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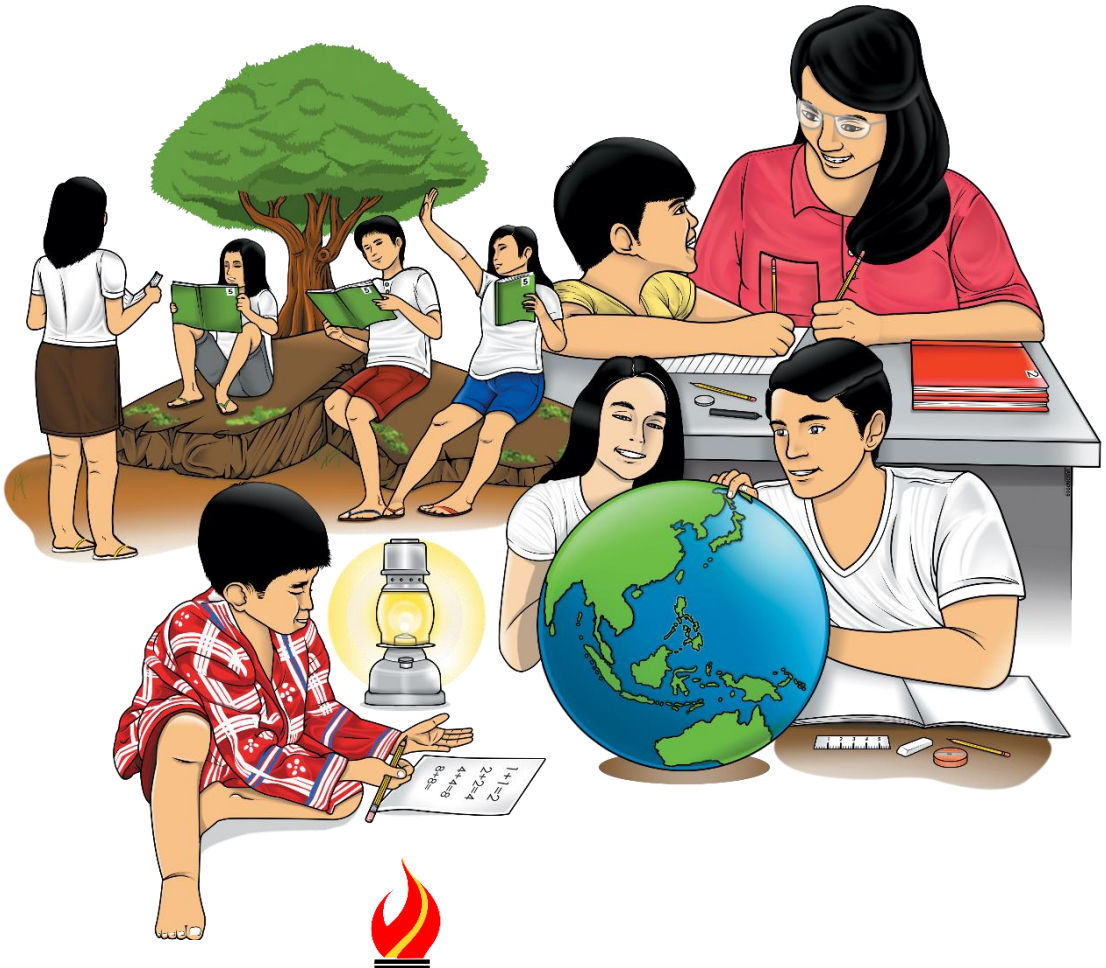
DEPARTMENT OF EDUCATION

Mathematics

Quarter 3 – Module 5:
Determining the Missing Terms in a Sequence



ALTERNATIVE DELIVERY MODE
ADM

Mathematics – Grade 4
Alternative Delivery Mode
Quarter 3 – Module 5: Determining the Missing Terms in a Sequence
First Edition, 2020

Published by the Department of Education
Secretary: Leonor Magtolis Briones
Undersecretary: Diosdado M. San Antonio

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Printed in the Philippines by _____

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Mathematics

Quarter 3 – Module 5:
Determining the Missing Terms in a Sequence

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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

This module was designed in order to assist you learn how to determine the missing term/s in a sequence of numbers.

In this lesson, you will be guided on how to find or give the rule in determining the missing term/s. The learning activities allow you to explore, discover and appreciate the beauty of patterns that can be seen in different objects around us. You will also be taught on how patterns are created in the succeeding activities.

