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DepED
DEPARTMENT OF EDUCATION

Lesson Exemplar for Mathematics

Quarter 4
Lesson
3

Lesson Exemplar for Mathematics Grade 8
Quarter 4: Lesson 3 (Week 3)
SY 2025-2026

Development Team

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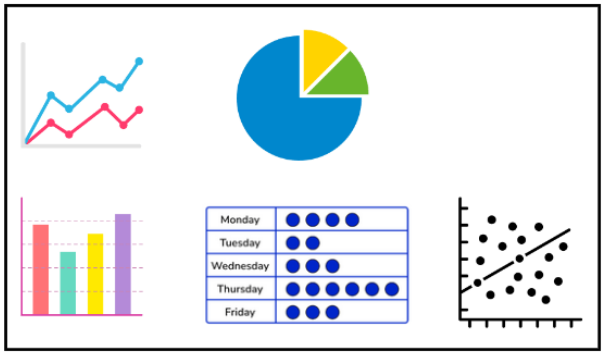
MATHEMATITCS / QUARTER 4 / GRADE 8

I. CURRICULUM CONTENT, STANDARDS, AND LESSON COMPETENCIES	
A. Content Standards	Learners demonstrate knowledge and understanding of interpretation and analysis of graphs from primary and secondary data.
B. Performance Standards	By the end of the quarter, the learners are able to interpret and analyze graphs from primary and secondary data.
C. Learning Competencies and Objectives	***Learning Competency*** investigate, interpret, and analyze graphs from primary data (e.g., examination scores).
D. Content	Interpretation and Analysis of Primary Data
E. Integration	

II. LEARNING RESOURCES
American Psychological Association. (2020). Publication Manual of the American Psychological Association (7th ed.). Washington, D.C Friel, S. N., Curcio, F. R., & Bright, G. W. (2001). Making sense of graphs: Critical factors influencing comprehension and instructional implications. Journal for Research in Mathematics Education, 32(2), 124-158.

III. TEACHING AND LEARNING PROCEDURE		**NOTES TO TEACHERS**
A. Activating Prior Knowledge	**DAY 1** **1. Short Review** Match the pictures on the left to the terms on the right. **2. Feedback (Optional)**	Given that students have already covered graphs in grade 6, we will begin the lesson by assessing their knowledge of terms commonly used in data representation.



