



Mathematics

Quarter 1 – Module 6: **Finding GCF and LCM**



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Mathematics

Quarter 1 – Module 6: Finding GCF and LCM



Introductory Message

This Self Learning Module (SLM) is prepared so that you, our dear learners, can continue your studies and learn while at home. Activities, questions, directions, exercises, and discussions are carefully stated for you to understand each lesson.

Each SLMS is composed of different parts. Each part shall guide you step-bystep as you discover and understand the lesson prepared for you.

Pre-tests are provided to measure your prior knowledge on lessons in each SLM. This will tell you if you need to proceed on completing this module or if you need to ask your facilitator or your teacher's assistance for better understanding of the lesson. At the end of each module, you need to answer the post-test to self-check your learning. Answer keys are provided for each activity and test. We trust that you will be honest in using these.

In addition to the material in the main text, Notes to the Teacher are also provided to our facilitators and parents for strategies and reminders on how they can best help you on your home-based learning.

Please use this module with care. Do not put unnecessary marks on any part of this SLM. Use separate sheet of paper in answering the exercises and tests. And read the instructions carefully before performing each task.

If you have any questions in using this SLM or any difficulty in answering the tasks in this module, do not hesitate to consult your teacher or facilitator.

Thank you.



What I Need to Know

Hello, Mathletes!

In this module, you are going to learn how to find common factors, common multiples, greatest common factors and least common multiples of 2-4 numbers using continuous division. These lessons will enrich your knowledge and skills in the addition, multiplication, and division of numbers.

At the end of this module, you are expected to:

- find the common factors and the GCF of 2-4 numbers using continuous division; and
- find the common multiples and least common multiples of 2-4 numbers using continuous division.



Answer the test below. Take time to recall previous topics.

Di	rections:	Read answe	each stateme er on your wor	nt below and ksheet.	l write only the letter of the correct	
1)	What is t	he grea	atest common	factor of 4, 8	, and 12?	
	А.	2	B. 4	C. 8	D. 12	
2)	Which of	these s	sets of numbe	rs lists exactl	y the common factors of 12 and 24?	
	А.	1, 2, 3	, 4, 6, 12		C. 1, 2, 3, 4, 5, 24	
	В.	1, 3, 4	, 5, 7, 12		D. 1, 3, 6, 9, 12, 24	
3)	What is t	he GCI	F of 6, 12, and	l 18?		
	А.	5	B. 6	C. 12	D. 18	
4)	Mario wa	s aske	d to find the G	CF of 42 and	49. What number did he find?	
	А.	7	B. 12	C. 14	D. 18	
5)	There are	e 36 gir	ls and 16 boy	s in the Math	Club organized by Mr. Dela Cruz. He	
	plans to o	divide t	he same gend	er equally. W	hat is the biggest number of members	
	that each	ı group	would have?			
	А.	4	B. 8	C. 12	D. 16	
6)	What is t	he LCN	I of 8, 12 and	28?		
	А.	158	B. 160	C. 168	D. 178	
7)	7) Which of these numbers are the missing multiples in this set: (15, 30, 45, _, _, _)?					
	А.	50, 55	, 60		C. 60, 75, 90	
	В.	58, 75	, 90		D. 75, 90, 105	

8)	72 is the LCM	of what nur	mbers?		
	A. 5, 9,	and 36		C. 7, 9, and 36	
	B. 6, 9,	and 36		D. 8, 9 and 36	
9)	What is the LC	CM of 3, 9 at	nd 12?		
	A. 34	В. 35	C. 36	D. 37	
10) Which set rep	resents the	common mult	tiples of 120?	
	A. 30,	40,60,120	C	C. 30, 40, 50, 60	
	B. 120,	80, 60, 40		D. 120, 240, 360, 4	80

Lesson Finding GCF and LCM



What's In

A **prime number** is a whole number greater than 1 with only two factors, 1 and itself. For example, 2, 3, 5, 7, 11, and 13 are the first few prime numbers in the set of whole numbers. Why? Because 2 has only two factors which are 1 and 2. This is also true with 3 which also has two factors only, 1 and 3, and so as the other given prime numbers.

On the other hand, a **composite number** is a whole number greater than 1 with more than two factors. For example, 4, 6, 8, 9, and 10 are some of the composite numbers in the set of whole numbers. Why? Because 4 has three factors (1, 2, and 4), while 6 has four factors (1, 2, 3 and 6). You will notice that 8, 9 and 10 each has more than two factors also.

Factors are numbers you multiply together to get another number:

In $2 \ge 3 = 6$, 2 and 3 are the factors of 6. Likewise, 2 and 3 are prime numbers. Hence, we can call 2 and 3 as prime factors of 6.

Example: Express 120 as a product of prime factors.

