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DepED
DEPARTMENT OF EDUCATION

Lesson Exemplar for Mathematics

Quarter 1
Lesson
1

Lesson Exemplar for Mathematics Grade 8
Quarter 1: Lesson 1 (Week 1)
SY 2025-2026

Development Team

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MATHEMATICS / QUARTER 1 / GRADE 8

I. CURRICULUM CONTENT, STANDARDS, AND LESSON COMPETENCIES	
A. Content Standards	The learners should have knowledge and understanding of measures of central tendency of ungrouped data.
B. Performance Standards	By the end of the quarter, the learners are able to determine measures of central tendency of ungrouped data and use the measures to draw conclusions.
C. Learning Competencies and Objectives	***Learning Competencies*** 1. The learners determine measures of the central tendency of ungrouped data. 2. The learners draw conclusions from statistical data using the measures of central tendency. ***Learning Objectives*** By the end of the lesson, the learners are expected to: 1. define measures of the central tendency of ungrouped data; 2. compute the mean, median and mode of ungrouped data; and 3. generate insights from statistical data using measures of central tendency.
D. Content	**Measures of Central Tendency of Ungrouped Data**
E. Integration	None

II. LEARNING RESOURCES
Admin. (2022, September 13). How to calculate measures of central tendency and dispersion - Formulas, examples. BYJUS. https://byjus.com/jee/how-to-calculate-measures-of-central-tendency-and-dispersion/ Libretexts. (2023, December 12). 8.1: Measures of Central Tendency and Dispersion (Ungrouped data). Mathematics LibreTexts. https://math.libretexts.org/Courses/Western_Technical_College/PrePALS_Math_with_Business_Apps/08%3A_Statistics/8.01%3A_Measures_of_the_Central_Tendency_and_Dispersion_(Ungrouped_Data) MindaNews. (2023, April 30). Davao City posts highest heat index in Mindanao on April 29 and 30. MindaNews. https://mindanews.com/top-stories/2023/05/davao-city-posts-highest-heat-index-in-mindanao-on-april-29-and-30/#gsc.tab=0

III. TEACHING AND LEARNING PROCEDURE		NOTES TO TEACHERS
A. Activating Prior Knowledge	**DAY 1** **1. Short Review** **Activity 1: Do You Remember?** Let the learners identify whether the following data is quantitative or qualitative. 1. general average 2. civil status 3. annual income 4. years in school 5. educational attainment 6. skin color 7. age 8. number of children 9. weight 10. social class **2. Feedback (Optional)**	This activity is intended to recall the type of data (i.e. quantitative and qualitative data). At the end of the activity, you may ask the learners the difference between qualitative and quantitative data. **Answer Key:** 1. quantitative 2. qualitative 3. quantitative 4. quantitative 5. qualitative 6. qualitative 7. quantitative 8. quantitative 9. quantitative 10. qualitative
B. Establishing Lesson Purpose	**1. Lesson Purpose** **Activity 2: Meet Me in the Middle** Analyze the two number lines below and answer the questions that follow.  **Guide Questions:** 1. What is the middle value of the indicated numbers in the number line on the left? 2. What is the middle value of the indicated numbers in the number line on the right? 3. How were you able to find the answer for each given number line?	Activity 2 is intended to give the learners an idea on the process of finding the mean. You may also add other questions if necessary. **Answer Key:** 1. 5 2. 5.5 3. By finding what is half-way between the indicated numbers.

	2. Unlocking Content Vocabulary • **Measures of Central Tendency** are a single value that attempts to describe a set of data by identifying the central position within that set of data. As such, measures of central tendency are sometimes called measures of central location. • **Mean** is the sum of the data values divided by the number of values. This is also referred to as the arithmetic mean. The mean is the balance point of a distribution. • **Median** is the number that falls in the middle position once the data has been organized from smallest to largest or largest to smallest. • **Mode** is the value that appears most frequently in the set of data.	
C. Developing and Deepening Understanding	**DAYS 2-3** **1. Explicitation** a. In finding the mean of ungrouped data, we find the sum of values (x) divided by the number of values in the data set represented by N. We use the formula: $$\underline{x} = \frac{\sum \quad x}{N}$$ $where$: $\underline{x} = mean$ $\sum \quad x = sum\ of\ values$ $N = number\ of\ values$ Note: The symbol Σ (sigma) is a Greek letter used to indicate summation. b. In finding the median of ungrouped data, we arranged the values of the data set in either increasing or decreasing order and find the middle score. If there are two middle values, we add those and divide it by 2 or $\frac{x_1+x_2}{2}$ where $x_1\ and\ x_2$ are the two middle values. c. In finding the mode, select the value that appears most often in the data set. If two or more values appear the same number of times, then each of the values is a mode. However, if all scores appear the same number of times, then the set of data has no mode.	