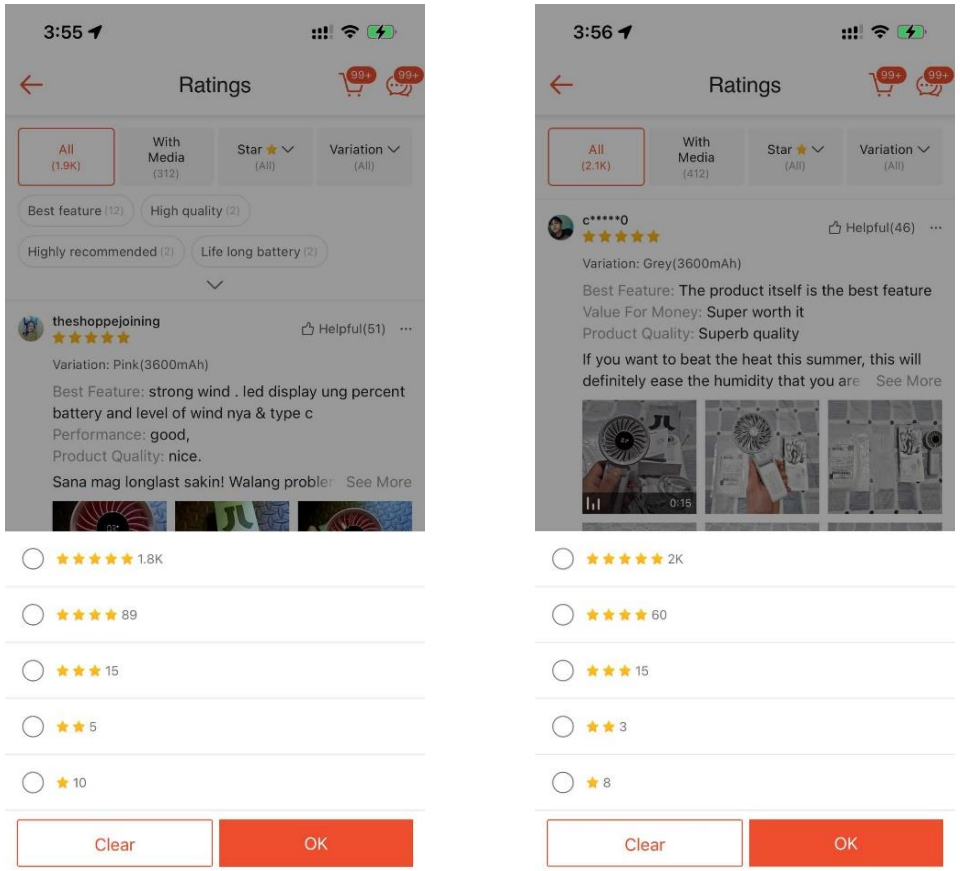
Pie Graph

Scatter Plot

Pictograph

Bar Graph

Line Graph

B. Establishing Lesson Purpose	**1. Lesson Purpose** When teaching about online purchasing, first explain data using the example of fan features listed on the site. Then, show an image of an online shop search page for "portable electric fan." Highlight two identical items and their ratings, and ask which one the audience would choose. Next, discuss organizing the information to compare fans easily and propose using graphs to visualize data. Lastly, explain that creating graphs helps spot patterns and compare features quickly, similar to analyzing data on Shopee.  Image Retrieved from shopee.com	Start the discussion by asking the class the following question: "With the increasing heat, you might be in need of a portable electric fan from an online shop. With lots of options available, how can you select the most suitable one for your need?"

2. Unlocking Content Vocabulary

Match the terms on the left with their definitions on the right. Write the letter of the matching definition in the blank.

Terms	Definitions
___A. Graph	1. A single piece of information plotted on a graph.
___B. Axis	2. The horizontal or vertical lines on a graph used to measure data.
___C. Label	3. Words or numbers that explain the information on a graph.
___D. Title	4. A brief description that explains what the graph shows.
___E. Data Point	5. A visual representation of data using bars, lines, or slices.

Answer:
1. 5
2. 2
3. 3
4. 4
5. 1

After unlocking the terms, relate these terms to the topic.

C. Developing and Deepening Understanding

SUB-TOPIC 1: GRAPHICAL REPRESENTATION OF PRIMARY DATA

1. Explicitation

Types of Data	Primary Data	Secondary Data
Definition	first hand data that a researcher has gathered.	data that we collected by someone else.
Methods	observations, surveys, interviews, and focus group discussions	data from libraries, data on the internet, journals, books, and historical records.
Example	The data from an interview of a researcher in a school of a teacher on their job satisfaction.	The data on how the brain works from the internet.

This lesson will discuss primary data.

In general data can be represented in different ways.

1. **Bar Graph** – a graphical display of data using bars of different heights good way to show relative sizes
2. **Pictograph** – a way of showing data using images. Each image stands for a certain number of things
3. **Line Graph** – a graph that shows information that is connected in some way. Allows you to determine trends

Explain the different representations of graphs using the same details to let them see the difference between the graphs. Let them realize that sometimes data are fitted with specific types of data.

4. **Scatter Plot** – a graph plotted that shows the relationship between two sets of data.
5. **Circle Graph** – a special chart that uses “pie slices or sectors” to show relative data sizes. It's a good way to show relative sizes at a glance.

In graphing, the following are suggested steps to do:

Step 1: Choose a Graph Type

Step 2: Label the Axes:

- Horizontal Axis (X-axis): Label it
- Vertical Axis (Y-axis): Label it

Step 3: Draw the Bars/lines/pictures/sectors.

