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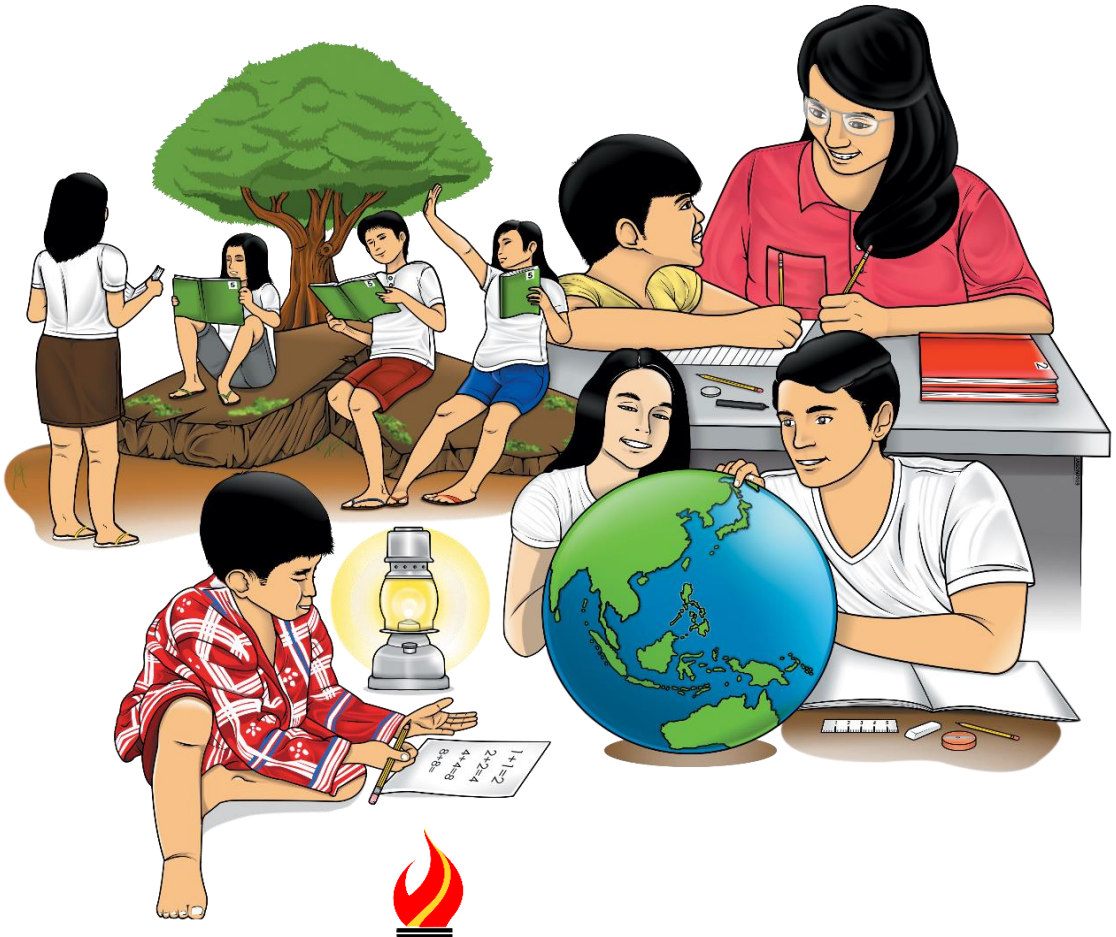
Mathematics
Quarter 2 – Module 1: Prime and Composite Numbers



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Mathematics
Quarter 2 – Module 1: Prime and Composite Numbers

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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 SLM is composed of different parts. Each part shall guide you step-by-step 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 a 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

Numbers play an important role in our lives. We use them in our daily living. Numbers may be prime or composite.

This module was designed and written with you in mind. It is here to help you master identifying factors of a given number as well as prime and composite numbers.

In this module, you will perform exercises that will help you understand prime and composite numbers.

