7

DepED
DEPARTMENT OF EDUCATION

Lesson Exemplar for Mathematics

Quarter 3
Lesson
3

Lesson Exemplar for Mathematics Grade 7
Quarter 3: Lesson 3 (Week 3)
SY 2024-2025

Development Team

Writer:
- Rener D. Daya (University of Mindanao)

Validator:
- Clemente M. Aguinaldo Jr. (Philippine Normal University – North Luzon)

Management Team

Philippine Normal University
Research Institute for Teacher Quality
SiMERR National Research Centre

MATHEMATICS / QUARTER 3 / GRADE LEVEL 7

I. CURRICULUM CONTENT, STANDARDS, AND LESSON COMPETENCIES	
A. Content Standards	The learners should have knowledge and understanding of … 1. data collection and sampling techniques, and the presentation of data in appropriate tables and graphs. 2. interpretation of statistical graphs.
B. Performance Standards	By the end of the lesson, the learners are able to … • collect data, and organize data in a frequency distribution table. (DP) • represent and interpret data in different types of graphs. (DP)
C. Learning Competencies and Objectives	By the end of the lesson, the learners … **Use appropriate graphs to represent organized data: pie graph, bar graph, line graph, histogram and stem-and-leaf plot.** 1. *Correctly use different graphs for their specific purpose.* 2. *Properly create a graph based on the given data.* **Interpret statistical graphs.**
D. Content	• Frequency Distribution Table • Graphical Representation of Data • Interpretation of Statistical Graph
E. Integration	Market Research • Presentation and interpretation of graphs

II. LEARNING RESOURCES
HMH. (2023). *Guiding Student Research with KWL Chart Template.* Retrieved 19 December 2023 from https://www.hmhco.com/blog/free-kwl-chart-graphic-organizer-template Pierce, R. Math is Fun. (2022). *Frequency Distribution.* Retrieved 20 December 2023 from https://www.mathsisfun.com/data/frequency-distribution.html Pierce, Rod. *"Data Graphs (Bar, Line, Dot, Pie, Histogram)"* Math Is Fun. Ed. Rod Pierce. 20 Dec 2023. 20 Dec 2023 http://www.mathsisfun.com/data/data-graph.php Dummies. (2016). *The Basics of Pie Chart.* Retrieved 19 December 2023 from https://www.dummies.com/article/academics-the-arts/math/pre-algebra/the-basics-of-pie-charts-168778/

StatisticsHowTo.com. (2023). *Frequency Distribution Table*: *Examples, How to Make One* Retrieved 19 December 2023 from https://www.statisticshowto.com/probability-and-statistics/descriptive-statistics/frequency-distribution-table/
Hoyland, S. Study.com (2023). *Frequency Distribution in Statistics: Table and Examples*. Retrieved 20 December 2023 from https://study.com/learn/lesson/frequency-distribution-table.html
CUEMATH (2024, December 20). *Line Graph*. https://www.cuemath.com/data/line-graphs/
K5Learning (2024, December 20). *Reading Graphs: Plots, Charts, and Graphs*. https://www.k5learning.com/free-math-worksheets/fourth-grade-4/data-graphing/reading-graphs