Step 4: Label the Bars

Step 5: Add a Title: Give your graph a clear title that describes the information it shows, for example, “Sleep Habits in Our Class”.

2. Worked Example

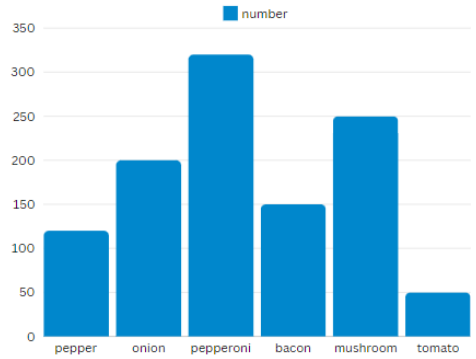
The canteen manager of a school conducted a survey on 1 090 students on their pizza toppings preference. The following shows the number of students for each topping.

Pepper – 120	Pepperoni – 320	Mushroom – 250
Onion – 200	Bacon – 150	Tomato – 50

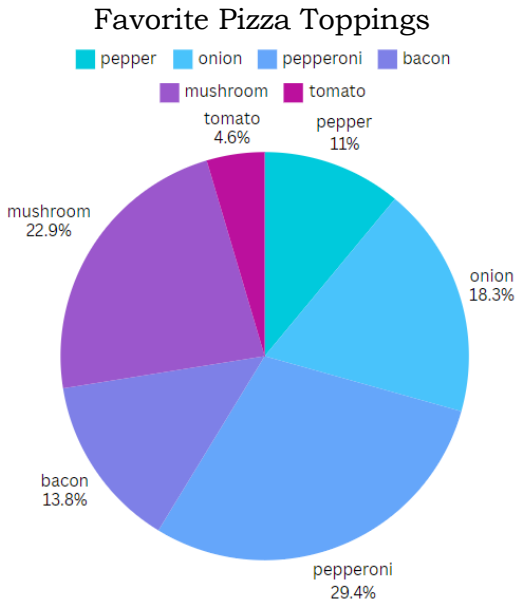
Since the data were collected directly from a survey, these are primary data. The data can be presented in different ways.

Bar Graph:

Favorite Pizza Toppings



Pie Graph:



Pictograph:

Favorite Pizza Toppings

legend	
50	
20	
pepper	
onion	
pepperoni	
bacon	
mushroom	
tomato	

3. Lesson Activity

Activity 1: Graphing Greenhouse

Sketch and label different graphs (bar graph, line graph, and pie graph and pictograph) that could represent this data. Each data point represents the number of minutes of sunlight a particular houseplant receives daily.

Houseplant Sunlight Minutes (per day) from an observation of an environmental researcher.

Snake Plant	180
Spider Plant	120
Philodendron	220
Peace Lily	60

Challenge:Discuss with a partner: Which graph (bar, line, or pie) do you think is the most appropriate way to represent the plant sunlight data in this case? Why?

See Worksheet Activity No. 1

The answer may differ per student.

Ask students to share examples of situations where they've seen information presented visually (e.g., charts, diagrams).

Elaborate on the appropriateness of the graphs for certain data.

DAY 2-3

SUB-TOPIC 2: INVESTIGATING, INTERPRETING, AND ANALYZING GRAPHS OF PRIMARY DATA

1. Explicitation

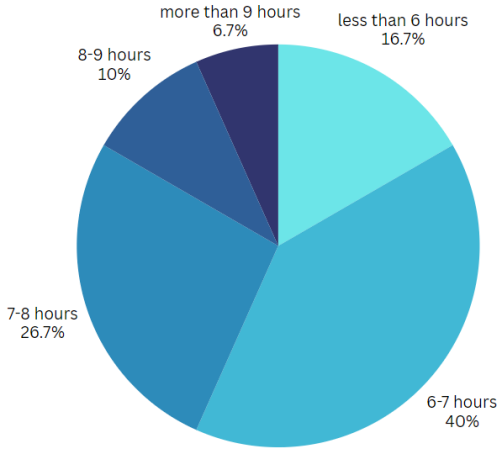
Imagine if we asked everyone in our class how many hours of sleep they get each night. How could we show this information with a graph? Let's discuss ideas and build on what we already know about graphs and data.