2. Worked Example

Example 1: The shoe sizes of the members of the basketball team Liliw Lakers are 7, 9, 11, 8, 8, 8, 7, 8, 9, 10, 8. Compute for the measures of central tendencies.

Solution:

a. mean $\underline{x} = \frac{7+9+11+8+8+8+7+8+9+10+8}{11}$

$= \frac{93}{11} = 8.4545 \ldots$ or approximately **8.45**

Hence, the average shoe size of the members of the basketball team is 8.45.

b. median

By rearranging the values in increasing order:

7, 7, 8, 8, 8, **8**, 8, 9, 9, 10, 11

since the middle value is the median, then the median is **8**.

c. mode

Since 8 is the most repeated value in the data set, then the mode is **8** i.e. the most occurring shoe size of the player is 8.

Example 2: Teacher Abigail recorded the number of spelling errors made by her 8 students during the test, 6, 5, 4, 6, 2, 0, 5, 1. Compute for the measures of central tendencies.

Solution:

a. mean $\underline{x} = \frac{6+5+4+6+2+0+5+1}{8} = \frac{93}{11} = 3.63$

Hence, the average number of spelling errors is **3.63**.

b. median

Let's try rearranging the values in decreasing order:

6, 6, 5, **4, 5**, 0, 1, 2

since there are two middle values, we add them and divide it by two $\frac{4+5}{2} = 4.5$, then the median is **4.5**.

c. mode

Since 5 and 6 occur the same number of times in the data set, then the mode is both **5** and **6**. The data set is bimodal. Most students commit 5 or 6 spelling errors.

In the solution for each example, emphasize to the learners the following:

- N for the mean is the number of values in the data set
- For the median, the learner may opt to arrange the data in decreasing order and they will still get the same solution.
- For the mode, if there are two, the data set is bimodal. If there are more than two, it is multimodal. However, if all of the values occur the same number of times, then the data set has no mode.

You may add more examples if needed.

Example 3: Six members of the class list the number of brothers and sisters they have. These six numbers, in ascending order are 2, 0, 0, 4, 2, and 4. Compute for the measures of central tendencies.

Solution:

a. mean $\underline{x} = \frac{2+0+0+4+2+4}{6} = \frac{12}{6} = \mathbf{2}$

Hence, the average number of brothers and sisters is 2.

b. median

By rearranging the values in increasing order:

0, 0, **2, 2**, 4, 4

since there are two middle values, we add them and divide it by two $\frac{2+2}{2} = 2$, then the median is **2**.

c. mode

Since all values occur the same number of times, then the data set has no mode.

Example 4: The weights in kilograms of the runners in the annual district level marathon are the following:

90.7, 89.5, 93.4, 92.1, 82.6, 92.5, 94.4, 89.5, 86.7, 90.4, 94.4, 97.1, 89.5

Find the mean, median and mode.

Solution:

a. mean $\underline{x} = \frac{90.7+89.5+93.4+92.1+82.6+92.5+94.4+89.5+86.7+90.4+97.1+89.5}{13}$

$= \frac{1182.8}{13} = \mathbf{90.98}$

Hence, the average weight of runners is 90.98 kg.

b. median

By rearranging the values in increasing order:

82.6, 86.7, 89.5, 89.5, 89.5, 90.4, **90.7**, 92.1, 92.5, 93.4, 94.4, 94.4, 97.1

since the middle value is the median, the median is **90.7**.

c. mode

Since 89.5 is the most repeated value in the data set, then the mode is **89.5** i.e. the most occurring weight of the runners is 94.4 kg.