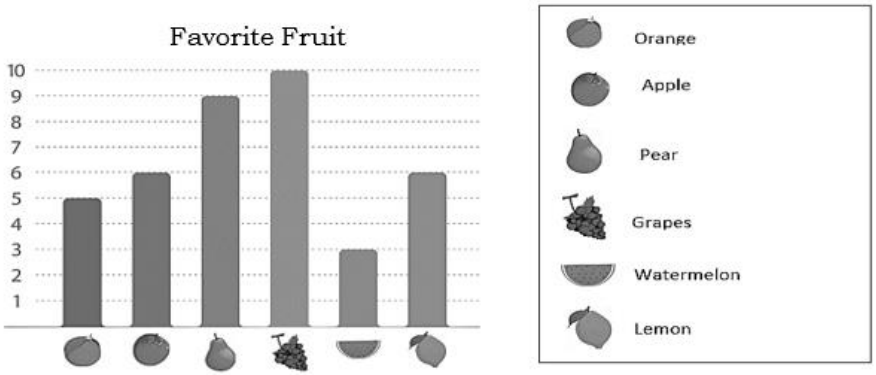
III. TEACHING AND LEARNING PROCEDURE		**NOTES TO TEACHERS**
A. Activating Prior Knowledge	**DAY 1** **1. Short Review** Let this short activity be answered by the learners. Below are the results of a 50-item test of Grade 7 class in English. Construct a frequency distribution. 38, 45, 48, 13, 35, 46, 21, 18, 19, 32, 33, 31, 33, 19, 30 33, 39, 46, 48, 47, 18, 24, 44, 48, 37, 32, 21, 24, 25, 28 **2. Feedback (Optional)**	**DAY 1 Time Frame** 15-minute short review 20-minute discussion 20-minute lesson activity, feedback Q&A. The teacher may introduce the lesson by giving the learners a short review on the first day of this lesson. This activity can be answered by pair or individual. After giving activities to the learners, the teacher should give feedback to connect the subject matter.
B. Establishing Lesson Purpose	**1. Lesson Purpose** **Guide Questions:** 1. Why do we need to use graphs in presenting a set of data? 2. How do we choose the best type of graph suited to present a set of data? **2. Unlocking Content Area Vocabulary** **Statistical Graphs** or **Charts** are visual representations of statistical data. These graphs are utilized to illustrate a data set, making it simpler to understand and interpret the information.	In this part, the teacher will establish the lesson's purpose by discussing its importance to the daily lives of the learners. Let them explain the basic concepts, uses, and importance of graphs using the guide questions.

C. Developing and Deepening Understanding

SUB-TOPIC 1: Bar Graph

1. Explicitation

Bar Graph is a data presentation tool that uses bars with different heights and lengths. To create a bar graph, plot the frequencies against the categories. Below is an example of a bar graph showing the favorite fruit of Grade 7 students.



2. Worked Example

Mrs. Ignacio wanted to present his weekly sales in an easier way for her boss. The frequency distribution table is presented below. If her boss wanted her to present it using a bar graph, what would her graph look like?

Color Pen	Frequency (in pcs)	Relative Frequency	Percentage
Black Pen	50	0.34	34%
Blue Pen	60	0.40	40%
Red Pen	20	0.13	13%
Green Pen	20	0.13	13%
Total	**150**	**1.00**	**100%**

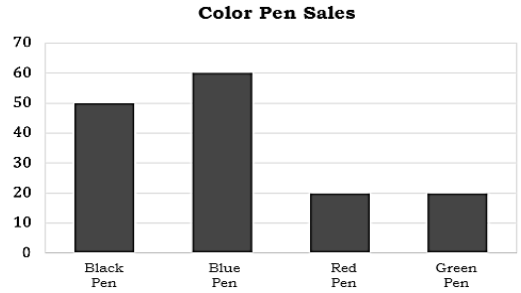
Solution: Based on the given table, we can conclude that each category is best described by its frequencies. Remember that in a bar graph, the height or length of the bar represents how frequently a specific category was seen. The height of each bar represents the equivalent frequency for each category. Hence, to communicate this data to her boss, we can create a bar graph to help her comprehend better color pen sales. The bar graph shows which color pen sells the most and which sells the least. Moreover, a bar graph can show the difference in sales between each color pen. To create a bar graph, plot the frequency against the categories, as illustrated in the graph below.

In this sub-topic, the teacher can use the worked example as an individual or group activity and as formative assessment to let the learners participate in an interactive discussion.

Along the discussion, the teacher may also use the activity worksheets on the second day of the lesson as a formative assessment.

This lesson proper can also be repeated in sub-topic 2.

The teacher may also add more activities for further elaboration of the lesson, as the need arises.