Today's lesson will help us create, understand, and analyze graphs using data we collect ourselves. This will enable us to better understand the information we gather and draw meaningful conclusions.

Interpret: What information can you easily see from your graph?
Analyze: Are there any interesting patterns or trends in the data?
Relate: Does your collected data match your expectations or initial ideas about the topic?

2. Worked Example

Number of Hours of Sleep	Frequency
Less than 6 hours	5 students
6-7 hours	12 students
7-8 hours	8 students
8-9 hours	3 students
More than 9 hours	2 students



Processing Questions:

1. What can you observe about the duration of sleep of the students?
2. Are there any categories with a significantly higher or lower number of students?
3. Does the graph suggest any trends in sleep habits?
4. Why do some students get more than 9 hours of sleep?
5. Enumerate some reason/s why some students sleep less than 6-7 hours. (the answer may vary since the teacher is getting some information about the class)

Note that: A larger sample size would provide a more accurate picture of sleep patterns in the general population.

3. Lesson Activity

Activity 2: Graphing Our World!

Let's explore something interesting about our class!

Part 1: Pick Your Topic!

Circle one topic you'd like to investigate:

- Favorite after-school activity
- Preferred music genre
- Number of siblings
- How you get to school (bike, bus, walk, etc.)
- Free time fun (reading, sports, games, etc.) OR
- Write your own idea (teacher approval needed): _____

Answers:

1. Most students seem to fall within the 6–7-hour range.
2. Yes, 6-7 hours has the most students
3. There might be a tendency towards getting a moderate amount of sleep, but this depends on the class size and data spread.
4. Answers may vary
5. Answers may vary

Part 2: Data Mission!
Ask your classmates what they picked for your chosen topic (whisper quietly!)
Tally their answers in the chart below.
Example (for "Favorite after-school activity"):

Activity	Tally
Sports	| | | | |
Music	| | |
Clubs	| | | |
Others	|

Part 3: Graph Time!
Look at your tallies. Which graph type would show this best?
Circle one: (Bar Graph Line Graph Pie Chart ⭕)
On a separate sheet (or use the back!), create your graph based on your tallies.
Label the axes (what's on each line) and add a title that explains your graph.

Part 4: Cracking the Code!
Look at your graph. What cool stuff can you see? Write down your findings:

- What sticks out the most?
- Are there any patterns or surprises?
- Did the results match what you thought?
- Write a short sentence or two summarizing what your graph reveals about your topic.

Challenge!
Show your graph to a friend! Explain what you found and see what they think. Maybe their graph has some clues too!

D. Making Generalizations

1. **Learners' Takeaways**
   Write down 2-3 things you can now do when looking at a graph. (e.g., identify patterns, compare categories, understand trends)

2. **Reflection on Learning**
   How can you use these skills of interpreting and analyzing data in other subjects or everyday life?

IV. EVALUATING LEARNING: FORMATIVE ASSESSMENT AND TEACHER'S REFLECTION		NOTES TO TEACHERS
A. Evaluating Learning	**DAY 4** **1. Formative Assessment** **Test I.** 1. A bar graph is most appropriate for displaying data about: A. Changes over time. B. Comparisons between categories. C. Parts of a whole. D. None of the above. 2. A line graph with a steep upward slope generally indicates: A. A sharp decrease in the data. B. A gradual increase in the data. C. No change in the data over time. D. The data is unreliable. 3. A pie chart is best suited for representing data that shows: A. Trends over several weeks. B. Proportions of a whole. C. Changes in temperature throughout the day. D. The results of a yes/no survey. 4. A graph shows the average high temperature in a city for each month of the year. The X-axis is labeled "Month" and the Y-axis is labeled "Temperature (°C)". Which type of graph would be most appropriate for displaying this data? A. Bar graph B. Line graph C. Pie chart D. Scatter plot 5. When interpreting a graph, it's important to consider: A. Only the colors used in the bars or lines. B. The title, labels, and any legend provided. C. The data source without looking at the graph itself. D. Only the overall shape of the graph.	**Answer:** **Test I** 1.b 2.b 3.b 4.a 5.b 6.a 7.a 8.b 9.b 10.a