After going through this module, you are expected to:

1. determine the missing term/s in a sequence of numbers, etc.; and

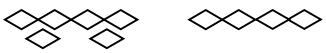
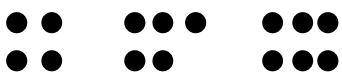
2. give/state the rule in determining the missing term/s in a sequence.

What I Know

Let us check first your knowledge about patterns.

You need a sheet of paper for the activities.

A. Fill in the blank with the missing term.

1. A B C A B C A B _____
2. 1 2 3 4 5 _____
3. 0 00 000 0000 _____
4.  _____
5.  _____

B. Identify the applicable rule for each pattern. Choose the answer from the box.

1. 3 5 7 9 _____
2. 1 2 3 4 _____
3. 8 6 4 2 _____
4. 5 10 15 20 _____
5. 9 8 7 6 _____

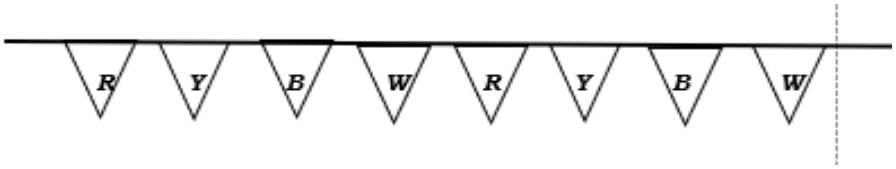
Add 5	Subtract 1	Add 1
Subtract 2	Subtract 5	Add 2

Check your answers with the Answer Key on page 14.

If you got a score of 8-10, you're GREAT. This lesson will be very easy for you.

If your score is 7 or below, you need to study carefully the lesson and the activities.

What's In

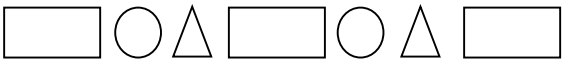


Every community celebrates fiesta. During fiesta we see *banderitas (flaglets)* hanged along the streets. If you notice, these *banderitas* are of different colors and are arranged alternately such as red, yellow, blue, white, red, yellow, blue, white and this arrangement of colors continues until the end of the rope. This arrangement shows pattern.

Let us see if you can look for the pattern in each activity.

I. Study the pattern and fill in the next term on the line provided.

1.  _____

2.  _____

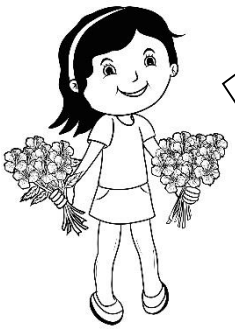
3.  _____

4. A B C D _____

5. A1 B2 C3 D4 _____

Please check your answer at the last page of this module. Did you get the right answer? If yes, then you know already what pattern is.

What's New



I am Hana. Every Saturday and Sunday I help my mother sell flowers in the market. For each day of helping her, mother gives me ₱ 10.00. I save this amount in my piggy bank so that I could buy a gift for her on her birthday. It's been one month now since I started saving. How much do I have now? How about on the next Saturday and Sunday?

If you were Hana would you also help your parents earn a living? What would you do with the money given by your parents?

If you are given an allowance daily, will you save part of it?

Is saving important?

Let us help Hana compute her savings.

What is It

Let us compute Hana's savings using this table.

	For one month								**For next month**	
	Sat	**Sun**	**Sat**	**Sun**	**Sat**	**Sun**	**Sat**	**Sun**	**Sat**	**Sun**
Saving	₱ 10	₱ 10	₱ 10	₱ 10	₱ 10	₱ 10	₱ 10	₱ 10	₱ 10	₱ 10
Total	10	20	30	40	50	60	70	80	?	?

Let us add the Hana's savings.

10 + 10 = 20 20 + 10 = 30 30 + 10 = 40 40 + 10 = 50

50 + 10 = 60 60 + 10 = 70 70 + 10 = 80

Her savings for one month amounted to ₱ 80.00. In order to know her savings for the next Saturday and Sunday of the following month, we will add again ₱10 for each day.

Saturday ➡ 80 + 10 = 90 Sunday ➡ 90 + 10 = 100

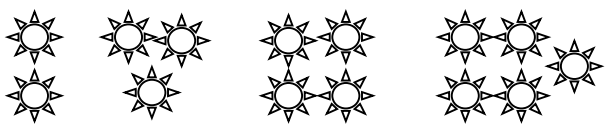
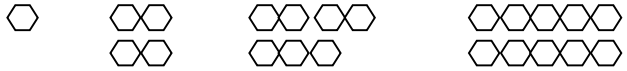
So, her savings for the next Saturday will be ₱ 90.00 and the next Sunday will be ₱ 100.00.