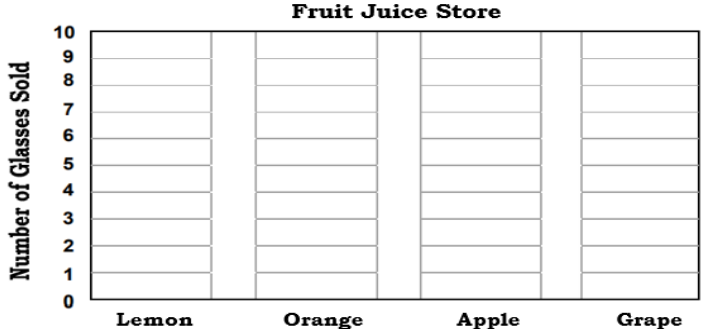
After discussing the example, Activity 2 in the worksheet can be given to the students as a drill.

3. Lesson Activity

Activity 1: Juice Store Sales!

1. A store of fruit juice recorded the number of glasses sold in a day. Create a bar graph and answer the following questions.

Fruit Juice	Lemon	Orange	Apple	Grape
Number of Glasses	7	8	9	10



Questions:

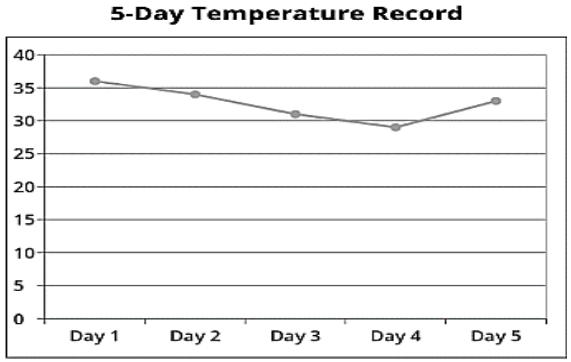
1. What juice sold the most?
2. What juice sold the least?
3. How many glasses of apple juice were sold?
4. How many more glasses of grape juice were sold than lemon juice?
5. How many glasses of orange and apple juice together were sold?
6. How many glasses were sold in all?

DAY 2

SUB-TOPIC 2: Line Graph

1. Explicitation

The line graph makes use of lines and dots to show a potential future pattern or trend. Plotting the time (horizontal) against the observed phenomenon (vertical) and then connecting the two with lines is the way to create a line graph. Future events might then be predicted using this pattern. A line graph works well for presenting time series. The graph on the right is an example of a line graph.

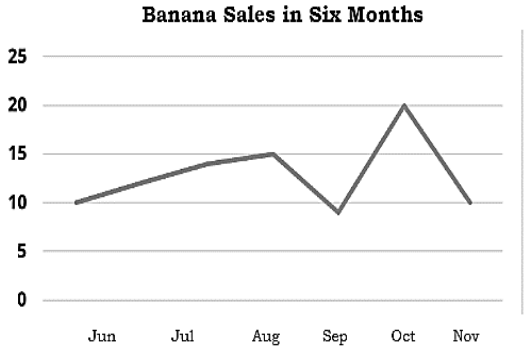


2. Worked Example

Mr. Dela Cruz's manager wanted to know (and see more easily) whether their banana sales had increased or decreased. Determine if sales increased or decreased for seven months using the data provided below.

Month	June	July	August	September	October	November	December
Sales (kg)	11	12	15	16	10	21	10

Solution: The provided data is an example of a time-dependent series. Remember that a line graph uses dots and lines to reveal a pattern or trend that may continue in the future. This means that line graphs are best suited to time series. The line graph may simply show us the sales trends over a certain time period. It also allows us to forecast sales for the next few months. To create a line graph, plot the time (horizontal) against the observed phenomena (vertical) and connect the two with lines. This pattern might then be utilized to forecast upcoming events.



Before proceeding to Day 2, a short review of the previous activity can be done.

DAY 2 Time Frame

10-minute short review sub - topic 1
20-minute discussion
20-minute lesson activity, feedback Q&A

Let the students present their answer in the class.