After going through this module, you are expected to:

1. identify the factors of a given number up to 100;
2. identify the multiples of a given number up to 100; and
3. differentiate prime from composite numbers.

What I Know

Let us try to see what you know about prime and composite numbers.

A. Write ***P*** if the number is prime and ***C*** if the number is composite.

1. 3	6. 13
2. 5	7. 24
3. 9	8. 25
4. 12	9. 36
5. 15	10. 47

If you are done answering the activity, please go to the ***Answer Key*** on page 12 and check if your answers are correct.

Thank you for your honesty in answering and checking your work. Hope you will do this until the end of this module.

What's In

Let us review first some of the concepts that can help you understand Prime and Composite numbers.

Fill in the missing numbers and identify the last number as odd or even. Write your answer in the blank.

1. 11, ___, 13, 14, ___ _____

2. 24, 25, ___, 27, ___ _____

3. ___, 51, 52, 53, ___ _____

4. 63, 64, 65, ___, ___ _____

5. 90, 91, 92, ___, ___ _____

If you are done answering the activity, please go to the ***Answer Key*** on page 12 and check if your answers are correct.

Have fun in doing the activities in this module.

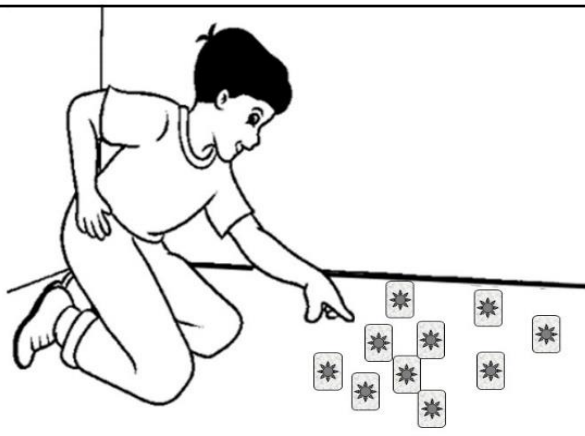
Notes to the Teacher

The activities may be supplemented and enhanced with some contextualized problems that will get the interest of the learners to perform well in differentiating prime and composite numbers.

What's New

Let us start learning the new concept with the help of this problem.

Read and understand the problem, then answer the questions that follow.



Marlo has 10 cards. He wants to arrange them in rows. In how many ways can he arrange them?

What is asked in the problem?

- The number of ways that Marlo can arrange his cards.

What are the given facts that can help you solve the problem?

- 10 cards

In how many ways can he arrange them?

