*Z*est for *P*rogress
*Z*eal of *P*artnership

6

MATHEMATICS
4th QUARTER – Module 4:
CONSTRUCTING AND INTERPRETING PIE GRAPH

JANUARY
Makugihon

FEBRUARY
Mahigugmaon

MARCH
Matinabangon

APRIL
Matinahuron

MAY
Mahapsay og Malinywo

JUNE
Maabtik og Masunod sa Ihsaktong Oras

JULY
Maantigo og Maabilidad

AUGUST
Maginhunahunaon para sa Uban

SEPTEMBER
Madaginoton

OCTOBER
Matinud-anon

NOVEMBER
Masaligan

DECEMBER
Maalampuon

Name of Learner: _____

Grade & Section: _____

Name of School: _____

Mathematics – Grade 6
Alternative Delivery Mode
Quarter 4 - Module 4: Constructing and Interpreting Pie Graph
First Edition, 2020

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 of lessons in each SLM. This will tell you if you can proceed on completing this module or if you need to ask your facilitator or your teacher's assistance for a 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 with 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. Read the instructions carefully before performing each task.

If you have any questions 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

Graphs and charts condense large amounts of information into easy-to-understand formats that clearly and effectively communicate important points. Charts are often used to ease understanding of large quantities of data and the relationships between parts of the data. Charts can usually be read more quickly than raw data. Certain types of charts are more useful for presenting a given data set than others.

After going through the module, you are expected to construct a pie graph based on a given set of data and interpret it.
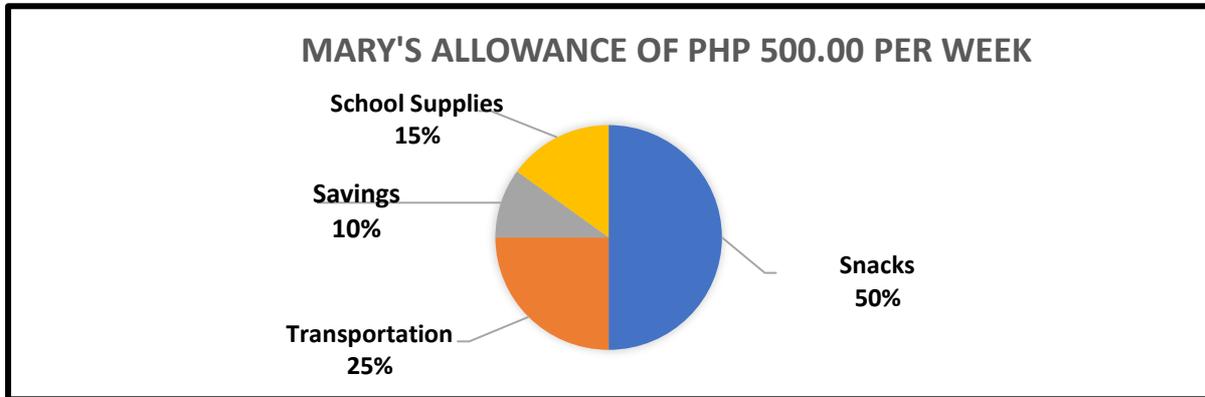
As you continue your journey in this module, you will learn the beauty of constructing a pie graph following the different steps you will use in your daily life.
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What I Know

Directions: Choose the letter that corresponds to your answer. Write your answer on a separate sheet.

Use this graph to answer questions 1-3.

MARY'S ALLOWANCE OF PHP 500.00 PER WEEK

School Supplies 15%
Savings 10%
Transportation 25%
Snacks 50%

1. What is the title of the given graph above?
   A. Mary's allowance of Php 500 Per Week   C. pie graph
   B. snacks   D. Mary's savings

2. What percent of her allowance does Mary spend for snacks?
   A. 10%   B. 11%   C. 25%   D. 50%

3. How much does she keep for savings?
   A. Php 10.00   B. Php 15.00   C. Php 50.00   D. Php 100.00

4. Which of the following pie graphs correctly represents the following data?
   Rita's Number of Colored Pencils: 12 yellow, 15 red, 20 blue
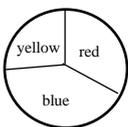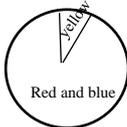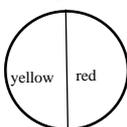
   A.   B.   C.   D.
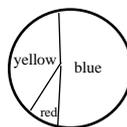
5. Which of the following is the best title for the given pie graph below?
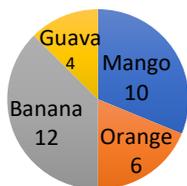
   A. Number of Vegetables
   B. Number of Desserts
   C. Number of Fruits
   D. Number of Pets

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What's In

Directions: Read and understand the given situation. Complete the table and answer the questions that follow.