6. If a graph shows a cluster of data points close together, it suggests:
   A. A strong positive correlation between the variables.
   B. A weak relationship between the variables.
   C. The data is inaccurate or unreliable.
   D. The graph type is not appropriate for the data.

7. When analyzing a graph, identifying outliers refers to:
   A. Data points that fall outside the main trend.
   B. The colors used in the graph.
   C. The title of the graph.
   D. The labels on the axes.

8. A graph with a missing axis label can be:
   A. Easily interpreted without any problems.
   B. Misleading and difficult to understand.
   C. More visually appealing with fewer labels.
   D. A sign of a poorly designed graph.

9. The main purpose of a graph is to:
   A. Replace the need for a data table.
   B. Clearly represent data in a visual format.
   C. Confuse the reader with complex visuals.
   D. Only show positive trends in the data.

10. When looking at a graph, it's important to be aware of:
   A. Hidden messages or biases in the data presentation.
   B. Only the information explicitly stated in the graph title.
   C. Just the overall aesthetics and design of the graph.
   D. None of the above.

Test II: Movie Genres Preferred by Classmates

Movie Genre	**Frequency**
Comedy	15 students
Action/Adventure	12 students
Animation	8 students
Drama	5 students
Sci-Fi/Fantasy	3 students

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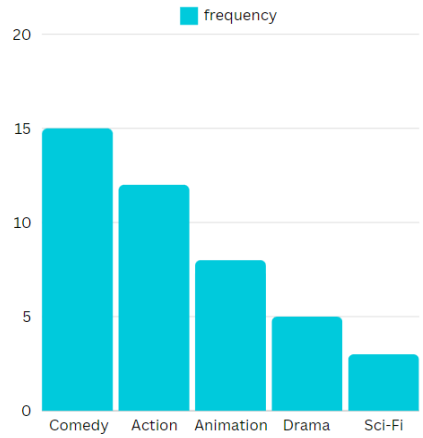

Questions:
1. What is the most popular movie genre preferred by students?
2. What is the least popular movie genre preferred by students?
3. Why do you think Comedy is the most popular genre?
4. Why do you think Sci-Fi/Fantasy has the fewest students who chose it as their favorite?
5. Does the graph suggest any trends in movie genre preferences?

2. Homework (Optional)
</td>
<td>Answer:
Test II
1. Comedy
2. Sci-Fi
3-5. answer may vary</td>
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<td rowspan="5">B. Teacher's Remarks</td>
<td>Note observations on any of the following areas:</td>
<td>Effective Practices</td>
<td>Problems Encountered</td>
<td rowspan="5">The teacher may take note of some observations related to the effective practices and problems encountered after utilizing the different strategies, materials used, learner engagement, and other related stuff.

Teachers may also suggest ways to improve the different activities explored/lesson exemplar.</td>
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C. Teacher's Reflection	*Reflection guide or prompt can be on:* • *principles behind the teaching* *What principles and beliefs informed my lesson?* *Why did I teach the lesson the way I did?* • *students* *What roles did my students play in my lesson?* *What did my students learn? How did they learn?* • *ways forward* *What could I have done differently?* *What can I explore in the next lesson?*	Teacher's reflection in every lesson conducted/facilitated is essential and necessary to improve practice. You may also consider this as an input for the LAC/Collab sessions.