Solution:	$120 = 2 \ge 60$	2	120
	$= 2 \times 2 \times 30$	2	60
	$= 2 \times 2 \times 2 \times 15$	2	30
	$= 2 \times 2 \times 2 \times 3 \times 5$	3	15
			5

Doing the above method is what we call **prime factorization**.

Therefore, the prime factorization of 120 is 2 x 2 x 2 x 3 x 5.

The **prime factorization** of a number is the product of prime factors that makes up that number.

ACTIVITY: FACTOR ME OUT

Directions: Find the prime factorization of each number. Take your time and enjoy!

1) 128	4) 148	7) 340	10) 4 200
2) 2 200	5) 320	8) 999	
3) 2 250	6) 175	9) 1 620	



From the previous lesson, you were taught how to perform PMDAS and GMAS operations. This time, you are going to deal with finding (GCF) greatest common factor and (LCM) least common multiple.

Read and analyze the problem:

Mary and her friends were assigned to decorate their classroom. There were three pieces of ribbon measures 16 cm, 24 cm, and 40 cm, respectively. Mary wanted to cut them into strips of the same length. What is the largest possible length of each strip?

If you were Mary, how are you going to do it?



You may try to answer this in your notebook and compare your answers on the detailed discussion on the next page, Problem 1.



Remember:

Steps in finding the GCF using continuous division:

- 1. Write the numbers horizontally and find a prime number that will divide all the numbers, if possible.
- 2. Divide by that prime number and write the quotients below the dividends.
- 3. Continue the process until none of the numbers has a common prime divisor.

Note that: The GCF is the product of all the prime factors common to all the numbers given.

Consider these problems.

Problem 1:

We want to know what is the largest possible length of each strip that Mary can cut from the three pieces of ribbons? (*Please refer to problem in What's New.*)

Solution:

	2	16, 24, 40	→ Step 1
Divisors 🔶	2	8, 12, 20	_ → Step 2
(Prime numbers)	2	4, 6, 10	_ → Step 3
		2 3 5	

So, the common factors are: $2 \ge 2 \ge 2 = 8$ (**Step 4**). The greatest common factor is 8.

Therefore, the longest possible length of each strip is 8 cm.

Problem 2:

Grand Tours van route A arrives at its stop every 8 minutes. Van route B arrives at its stop across the terminal every 16 minutes. And van route C arrives at the gas station stop every 24 minutes. If all three vans are currently arriving at their stops, how many hours will pass before all three vans arrive at the same time?

Solution:

In relation to the word problem, the vans' arrival every 8, 16 and 24 minutes are presented in the table below which shows how to find the Least Common Multiple of the following set of numbers using continuous division: 8, 16 and 24.

Step 1	8 16 24 Arrange the given numbers horizontally
Step 2	281624248122246123
Step 3	The common divisors are those numbers at the leftmost part. The quotients, on the other hand are those numbers found at the bottom
Solve for the answer	$2 \times 2 \times 2 \times 1 \times 2 \times 3 = 48$

So, the LCM of 8, 16, and 24 is 48.

Therefore, all three vans arrive at the same time 48 minutes later.

A) Common Factors and Greatest Common Factors

- Common factors are factors that are the same for two or more numbers.
- Greatest Common factor (GCF) is the greatest number that is a factor of two or more numbers.

Let me see if you still remember how to find the common factors and the GCF of two numbers. Study the given example.

Find the common factors and the GCF of the following numbers.

Example: 12, 16, and 18

Factors of 12 :	1, 2, 3, 4, 6, 12
Factors of 16 :	1, 2, 4, 8, 16
Factors of 18 :	1, 2, 3, 6, 9, 18
Common factors :	1 and 2
GCF:	2

1) 32 and 36	6) 24 and 48
2) 27 and 42	7) 21 and 54
3) 54 and 60	8) 72 and 81
4) 45 and 50	9) 55 and 100
5) 18 and 42	10) 120 and 180

B) Common Multiple and Least Common Multiple

The multiple of a number is a product obtained when multiplying a number by a whole number.

Study the given example.

What are the multiples of 4?The multiples of 4 are 4, 8, 12, 16, 20, 24, 28, ...Why?This is because

- 4 x 1 = 4, 4 x 2 = 8, 4 x 3 = 12, 4 x 4 = 16, 4 x 5 = 20,4 x 6 = 24, and so forth.
- The least common multiple (LCM) of a set of numbers is the smallest non-zero that is a multiple of all numbers in a set.

Let us recall, below is an example of finding the multiples of a given number:

Example: Find the LCM of 8 and 12.

- Multiples of 8 = {8, 16, 24, 32, 40, 48, 54, 60, ...}
- Multiples of 12 = {12, 24, 36, 48, 60, 72, ...}

What numbers are found in both sets?