3. Lesson Activity

Activity 2: Create a line graph out of the data below:

Month	August	September	October	November	December	January
Attendance	31	28	33	35	25	29

SUB-TOPIC 3: Stem and Leaf Plot

1. Explicitation

Stem and Leaf Plot is a unique table in which each data value is divided into a "stem" (the first digit or digits) and a "leaf" (typically the last digit).

2. Worked Example

Given the data below, make a stem and leaf plot out of it.

12, 13, 15, 20, 21, 22, 22, 24, 24, 31, 32, 40

- The "stem" values are listed first, followed by the "leaf" values, which are arranged right (or left) of the stem values.
- The "stem" is used to group the results, and each "leaf" displays the individual scores for each group.

Stem	Leaf
1	2 3 5
2	0 1 2 2 4 4
3	1 2
4	0

3. Lesson Activity

Activity 3: Bong got his friends to do a long jump and got the following results:

2.5, 2.6, 2.6, 2.7, 2.8 3.1, 3.5, 3.6, 4.3, 5.1

a. Create a stem and leaf plot.
b. Explain the distribution of the stem and leaf plot.

DAY 3

SUB-TOPIC 3: Interpretation of Statistical Graphs

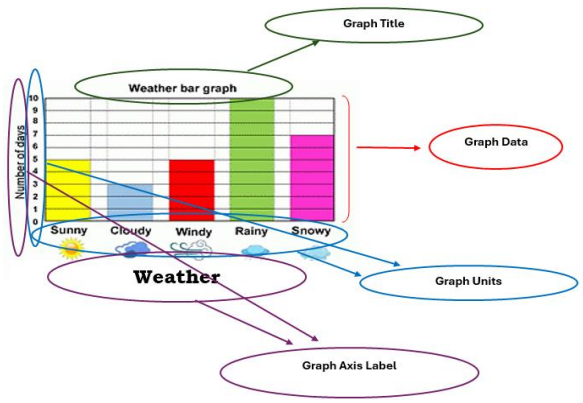
1. Explicitation

Statistical Graph is one of the most significant components of data presentation and analysis to expose structure and trends. Moreover, statistical graphs enable data to be displayed in various visual formats. In this lesson, students will learn to recognize the key elements of a statistical graph and how to interpret the data presented within it.

DAY 3 Time Frame

5-minute short review from sub-topic2
20-minute discussion
20-minute lesson activity, feedback Q&A
10-minute generalization
Use the graphic organizer to elaborate the topic.

Major Components of a Statistical Graph

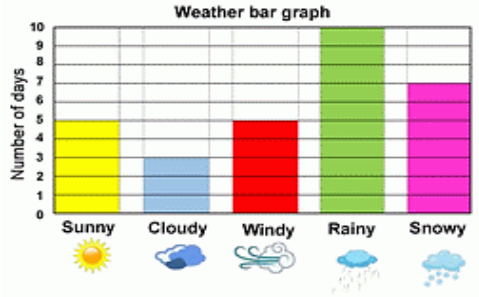


Graphical Interpretation

The graph above displays the number of days each type of weather occurred in a month. To better understand what the graph means, we first need to locate the units on the two-axis labels. Then, look at the bars that represent each unit. The height of the bars shows the number of days each type of weather occurred in the month. In the graph, rainy days have the highest number with 10 days, and cloudy days have the lowest with 3 days.

2. Worked Example

A. Teacher Anna constructed a bar graph to show the number of days of each weather in the month of September as shown below.



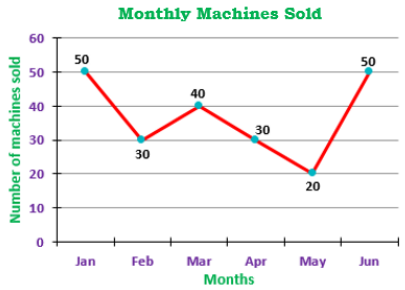
1. How many days were sunny? *Answer: 5 days*
2. How many days were rainy? *Answer: 10 days*
3. How many fewer windy days were there than rainy days? *Answer: 5 days*

Interpretation: The graph above shows that there were 5 days of sunny days, 10 days of rainy days, and 5 windy days which were fewer than rainy days. There were 3 cloudy days which has the shortest number of days.