Why were we able to give the next total amount of Hana's savings? Do you see any pattern in the amount saved?

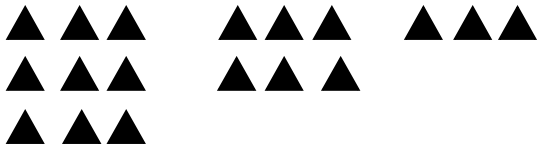
Yes, there is a pattern of adding ₱ 10.00 so, it is easy to give the next total amount of savings.

This is called **Number Pattern**. Number pattern is ***a pattern or sequence in a series of numbers***. This pattern establishes a common relationship between all numbers. The difference between consecutive numbers helps us understand their relationship.

In early grades, learners are already taught about patterns starting from illustrations up to numerals. Let us study these patterns and their rule:

Pattern	**Rule**
	Add one
	Add three

Subtract two



Subtract three

In order to know the next term, you have to study the patterns and know the rule.

First, see if the objects are getting more or getting less. If it gets more, then it is being added. If it gets lesser, then it is being subtracted.

In numerals, we can easily find the rule by looking into the next term and subtracting the term before it if it is in increasing order. The difference is what is being added to the existing numeral in order to get the numeral next to it.

2, 4, 6, 8, ____ , ____ 4 - 2 = **2** , 6 - 4 = **2** , 8 - 6 = **2**

Rule ➡ Add 2 to find the next term
So, the missing terms are **10** and **12**

5, 10, 15, 20, ____ , ____ 10 - 5 = **5** , 15 - 10 = **5** , 20 – 15 = **5**

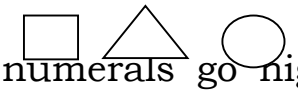
Rule ➡ Add 5 to find the next term
So, the missing terms are **25** and 30

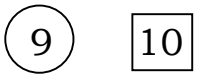
If it is in decreasing order, subtract the previous term from the new term. The difference is what is being subtracted from the existing numeral to get numeral next to it.

33, 30, 27, 24, ____, ____ 33 -30 = **3** , 30 - 27 = **3** , 27-24 = **3**

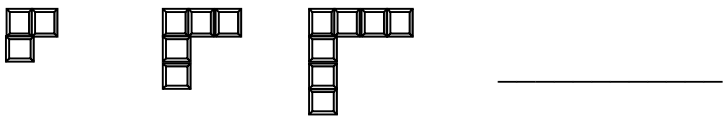
Rule ➡ Subtract 3 to find the next term
So, the missing terms are **21** and **18**

Sometimes the pattern is a combination of sequence of illustrations and numerals like the following:

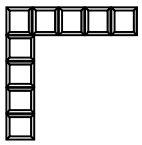
As what we can see, the three shapes  are drawn repeatedly and sequentially as the numerals go higher. Therefore, the missing terms will be:



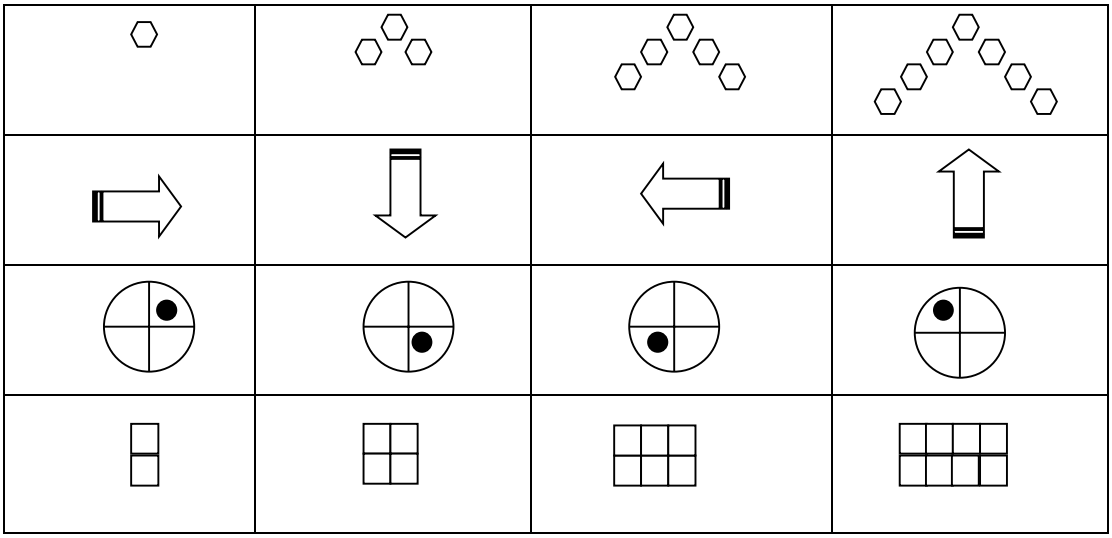
In some instances, **patterns of figures** are used. We just need to observe the series of sequence of objects or illustrations in order to get the next terms.