These are **24**, **48**, **60**, are the common multiples of 8 and 12.

What is the smallest among these numbers? It is 24.

Thus, the **LCM** of 8 and 12 is **24**.

Do the exercises below.

Find the LCM of each set of numbers.

1)	7 and 21	6) 6, 12, and 18
2)	4, 8, and 12	7) 8, 16, and 20
3)	10, 15, and 45	8) 12, 20, and 28
4)	12, 18, and 36	9) 30, 40, and 50
5)	9, 12, and 18	10) 3, 12, and 24



What's More

Now you can apply what you have learned in finding the GCF and LCM.

A. **Directions:** Copy the table below on your notebook. Then, using the continuous division, fill in the correct information in each blank.

Numbers	Common Factors	GCF	LCM
1) 36, 48			
2) 12, 16, 30			
3) 24, 36, 48			
4) 14, 21, 28, 35			
5) 15, 30, 45, 60			
6) 8, 16, 32			
7) 18, 36, 72			
8) 9, 12, 18			
9) 30, 60, 80			
10) 2, 10, 20			

- B. **Directions:** Write T if the statement given is true. If the statement is false, change the underlined numbers to make it true. Write your answers in your Math activity notebook.
 - 1) The LCM of $3 \times 3 \times 2$ and $2 \times 3 \times 2$ is $2 \times 2 \times 2 \times 3 \times 3$.
 - 2) <u>180</u> is the LCM of 30 and 36.
 - 3) The LCM of 5 x 2, 3 x 2, and 3 x 5 is $2 \times 3 \times 5$.
 - 4) The LCM of 15, 20 and 30 is <u>120</u>.
 - 5) <u>140</u> is the LCM of 14, 28, and 40.



What I Have Learned

Directions: Find the words in Column B which best describes the statement in Column A. Write only the letter of your answer.

	Α		В
1)	These are the factors of two or more numbers which are the same in all	A.	GCF
	the numbers in a set	В.	common factor
2)	It is simply the smallest of the common multiples.	C.	LCM
3)	This is done to determine the LCM of 2-4 numbers using continuous division for all numbers in a set.	D.	LCD
		E.	Factoring
4)	The greatest factor that two or more numbers share.	F.	multiply the common prime divisors



What I Can Do

Let us try!

Activity 1. Who I am!

Directions: The numbers and letters inside the box show the factors of 60 in increasing order. Find the value of all the letters inside the box. Write your answer in your Math Activity Notebook. You may try another number of your choice.

1	А	В	С	D	E
F	G	Н	Ι	J	60

B. Find and list all the factors of 225.

Activity 2: Know me more! Find out if the given statements are right or wrong.

- **Directions: True or False**: Mark (/) if the statement is true and (X) if the statement is false. Write your answers on your worksheet.
 - 1) In finding the GCF of two numbers, the common factors are to be listed down.
 - 2) The LCM of 12, 8, and 20 is 310.
 - 3) The numbers 16, 60, and 24, has an LCM of 240.
 - 4) The LCM of 18, 24, and 36 is 60.
 - 5) In finding the GCF of two numbers, after the prime factors are listed it must be divided.
 - 6) The GCF of 20 and 28 is 2.
 - 7) GCF is the biggest number that will divide both the given number.
 - 8) The GCF of 30 and 24 is 6.
 - 9) To find GCF of the given numbers may be done by prime factorization tree.
 - 10) There is no GCF if there are no common factors of the given number.



You may review the previous activities before you answer the test below.

Directions: Choose the letter of the correct answer. Write the answer in your worksheet. 1) What is the greatest common factor of 18, 27, and 45? A. 4 B. 8 C. 9 D. 12 2) Which of these sets is exactly the common factors of 36 and 42? A. 1, 2, 3, 6 B. 1, 3, 4, 12 C. 1, 3, 6, 12 D. 1, 2, 3, 24 3) What is the GCF of 12, 24, and 36? D. 48 A. 12 B. 18 C. 24 4) Mario was asked to find the GCF of 15, 30, and 45. What number did he find? A. 15 B. 30 C. 45 D. 60 5) Sixty notebooks, 48 ball pens, and 36 correction tapes are shared among a number of grade 5 pupils such that each gets an equal number of each kind. How many pupils will get an equal number of each kind? A. 3 B. 8 C. 12 D. 16 6) What are the first 4 multiples of 4? A. 2, 4, 8, and 12 C. 4, 8, 16, 20 B. 4, 8, 12, 16 D. 4, 8, 16, 24 7) Which of the following is the LCM of 24, 48, and 80? A. 220 C. 260 B. 240 D. 280 8) What are the first 3 common multiples of 3, 4, and 6? C. 12, 24, 36 A. 12, 24, 30 B. 12, 24, 32 D. 12, 24, 42 9) Which of these multiples is the LCM of 12, 16, and 24? A. 24 B. 48 C. 54 D. 60 10) Alfred Jun visits the library once every 2 days. Jayson visits it once every 3 days

while Justine Louie once every 4 days. They all meet one day in the library. After how many days will they meet in the library again?