Mark is a pet lover. He has 30 pets in their home. 50% of his pets are birds, 30% are dogs, and the rest are cats.

Pets	Number
Birds	
Dogs	
Cat	

1. How many percent of Mark's pets are cats?
2. How many percent of his pets are dogs?
3. How many percent of his pets are birds?

What's New

Directions: Are you a pet lover like Mark? What kind of pets do you have at home? Complete the pie graph by writing the name and percent of pets that you have at home.
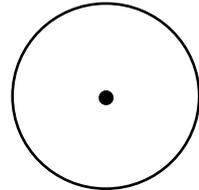
QUESTION: Among these pets that you have at home, what is your most favorite? Why?

What is It

- Graphs are visual representations of numerical data.
- Pie graphs or circle graphs show the percentage of a whole represented by each

STEPS IN CONSTRUCTING A CIRCLE GRAPH OR A PIE GRAPH

1. Find the fractional part or the percent of each item in the data.
2. Determine the number of degrees for each item. A circle contains 360°. To determine the number of degrees for each item, multiple 360 ° by the corresponding fractional part or percent.
3. Using a compass, draw a circle. Mark, the center of the circle.
4. Using a protractor, draw in the circle the number of degrees in each item.

EXAMPLE:

Construct a pie graph using the following data.

Mark's Pets	
Kind of Pets	**Number of Pets**
Birds	15
Dogs	9
Cats	6
Total	**30**

In the given example, we must first determine the fractional part of each item's percentage in the data.

Step 1: The following numbers represent what percent of the whole; each item is rounded to the nearest percent.

Birds: $\frac{15}{30} \times 100 = 50\%$

Dogs: $\frac{9}{30} \times 100 = 30\%$

Cats: $\frac{6}{30} \times 100 = 20\%$

TOTAL = 100%

Step 2: The following numbers represent the number of degrees in each section.

Birds: 360° × 50% = 180°

$$\frac{360°}{1} \times \frac{50}{100} = \frac{18\ 000}{100} = 180°$$

Dogs: 360° × 30% = 108°

$$\frac{360°}{1} \times \frac{30}{100} = \frac{10\ 800}{100} = 108°$$

Cats: 360° × 20% = 72°

$$\frac{360°}{1} \times \frac{20}{100} = \frac{7\ 200}{100} = 72°$$

Step 3: Use a compass to draw the circle and a protractor to measure the degrees.

Mark's Pets

6 Cats 20%

15 Birds 50%

9 Dogs 30%
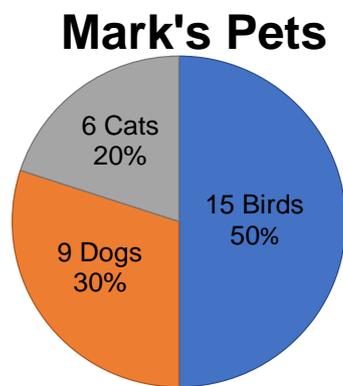
QUESTIONS:

1. What is the title of the pie graph at the right?
2. How many dogs does Mark have?
3. What percent of his pets are dogs?
4. What percent of his pets are cats?
5. Why do we need to take care of the animals?

What's More

Directions: Complete the table below, represent each item in the pie graph, and answer the following questions.

Mario's Weekly Expenses in School

Expenses	Amount (Php)	Percent	Degrees
Food	500	50%	180°
Fare	200		
School Supplies	200		
Others/savings	100		
TOTAL	1 000		
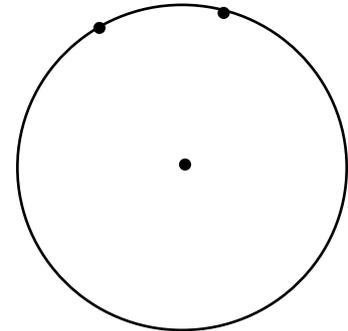
1. What is the title of the pie graph?
2. How much was spent on food?
3. How many percent does the school supplies represent?
4. What expenses have the most allocated budget?
5. Why do we need to save money?

What I Have Learned

Directions: Complete the graphic organizer by answering the given questions.

Steps in Constructing a Pie Graph

➢ Graphs are visual representations of numerical data.
➢ Pie graphs or circle graphs show the percentage of a whole represented by each part.