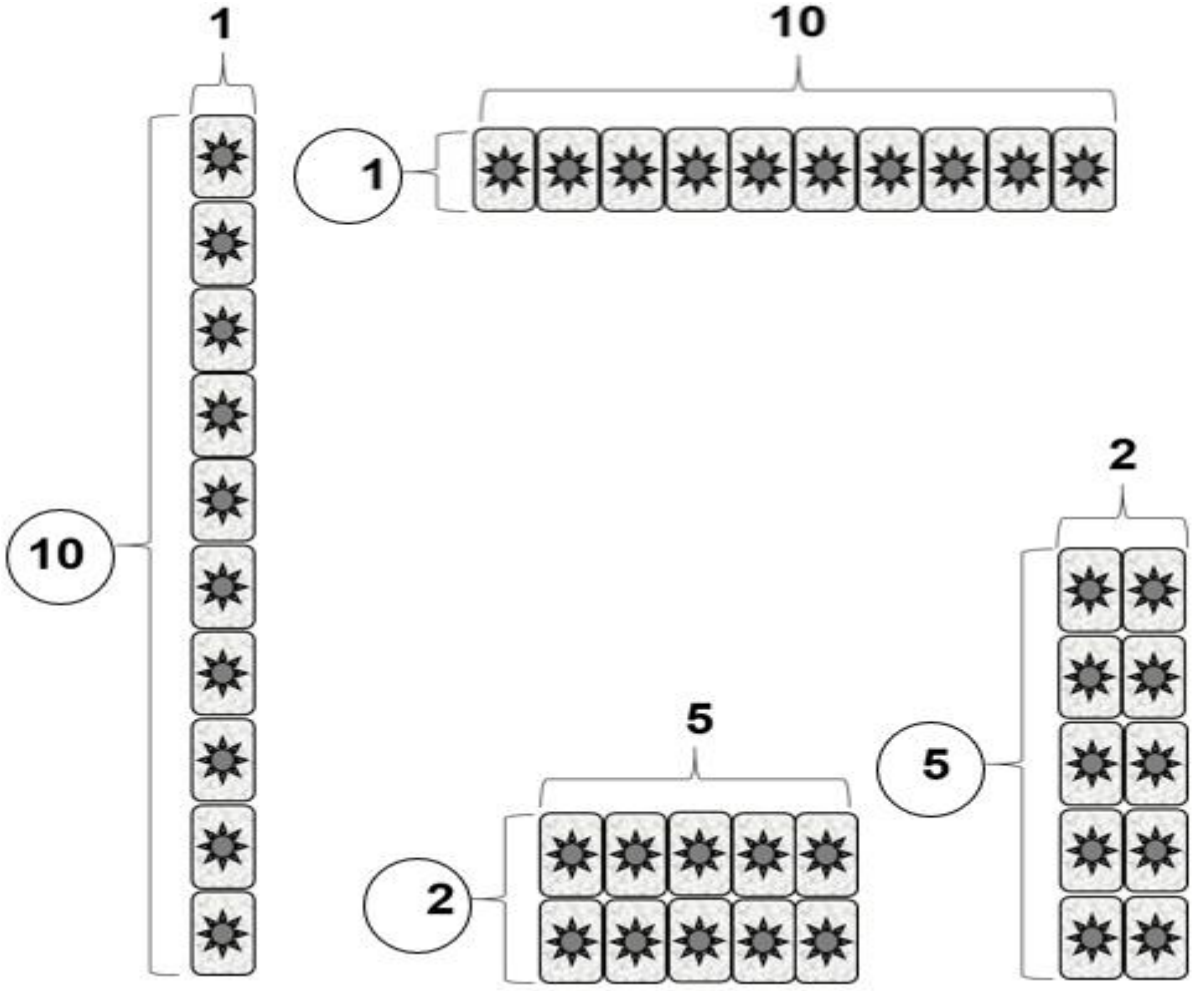
You can solve the problem by drawing a picture.

Try to answer the problem. Have patience and have fun!

We will find out on the next part of this module whether you answered the problem properly and correctly.

What is It

Observe the pictures.



These pictures show the different ways by which Marlo can arrange his cards.

As shown in the picture, Marlo can arrange his cards in rows of 1, 2, 5 and 10.

We can check if our answer is correct with the use of ***factors*** and ***multiples***.

> ***Factors*** are numbers that we multiply to get a product.
>
> ***Multiples*** are the products of a number multiplied by other whole numbers.

Let us check if 1, 2, 5 and 10 are ***factors*** of 10.

The following multiplication sentences show the factors of 10.

10 = 1 x 10

1 is a factor of 10.
10 is a factor of 10.

10 = 2 x 5

2 is a factor of 10.
5 is a factor of 10.

Therefore, 1, 2, 5 and 10 are the factors of 10.

Let us now check if 10 is a ***multiple*** of 1, 2, 5 and 10. Let us multiply these numbers by the numbers 0, 1, 2, 3, . . .

X	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Multiples of 1	0	1	2	3	4	5	6	7	8	9	10
Multiples of 2	0	2	4	6	8	10	12	14	16	18	20
Multiples of 5	0	5	10	15	20	25	30	35	40	45	50
Multiples of 10	0	10	20	30	40	50	60	70	80	90	100

The table above shows that 10 is present in the multiples of 1, 2, 5 and 10.