Looking carefully into the pattern as to how the objects or figures have been arranged, we can see that a is being added to both ends so, the next term will be:



Here are some examples:



Let us have some more examples of finding patterns.

Rico's Uncle Rudy is in the hospital. He plans to visit him every other day. His first visit was on Monday. What days will be his second, third and fourth visits?

Let us list down the days of the week and identify the days that Rico will visit his uncle. Every other day means that there is a day in between that he will not be in the hospital.

Monday	Tuesday	Wednesda	Thursday	Friday	Saturda	Sunday
1st visit		2nd visit		3rd visit		4th visit

Therefore, Rico's second, third and fourth visits will be on Wednesday, Friday and Sunday.

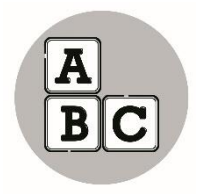
If you will look at the 2021 calendar, you will see that February has only 28 days. But every leap year, February has 29 days. Leap years are years where an extra day is added to the shortest month, February. It occurs every four years. Year 2020 was a leap year. When will be the next three consecutive leap years?

With the pattern that leap year happens every four years, this will be the next three consecutive leap years:

$2020 + 4 = \boxed{2024}$ $2024 + 4 = \boxed{2028}$ $2028 + 4 = \boxed{2032}$

Did you find it easy?

Just carefully study the pattern and sequence of numbers and figures in order for you to give the next term/s or the missing term/s.



What's More

Let us check what you have learned from the lessons.

Activity 1 – "Next Please"

Study the patterns and fill the missing term on the blank.

1. 3 , 6 , 9 , 12, _____
2. 4 , 8 , 12, 16, _____
3. 65, 60, 55, 50, _____
4. 36, 30, 24, 18, _____
5. 1 , 3 , 5 , 7 , 9 , _____

.

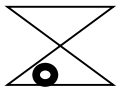
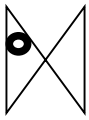
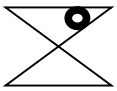
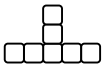
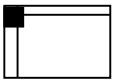
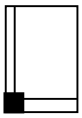
Activity 2 - "Rule Me Up"

State the rule for each pattern.

1. 10, 20, 40, 80, 160 _____
2. 22, 33, 44, 55, 66 _____
3. 50, 40, 30, 20, 10 _____
4. 36, 33, 30, 27, 24 _____
5. 41, 35, 29, 23, 17 _____

Activity 3 - "Draw The Next"

Draw the next pattern.

1.				
2.				
3.				
4.				
5.				

Score of:

12 – 15 → **EXCELLENT**! You can proceed to the assessment.

8 – 11 → **THAT'S GOOD**! You are almost there. Review the lessons where you find difficulty.

Below 8, kindly study carefully the given examples and explanations and you may ask help from someone who knows the lesson such as your teachers or parents.

What I Have Learned

Let us keep in mind what pattern is.

Pattern is a design or arrangement that repeats continuously.

- **Number pattern** is *a pattern or sequence in a series of numbers*. This pattern establishes a common relationship between all numbers. The difference between consecutive numbers helps us understand their relationship.
- **Patterns of Figures** *refer to a pattern or sequence in a series of figures or illustrations* showing common relationship.

In finding the rule, study closely how the sequence of numbers and/or figures are formed.

What I Can Do

Make at least 3 series of patterns using the following rules.