What I Can Do

Directions: Complete the table and construct a pie graph showing how Paolo budgets his time in a day. Use the following data. Write your answer on a separate sheet.

Paolo's Schedules in a Day

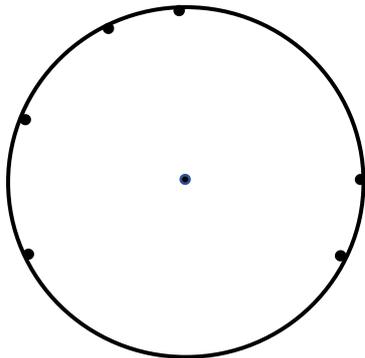| ACTIVITIES	TIME	PERCENT	DEGREES
School Classes	6 hours		
Household chores	2 hours		
Sleep	8 hours		
Homework	3 hours		
Rest and recreation	3 hours		
Other activities	2 hours		

1. What activity does he do for more than 6 hours in a day?
2. Which of the activities is 25% of his Schedule?
3. How many hours does Paolo spend to do his homework?
4. How many percent does he spend for rest and recreation?
5. What percent of Paolo's schedule is intended for his other activities?

Assessment

Directions: Choose the letter of the correct answer and write it on the space provided before each number. Write your answer on a separate sheet.

Books Sold According to Subject
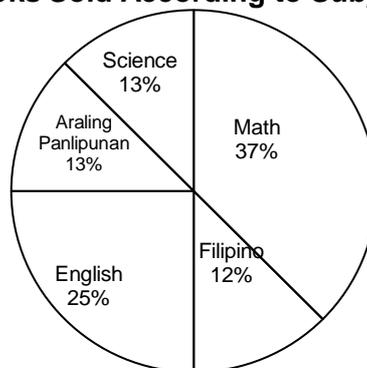
1. What is the title of the graph?
   A. Favorite Books
   B. Books Borrowed
   C. Books Sold According to Grade Level
   D. Books Sold According to Subject

2. What percent of the books sold for English?
   A. 12%   B. 13%   C. 25%   D. 37%

3. What percent of the books sold for Math?
   A. 12%   B. 13%   C. 25%   D. 37%

4. What subjects have the same percentage of sales?
   A. Science and Araling Panlipunan   C. English and Filipino
   B. Math and Filipino   D. Science and Math

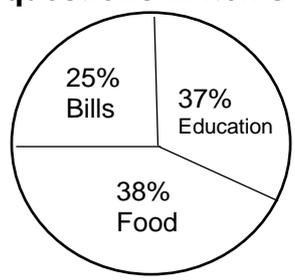5. Which subject has the least percent of sold books?
   A. Filipino   B. Math   C. Science   D. English

6. Which subject has the most percent of sold books?
   A. Filipino   B. Math   C. Science   D. English

7. What are the total degrees of a whole circle?
   A. 90°   B. 150°   C. 180°   D. 360°

Use this graph to answer the questions in items 8-10.

25% Bills

37% Education

38% Food

Monthly Expenses = Php 12 500.00

8. How many percent are allocated for food?
   A. 90°   B. 97.2°   C. 136.8°   D. 180°

9. How much was spent for bills?
   A. Php 3 000.00   C. Php 3 250.00
   B. Php 3 125.00   D. Php 5 200.00

10. How much was spent on education?
    A. Php 1 000.00   C. Php 5 350.00
    B. Php 2 225.00   D. Php 4 625.00
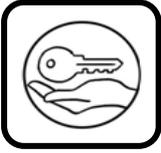
Answer Key

What I Know:

1. A   2. D
3. C   4. A
5. C

3.
4.

What Is It:

Number:
Birds – 15   Birds – 50%
Dogs – 9   Dogs – 30%
Cats – 6   Cats – 20%

What's New: Answers may vary

What's In:

1. 20%   2. 30%   3. 50%

What's More:

1. Mario's Weekly Expenses in School
2. Php 500
3. 20%
4. Food
5. Because we can use our savings in case of emergency. (answers may vary)

Food – 50%   180°
Fare – 20%   72°
School Supplies - 20%   72°
Others – 10%   36°
Total – 100%

What I Have Learned:

- Pie graphs or circle graphs show the percentage of a whole represented by each part.

STEPS IN CONSTRUCTING A PIE GRAPH

1. Find the fractional part or the percent of each item in the data.
2. Determine the number of degrees for each item. A circle contains 360°.
   To determine the number of degrees for each item, multiply 360° by the corresponding fractional part or percent.
3. Using a compass, draw a circle. Mark the center of the circle.
4. Using a protractor, draw in the circle the number of degrees in each item.