Teacher's Key Points:
Major Components of a Statistical Graph

- **Graph Title -** The first component of a graph which tells what the graph is about.
- **Graph Axis Label** – The second component of a graph that the x-axis,
- which goes left to right horizontally, and the y-axis, which goes up and down vertically.
- **Graph Units** - The third component of a graph in which are the units presented on the two axes.
- **Graph Data** – The fourth component of a graph that can be presented in many different forms, such as bars, dot, lines, or other representations.

B. A machine salesman wants to present the monthly sales of their company during the marketing review of their company. He constructed a line graph as shown below but he was a little bit confused when analyzing the data. Help the salesman interpret the graphical data by answering the questions below.



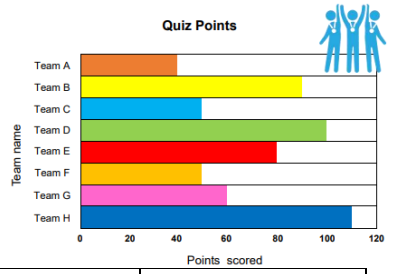
1. Which month has the lowest number of machines sold?
   Answer: May
2. What is the highest number of machines sold?
   Answer: 50
3. Which months have the same number of machines sold?
   Answer: January and June

Interpretation: The graph above shows the number of machines sold over six months. Based on the graph, the month of May has the lowest number of machines sold. Moreover, within these six months, the highest number of machines sold is 50, occurring in the months of January and June.

3. Lesson Activity

Activity 4: Let the learners answer the following activities.

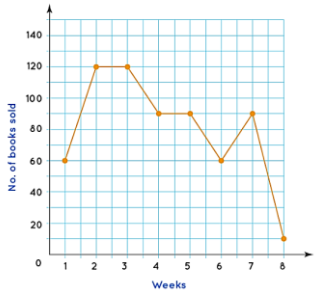
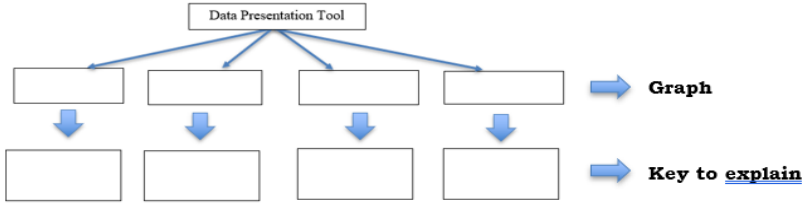
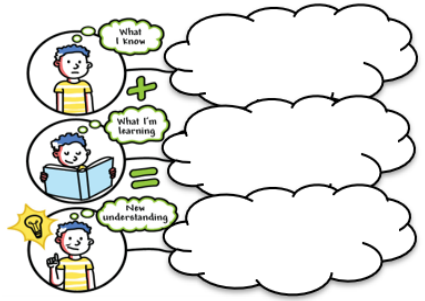
1. Eight teams joined a quiz competition. Their final scores are shown below. Study the graph, answer the questions, and write a short interpretation.



Question	Answer
a. Which team won the contest?	
b. How many points did Team F score?	
c. How many more points did Team D get than Team G?	
d. Which teams scored equally?	
e. What is the difference in the amount of points Team E scored and the amount Team H scored?	
f. How many teams scored fewer than 100 points?	
g. What are the average points of the top 3 highest teams?	
Interpretation:	

Use the graphic organizer to elaborate the topic.