Therefore, 10 is a multiple of 1, 2, 5 and 10.

So, we can finally say that Marlo can arrange his cards in 4 ways (by 1, 2, 5 and 10).

Study the table.

Product	**Numbers to be multiplied to get the given product**	**Factors**	**Number of factors**
7	1 x 7	1 and 7	2
9	1 x 9, 3 x 3	1, 3, and 9 *(take note to use only once the repeated factors like 3 in 3 x 3)*	3
12	1 x 12, 2 x 6, 3 x 4	1, 2, 3, 4, 6, and 12	6
23	1 x 23	1 and 23	2

Notice that 7 and 23 have 2 factors each.

The factors of 7 are 1 and itself.
The factors of 23 are 1 and itself.

Notice that 9 and 12 have more than 2 factors each.

The factors of 9 are 1, 3 and 9.
The factors of 12 are 1, 2, 3, 4, 6, and 12.

A number greater than 1 with only 2 factors is a ***Prime Number.*** The numbers 7 and 23 are examples of prime numbers.

A number with more than 2 factors is a ***Composite Number.*** The numbers 9 and 12 are examples of composite numbers.

The numbers 1 and 0 are neither prime nor composite. They are considered as special numbers.

The only even prime number is 2.

Let us try the next activity for mastery.

Use the given table and follow the instructions.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

1. Circle 1.
2. Cross out all multiples of 2 except 2.
3. Cross out all multiples of 3 except 3.
4. Cross out all multiples of 5 except 5.
5. Cross out all multiples of 7 except 7.

Try to observe the results.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

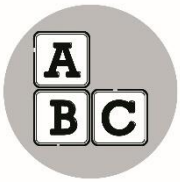
What can you say about the results?

The circled number which is 1 is neither prime nor composite. It is considered as special number.

The numbers that were crossed out are composite numbers.

The remaining numbers are prime numbers.

Now you already know the difference between prime and composite numbers.



What's More

Let us see if you can already do the activities.

Activity 1. Write the missing factor in each multiplication sentence.

1. 8 = 4 x ___
2. 27 = ___ x 9
3. 41 = 1 x ___
4. 56 = 8 x ___
5. 75 = ___ x 25

Activity 2. Write the missing multiple of each number.

1. 4: 4, 8, __, 16, 20, . . .
2. 7: 7, __, 21, 28, 35, . . .
3. 11: 11, 22, 33, __, 55, . . .
4. 15 : 15, 30, __, 60, 75, . . .
5. 20 : 20, 40, 60, 80, __, ...

Activity 3. Complete the table below with the needed data.

Number	Factors	Number of Factors	Prime or Composite?
1. 12	1,2,3,4,6,12		
2. 20	1,2,4,5,10,20		
3. 21	1,3,7,21		
4. 31	1,31		
5. 43	1,43		

If you are done answering the activity, please go to the ***Answer Key*** on page 12 and check if your answers are correct.

What I Have Learned

Just always remember:

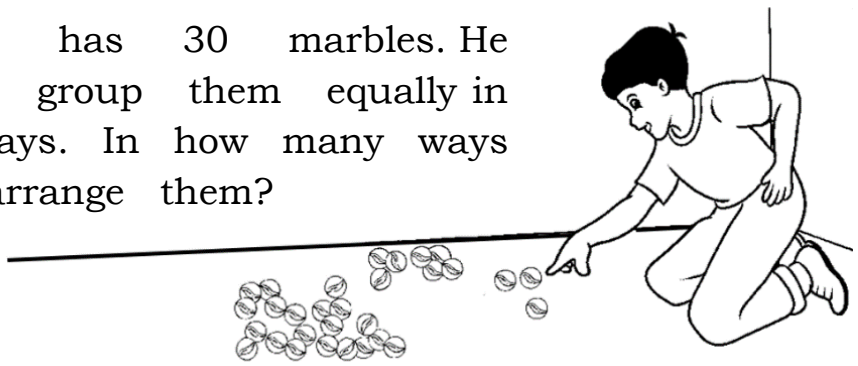
1. Factors are numbers that we multiply to get a product.
2. Multiples are the products of a number multiplied by other whole numbers
3. A prime number is a number with only two factors: 1 and the number itself.
4. A composite number is a number with more than two factors.

