try to solve below.

Identify mentally whether or not each larger number is divisible by the smaller number. Write “Yes” if the number is divisible, and “No” if it is not. Write your answer on a separate sheet of paper.

- | | |
|---------------------------|-----------------------------|
| 1) Is 213 divisible by 3? | 6) Is 918 divisible by 9? |
| 2) Is 519 divisible by 6? | 7) Is 718 divisible by 6? |
| 3) Is 137 divisible by 3? | 8) Is 849 divisible by 9? |
| 4) Is 504 divisible by 6? | 9) Is 354 divisible by 6? |
| 5) Is 369 divisible by 3? | 10) Is 9864 divisible by 9? |



What I Have Learned

In finding the common factors of numbers divisible by 3, 6, and 9, we can use the following divisibility rules: Let us check.

- A number is divisible by 3 if the sum of all the digits is divisible by ____.
- A number is divisible by ____ if the number is divisible by both 2 and 3.
- A number is divisible by 9 if the _____ of all the digits is divisible or a multiple of 9.
- If the sums of the digits of a number is 153, by what number/s is it divisible with? _____
- What smallest 3-digit number is divisible by both 3 and 6? _____



What I Can Do

Directions: Use the divisibility rules for 3, 6, and 9 to help you solve the following problem.

- 1) Are all numbers divisible by 9 also divisible by 3?
- 2) The number of colored pencils in Ana's pencil case is divisible by 3, 6, and 9. She has more than 10 but less than 25. How many-colored pencils does Ana have?

Write your answer in the journal notebook.

Q1. When is a number divisible by 3, 6, and 9?



Assessment

Confident enough to take the test? If not, you may review first before answering the test.

Directions: Choose the letter of the correct answer. Write your answer on a separate sheet of paper.

- 1) Which of the following numbers is divisible by 3?
A. 124 B. 342 C. 347 D. 671
- 2) Which of the numbers below is divisible by both 3 and 6?
A. 28 B. 48 C. 67 D. 93
- 3) What is the common factor of 12 and 9?
A. 3 B. 6 C. 9 D. 12
- 4) Which set is the common factor of 99 and 135?
A. 3 and 6 B. 3 and 9 C. 6 and 9 D. 6 and 12
- 5) 3, 6, and 9 are factors of _____.
A. 33 B. 42 C. 54 d. 64

- 6) One of the following is NOT divisible by 9. Which one is it?
 A. 342 B. 315 C. 264 D. 711
- 7) _____ is a common factor of 81 and 96.
 A. 3 B. 6 C. 8 D. 9
- 8) All the following are factors of 108 EXCEPT ____
 A. 3 B. 6 C. 8 D. 9
- 9) Both 3 and 6 are common factors of ____
 A. 486 and 267 B. 267 and 312
 C. 486 and 312 D. 267 and 311
- 10) Which of the following is NOT divisible by 3, 6, and 9?
 A. 711 B. 612 C. 810 D. 900



Additional Activities

More practice!

Directions: Identify the whole numbers between 1 and 100 that are divisible by 3, 6, and 9. Write your answers on the lines in the rows/boxes for 3, 6 and 9. Based on your answers above, how many whole numbers between 1 and 100 are divisible by 3, 6 and 9? Answer this in your activity notebook.

Divisible by 3:	____, ____ , ____ , ____ , ____ , ____ , ____ ,
	____, ____ , ____ , ____ , ____ , ____ , ____ ,
	____, ____ , ____ , ____ , ____ , ____ , ____ ,
	____, ____ , ____ , ____ , ____ , ____ , ____ ,
	____, ____ , ____ , ____ , ____ , ____ , ____ ,
How many are divisible by 3: ____	
Divisible by 6:	____, ____ , ____ , ____ , ____ , ____ ,
	____, ____ , ____ , ____ , ____ , ____ ,
	____, ____ , ____ , ____ , ____ , ____ ,
How many are divisible by 6: ____	
Divisible by 9:	____, ____ , ____ , ____ , ____ , ____ ,
	____, ____ , ____ , ____ , ____ , ____ ,
How many are divisible by 9: ____	

Based on your answers above, how many whole numbers between 1 and 100 are divisible by 3, 6 and 9?



Answer Key

<p>What I Can Do</p> <p>1. No 2. 18 colored pencils</p>	<p>What I have learned</p> <p>a. Three (3) b. Six (6) c. Sum d. 3 and 9 e. 132</p>
<p>What I Know</p> <p>1. C 2. A 3. D 4. B 5. C 6. B 7. A 8. C 9. D 10. B</p>	<p>What's In</p> <p>1. 41;2 No 2. 550; 5 Yes 3. 1256; 10 No 4. 8910; 10 Yes 5. 348; 2 Yes</p>
<p>What's More</p> <p>1. Yes 2. No 3. No 4. Yes 5. Yes 6. Yes 7. No 8. No 9. Yes 10. Yes</p>	<p>Assessment</p> <p>1. B 2. B 3. A 4. B 5. C 6. C 7. A 8. C 9. C 10. A</p>
<p>Additional Activities</p> <p>1. Divisible by: 3 = 33 6 = 16 9 = 11</p>	

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For inquiries or feedback, please write or call:

Department of Education - Bureau of Learning Resources (DepEd-BLR)

Ground Floor, Bonifacio Bldg., DepEd Complex
Meralco Avenue, Pasig City, Philippines 1600

Telefax: (632) 8634-1072; 8634-1054; 8631-4985

Email Address: blr.lrqaad@deped.gov.ph * blr.lrp@deped.gov.ph