Answer Key:
a. Team H
b. 50 points
c. 40 points
d. Team C and Team F
e. 30 points
f. 6 teams
g. 100 teams

	2. A bookshop made a line graph of the number of books it sold each week during a certain period. Based on the information provided in the line graph below, answer the questions below and write a short interpretation of the graph.  **Questions** / **Answer** a. Which week has the lowest number of books sold? b. What is the highest number of books sold? c. Which weeks have the same number of books sold? **Interpretation:**	**Answer Key:** 1. 8 2. 120 3. 2 & 3
D. Making Generalizations	**1. Learners' Takeaways** **Fill-Me-In.** To answer the following questions, let the learner fill in the graphic organizer below. 1. Why do we need to use graphs in presenting a set of data? 2. How do we choose the best type of graph suited to present a set of data?  **2. Reflection on Learning** **Know-Learn-Understand** Using the graphic organizer, let the learner fill up the necessary information.  	Towards the end of the lesson, the graphic organizer will allow the learners to identify and show their takeaways through conceptual and applications. The teacher, in this part, will instruct learners to write what they have learned from different sub-topics. In the part of "Key to explain," the learner uses bullets of ideas for them to be able to answer the guide questions. Use the picture for the learners to write their reflections about the lesson.

IV. EVALUATING LEARNING: FORMATIVE ASSESSMENT AND TEACHER'S REFLECTION		NOTES TO TEACHERS
A. Evaluating Learning	**DAY 4** **1. Formative Assessment** Answer the activity below as indicated.	**DAY 4 Time Frame** 35-minute short review 10-minute checking and rationalization of answers

1. Bayani's boss wanted to know if the sales of their fruits were in a month. The data is presented below. Help Bayani to present the fruit sales easily to his boss.

Fruit Sales	Mango	Orange	Grapes	Guava	Apple
(kg)	12	14	16	10	18

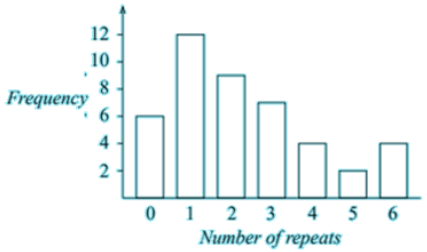
   a. Construct a bar graph based on the data above.
   b. Write a short interpretation of the data based on the constructed bar graph.

2. The data below describes the progress of the reading ability (rating of 1-10) of the Grade 2 students at an elementary school from June to December.

Month	**Level of Reading Ability**
June	2
July	3
August	4
September	6
October	8
December	10

   a. Construct a line graph based on the data.
   b. Write a short interpretation of the data based on the constructed line graph.

3. Gina has been collecting anime cards. Sometimes, when she bought a new packet, she found cards that she had already collected. She created a table to show the number of repeated cards in the packs she opened.



Questions	Answer
a. How many times has a card been repeated twice in the opened packs?	
b. How many times are there no repeated cards?	
c. What is the number of repeats with the same frequency?	
d. What is the least number of times that a card has been repeated?	
Interpretation:	

2. Homework (Optional)

Choose the word/value from the box below that suits the description of each item. Write your answer in the space provided.

Pie Graph	Bar Graph	Line Graph	Histogram
Scatter Diagram	Stem and Leaf	Ogive	270°
360°	100%	1.00	

_____ 1. This uses the height or length of the bar to show how frequently a specific category was identified.

_____ 2. It refers to a circular graph that represents how the categories are distributed.

_____ 3. This uses dots and lines to discern a pattern or trend that could continue.

_____ 4. This resembles a bar graph and shows how often measurements fall in a particular class or subinterval.

_____ 5. This is the total of all the interior angles in a pie chart.

_____ 6. This is the total relative frequency in each set of data.

_____ 7. This is the total percentage in each set of data.

The teacher may add homework for students to master the lesson.

B. Teacher's Remarks	*Note observations on any of the following areas:*	**Effective Practices**	**Problems Encountered**
	strategies explored		
	materials used		

The teacher may take note of some observations related to the effective practices and problems encountered after utilizing the different strategies, materials used, learner

	learner engagement/ interaction			engagement, and other related stuff. Teachers may also suggest ways to improve the different activities explored/lesson exemplar.
	others			
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.