What I Can Do

Let us see if you are now ready to solve this problem.

Read and understand the problem, then answer the questions that follow.

Clark has 30 marbles. He wants to group them equally in different ways. In how many ways can he arrange them?



What is asked in the problem?

1. What are the given facts that can help you solve the problem?
2. Is 30 prime or composite number?
3. How many ways can Clark arrange the marbles?

Assessment

You are now ready for the next activity.

A. Write the letter that corresponds to the correct factors for each given number.

1. **23**

a. 2 x 12 b. 1 x 23 c. 3 x 11 d. 2 x 23

2. **25**

a. 5 x 5 b. 5 x 6 c. 2 x 5 d. 2 x 25

3. **42**

a. 6 x 6 b. 2 x 12 c. 2 x 22 d. 7 x 6

4. **55**

a. 5 x 5 b. 5 x 10 c. 5 x 11 d. 5 x 22

5. **81**

a. 8 x 11 b. 9 x 9 c. 4 x 21 d. 8 x 9

B. Write the first 5 multiples of the given numbers.

1. 8 : _____

2. 9 : _____

3. 13 : _____

4. 21 : _____

5. 25 : _____

C. Copy and complete the table below.

Number	Factors	Number of factors	Prime or Composite?
1. 19			
2. 22			
3. 25			
4. 29			
5. 33			

If you are done answering the activity, please go to the ***Answer Key*** on page 13 and check if your answers are correct.

Additional Activities

Let us try some more.

A. Circle the prime numbers and box the composite numbers.

23	46	40	75	60
21	82	55	43	49

If you are done answering the activity, please go to the ***Answer Key*** on page 13 and check if your answers are correct.

Answer Key

What I Know

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

What's In

What's More

Activity 1

1. $8 = 4 \times \underline{2}$
2. $27 = \underline{3} \times 9$
3. $41 = 1 \times \underline{41}$
4. $56 = 8 \times \underline{7}$
5. $75 = \underline{3} \times 25$

Activity 2

1. 4 : 4, 8, $\underline{12}$, 16, 20, …
2. 7 : 7, $\underline{14}$, 21, 28, 35, …
3. 11 : 11, 22, 33, $\underline{44}$, 55, …
4. 15 : 15, 30, $\underline{45}$, 60, 75, …
5. 20 : 20, 40, 60, 80, $\underline{100}$, …

Activity 3

	Number	Factors	Number of Factors	Prime or Composite?
1.	12	1,2,3,4,6,12	6	Composite
2.	20	1,2,4,5,10,20	6	Composite
3.	21	1,3,7,21	4	Composite
4.	31	1,31	2	Prime
5.	43	1,43	2	Prime

Answer Key

Additional Activities

23	46	40	75	60
21	82	55	43	49

	Number	Factors	Number of factors	Prime or Composite?
1.	19	1, 19	2	Prime
2.	22	1, 2, 11, 22	4	Composite
3.	25	1, 5, 25	3	Composite
4.	29	1, 29	2	Prime
5.	33	1, 3, 11, 33	4	Composite

C
5. 25 : 25, 50, 75, 100, 125
4. 21 : 21, 42, 63, 84, 105
3. 13 : 13, 26, 39, 52, 65
2. 9 : 9, 18, 27, 36, 45
1. 8 : 8, 16, 24, 32, 40
B
5. b
4. c
3. d
2. a
1. b
A

Assessment

4. 8
3. composite
2. 30
1. The number of ways the marbles can be arranged.

What I Can Do

References

K to 12 Mathematics Curriculum Guide, August 2016

Tabilang, Alma R. et. Al, 2015, **Mathematics 4 Learner's Material** pp. 86-88, Department of Education

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