What I Can Do:

PERCENT	DEGREES
25%	90°
8.33%	29.99°
33.33%	119.99°
12.5%	45°
12.5%	45°
8.33%	29.99°

1. Sleep   2. School Classes   3. 3 hours   4. 12.5 %   5. 8.33 %

How Paolo Budgets His Time in a Day

I AM A FILIPINO
by Carlos P. Romulo

I am a Filipino – inheritor of a glorious past, hostage to the uncertain future. As such, I must prove equal to a two-fold task – the task of meeting my responsibility to the past, and the task of performing my obligation to the future.

I am sprung from a hardy race – child many generations removed of ancient Malayan pioneers. Across the centuries, the memory comes rushing back to me: of brown-skinned men putting out to sea in ships that were as frail as their hearts were stout. Over the sea I see them come, borne upon the billowing wave and the whistling wind, carried upon the mighty swell of hope – hope in the free abundance of the new land that was to be their home and their children's forever.

This is the land they sought and found. Every inch of shore that their eyes first set upon, every hill and mountain that beckoned to them with a green and purple invitation, every mile of rolling plain that their view encompassed, every river and lake that promised a plentiful living and the fruitfulness of commerce, is a hollowed spot to me.

By the strength of their hearts and hands, by every right of law, human and divine, this land and all the appurtenances thereof – the black and fertile soil, the seas and lakes and rivers teeming with fish, the forests with their inexhaustible wealth in wild and timber, the mountains with their bowels swollen with minerals – the whole of this rich and happy land has been for centuries without number, the land of my fathers. This land I received in trust from them, and in trust will pass it to my children, and so on until the world is no more.

I am a Filipino. In my blood runs the immortal seed of heroes – seed that flowered down the centuries in deeds of courage and defiance. In my veins yet pulses the same hot blood that sent Lapulapu to battle against the alien foe, that drove Diego Silang and Dagohoy into rebellion against the foreign oppressor.

That seed is immortal. It is the self-same seed that flowered in the heart of Jose Rizal that morning in Bagumbayan when a volley of shots put an end to all that was mortal of him and made his spirit deathless forever; the same that flowered in the hearts of Bonifacio in Balintawak, of Gregorio del Pilar at Tirad Pass, of Antonio Luna at Calumpit, that bloomed in flowers of frustration in the sad heart of Emilio Aguinaldo at Palanan, and yet burst forth royally again in the proud heart of Manuel L. Quezon when he stood at last on the threshold of ancient Malacanang Palace, in the symbolic act of possession and racial vindication. The seed I bear within me is an immortal seed.

It is the mark of my manhood, the symbol of my dignity as a human being. Like the seeds that were once buried in the tomb of Tutankhamen many thousands of years ago, it shall grow and flower and bear fruit again. It is the insigne of my race, and my generation is but a stage in the unending search of my people for freedom and happiness.

I am a Filipino, child of the marriage of the East and the West. The East, with its languor and mysticism, its passivity and endurance, was my mother, and my sire was the West that came thundering across the seas with the Cross and Sword and the Machine. I am of the East, an eager participant in its struggles for liberation from the imperialist yoke. But I know also that the East must awake from its centuried sleep, shake off the lethargy that has bound its limbs, and start moving where destiny awaits.

For I, too, am of the West, and the vigorous peoples of the West have destroyed forever the peace and quiet that once were ours. I can no longer live, a being apart from those whose world now trembles to the roar of bomb and cannon shot. For no man and no nation is an island, but a part of the main, and there is no longer any East and West – only individuals and nations making those momentous choices that are the hinges upon which history revolves. At the vanguard of progress in this part of the world I stand – a forlorn figure in the eyes of some, but not one defeated and lost. For through the thick, interlacing branches of habit and custom above me I have seen the light of the sun, and I know that it is good. I have seen the light of justice and equality and freedom, my heart has been lifted by the vision of democracy, and I shall not rest until my land and my people shall have been blessed by these, beyond the power of any man or nation to subvert or destroy.

I am a Filipino, and this is my inheritance. What pledge shall I give that I may prove worthy of my inheritance? I shall give the pledge that has come ringing down the corridors of the centuries, and it shall be compounded of the joyous cries of my Malayan forebears when first they saw the contours of this land loom before their eyes, of the battle cries that have resounded in every field of combat from Mactan to Tirad Pass, of the voices of my people when they sing:

"I am a Filipino born to freedom, and I shall not rest until freedom shall have been added unto my inheritance—for myself and my children and my children's children—forever."