1. Starting from 3 balls, add 4 more
2. Starting from 10 boxes, subtract 2
3. Starting from numeral 1, multiply it by 3

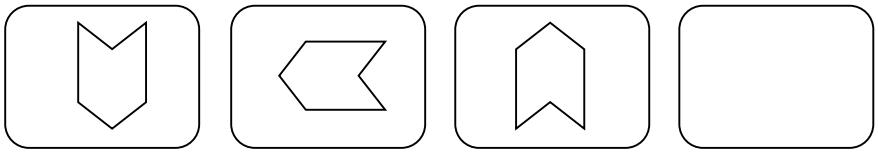
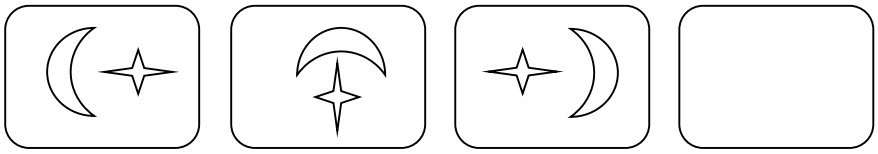
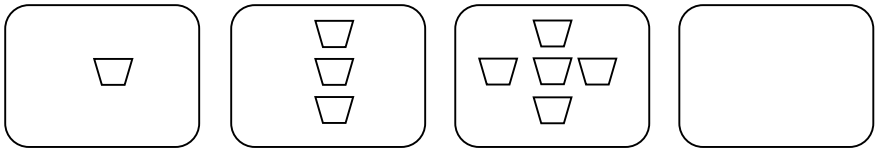
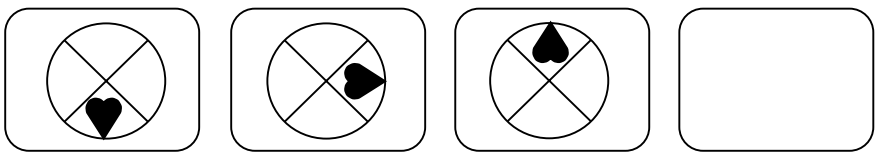
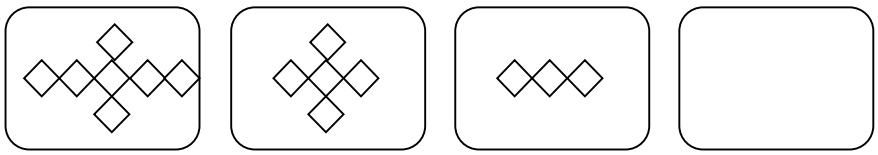
Check your answers with the Answer Key on page 14. If you got it right, you may go to assessment. If not, go back and review the examples and the activities.

Assessment

I. Match the pattern to its rule. Write the letter of the correct answer on your notebook.

A	**B**
___ 1. 8 , 14, 20, 26, 32	a. Add 10
___ 2. 35, 28, 21, 14, 7	b. Multiply by 2
___ 3. 11, 22, 44, 88, 176	c. Subtract by 5
___ 4. 33, 43, 53, 63, 73	d. Subtract by 7
___ 5. 90, 85, 80, 75, 70	e. Add 6

II. Study the figures and fill in the box with the missing term.

1. 
2. 
3. 
4. 
5. 

You're a **SUPER KID** if your score is 8-10. You are now ready for the next module.

With a score below 8, go back and study carefully the examples and explanations.

Additional Activities

Using what you have learned in patterns, make a design of what you would like to have in the walls of your bedroom.

Answer Key

Assessment

I.

1. **E**
2. **D**
3. **B**
4. **A**
5. **C**

II.

1. 2. 3. 4. 5.

What I Can Do

1.		
2.		
3. 1	3	9

What's More

Activity 1 – "Next Please"

1. 15
2. 20
3. 45
4. 12
5. 11

Activity 2 – "Rule Me Up"

1. Multiply by1 2
2. Add 11
3. Subtract 10
4. Subtract 3
5. Subtract 6

Activity 3 – "Draw the Next"

1. 2. 3. 4. 5.

What's In

1. 4. E
2. 5. E5
3.

What I Know

A. B.

1. C 1. Add 2
2. 6 2. Add 1
3. **ooooo** 3. Subtract 2
4. ◇◇ 4. Add 5
5. **ooooooo** 5. Subtract 1

References

DepEd Order No. 12, s. 2020.Adoption of the Basic Education Learning Continuity Plan for SY 2020-2021 In Light of the Covid-19 Public Health Emergency. June 19, 2020. p. 342.

https://www.toppr.com/guides/maths/can-you-see-the-pattern/pattern-in-figures-and-numbers/

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