A. 12 B. 16 C. 20 D. 24



Additional Activities

Directions: Copy these illustrations in your answer sheet. Write the common prime divisor at the left side of the numbers. Repeat the process until there is no common divisor left.

1) Missing numbers: ____, ____ LCM = ____, GCF = ____ 2) Missing numbers: ____, ___, _ LCM = ____, GCF = ____ 3) Missing numbers: ____, ____, ____ LCM = ____, GCF = ____ 4) Missing numbers: ____, ___, ____, ____, ____ LCM = ____, GCF = _____ 5) 24 48 Missing numbers: ____, ____, ____, LCM = ____, GCF = ___

6) 2 12 \square Missing numbers: ____, ____, ____ LCM = ____, GCF = ____ 7) Missing numbers: ____, ____ LCM = ____, GCF = ____ 8) Missing numbers: ____, ____, LCM = ____, GCF = ____ 9) $\mathbf{2}$ \square Missing numbers: ____, ____, ____, ____, LCM = , GCF = 10) 4 Missing numbers: ____, ____, ____, ____ LCM = ____, GCF = ____



Answer Key

		088	ר, 60 5. F, 2	3.T 4.I	x 3) Z. T	В. I. F, (2 x2 x3.	
	50	5	5, 2	[10) 2, 10, 20	
	540	10	ʻ2'10	1,2		6) 30' 60' 80	
	98	3	٤' `	[8) 9, 12, 18		
	72	18	81 '6 ' 9	1, 2, 3,		7) 18, 36, 72	
	8 32		1,2,4,8		<u>(9) 8, 16, 32</u>		
	2 180		1, 3, 5		2) 12'30'42'90		
	450				4) 14, 51, 58, 32		
	144	15	1, 2, 3, 4, 6, 12		3) 54.36.48		
	070	6 71			51 15°19°30		
		10			s		
	MOT	GCF	040400 <u>1</u> 44	Juluoj		·w	
What's More A.							
	(74)	06 °01 08	24.8	96.36	(9E) 741 .4	2.24	
	C	09 .6 (08) 0	91 [.] 2 (9E)	2.216	(06) 0 <i>2</i> 7. (00)	12.1 (d	
09 = <i>4</i> 3	0 [,] 30 [,] 60 GC	2' 9' 10' 13' 12' 5 5' 54	E = I' 5' 3' 4' 2' $E = I' 5' 3' 4' 1'$ $I' 3' 3$ $S = 54$ $I' 3' 3$ $S = 54$ $S = 54$ $S = 54$ $S = 54$	 I' 7' 3' 6 C GCE = GCE =	IO' CE = 3 (I' Շ' 3' ୧) 3' ୧ 4	GCF = 6 S. CF = 1, 2, 3 GCF = 1, 2, 3 GCF = 3 S. CF = 1, 2, 3 GCF = 3 GCF = 3 GCF = 3 GCF = 3 GCF = 1, 2, 3 GCF = 1, 4 GCF = 1, 3 GCF = 1, 4 GCF = 1, 4 G	
	3 x 5 2 x 7	7 x 7 2 x 5 x 17 7 x 5 x 5 x 5 x 5 x 5 x 5 x 5 x 5 x 5 x	6. 175 = 5 x 5 7. 340 = 2 x 7 9. 1, 620 = 2 9. 1, 620 = 2	(tuO 9M	X2X2X2X2 2 2 2 2 2 2 2 2 2 2 2 2 2	$I. B 4. A$ $2. A 5. A$ $3. B 6. C$ $I. 128 = 2 \times 2 \times 2$ $2. 2, 200 = 2 \times 2 \times 3$ $4. 148 = 2 \times 2 \times 3$ $3. 2, 250 = 2 \times 2 \times 3$	



1, 5, 7, 9 = X; 2, 3, 4, 6, 8, 10 = / (X = 1, 4, 5, 7, 9) (/ = 2, 3, 6, 8, 10)

 $\forall = 5^{\circ} B = 3^{\circ} C = \forall^{\circ} D = 2^{\circ} E = 9^{\circ} E = 10^{\circ} C = 15^{\circ} H = 12^{\circ} I = 50^{\circ} \Lambda = 30$

11) X 12-15(/or true

1' 3' 2' 6' 12' 52' 42' 22' 572

Activity 2:

Activity 1:

What Can I Do

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