	3. Lesson Activity **Activity 3: Try This!** Instruction: Let the learners find the measures of central tendencies. 1. The number of incorrect answers on a true-or-false test of your 15 classmates were recorded by your teachers as follows: 2, 1, 3, 0, 1, 3, 6, 0, 3, 3, 5, 2, 1, 4 and 2. Find the a. mean b. median c. mode 2. The number of building permits issued by your municipality last month were 4, 7, 0, 11, 4, 1, 15, 3, 5, 8, and 7. Find the a. mean b. median c. mode 3. An experiment was conducted for a random sample of 9 subjects. A stimulant was applied to each subject and the recorded reaction time are 2.5, 3.6, 3.1, 4.3, 2.9, 2.3, 2.6, 4.1 and 3.4 seconds. Find the a. mean b. median c. mode 4. The scores of 9 students in a 100-item test are 67, 70, 49, 95, 40, 97, 62, 54, and 42. Find the a. mean b. median c. mode 5. A set of data consists of five numbers. The mode is 2. The median is 3. The mean is 4. The difference between the largest and smallest number is 6. What are the five numbers?	Provide enough time for the learners to accomplish this activity. You may adjust the indicated time in the worksheet for this activity if necessary. **Answer Key:** 1. a. 2.4; b. 2; c. 3 2. a. 5.91; b. 5; c. 4, 7 3. a. 3.2; b. 3.1; c. none 4. a. 64; b. 62; c. none 5. 2, 2, 3, 5, 8

D. Making Generalizations	**DAY 4** **1. Learners' Takeaways and Reflection on Learning** **Activity 4: Closing the Loop!** Instruction: Let the learners answer the following questions. 1. What are the key concepts of our lesson? 2. Which part of the lesson is the easiest for you? Why? 3. Which part of the lesson is the hardest for you? Why? 4. How are we as a class today?	The activity is intended to determine what the learners have learned as well as to give feedback to their experiences during the lesson. Allot enough time to listen and process the responses of your learners. You may also add questions if needed.

IV. EVALUATING LEARNING: FORMATIVE ASSESSMENT AND TEACHER'S REFLECTION	**NOTES TO TEACHERS**
A. Evaluating Learning **1. Formative Assessment** **Activity 5: Let's Solve It!** Instruction: Let the learners analyze and answer the question that follows. According to PAG-ASA, last April 30, 2023, the heat index recorded in their 14 monitoring stations are the following:	**Answer Key:** 1. mean = 39.5 ℃ median = 41 ℃ mode = 41 ℃ 2. The mean implies that the average heat index in the 14 stations of PAG-ASA is 39.5 ℃ while median heat index is 41 ℃. Also, the mode shows that majority of the 14 stations of PAG-ASA recorded the 41 ℃ heat index.

Station	Heat Index (Celsius)
Aparri, Cagayan	41
Baguio, Benguet	28
Baler, Aurora	42
Basco, Batanes	34
Borongan, Eastern Samar	38
Butuan City, Agusan Del Norte	41
Calapan, Orriental Mindoro	40
Catarman, Northern Samar	44
Clark Airport, Pampanga	43
Coron, Palawan	36
Cubi Pt., Subic Bay Olongapo City	41
Daet, Camarines Norte	40
Dagupan City, Pangasinan	44
Davao City, Davao Del Sur	41

Source: https://mindanews.com/top-stories/2023/05/davao-city-posts-highest-heat-index-in-mindanao-on-april-29-and-30/#gsc.tab=0

<table>
<tr><td></td><td colspan="3">Questions:
1. Based on the table, what is the mean, median and mode heat index?
2. What does each measure of central tendency imply?

2. Homework (Optional)</td><td></td></tr>
<tr><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></tr>
<tr><td>strategies explored</td><td></td><td></td></tr>
<tr><td>materials used</td><td></td><td></td></tr>
<tr><td>learner engagement/ interaction</td><td></td><td></td></tr>
<tr><td>others</td><td></td><td></td></tr>
<tr><td>C. Teacher's Reflection</td><td colspan="3">Reflection guide or prompt can be on:
• <u>principles behind the teaching</u>
What principles and beliefs informed my lesson?
Why did I teach the lesson the way I did?

• <u>students</u>
What roles did my students play in my lesson?
What did my students learn? How did they learn?

• <u>ways forward</u>
What could I have done differently?
What can I explore in the next lesson?</td><td>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.</td></tr>
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