Lesson Plan: Comparing Mean, Median, and Mode

Lesson Overview

Topic	Lesson Information
Lesson Title:	Comparing Mean, Median, and Mode
Lesson Author:	Rachel Baron
Date Created:	10-7-22
Lesson Timeframe:	1 hour
Content Area(s):	math
General Topics/Skills Covered:	statistics
NRS Level(s):	C/D
Prerequisite Skills:	Some familiarity with mean, median, and mode will be helpful. This is **not** intended to be an introductory lesson, but would work as a review for students who may not have seen this topic in a while. Students are expected to describe their thoughts in writing. Depending on their technological capabilities, they could achieve this through voice typing.

Topic	Your Standards and Skills Addressed
College and Career Readiness Standards (CCRS):	6.SP.3 Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number. 6.SP.5 Summarize numerical data sets in relation to their context, such as by: c. Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered. d. Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.
English Language Proficiency Standards (ELPS) (if applicable):	N/A
Target Grammar/Language Forms (for ESL, if applicable):	N/A
Standards for Mathematical Practice (if applicable):	MP. 2 Reason abstractly and quantitatively MP. 6 Attend to precision
Transferable Skills:	1.3 Makes decisions using reasoning. 1.4 Processes and analyzes information.
Digital Literacy Skills:	1.3 Adapts to new software *1.4 Uses mobile devices for learning* (optional) 2.4 Manages and shares files 2.5 Practices healthy screen-time habits (level1)

Objectives, Materials, Vocabulary, and Culturally Responsive Teaching

Topic	Your Objectives, Materials, Vocabulary, and Culturally Responsive Teaching	Tips/Questions to Consider
Lesson Objective(s):	During the lesson, students will: • accurately describe how to find the mean, median, and mode of a set of data. • create sets of data that have a specific mean, median, or mode and maximize some values. • reflect on the differences between these three measures of center by giving logical reasons for preferring one measure over the others in a given situation. Student-facing: During this lesson, you will: • Review and deepen your understanding of mean, median, and mode. • Create data sets that have a specific mean, median, or mode. • Explain some differences between mean, median, and mode.	• Check it with SMART. (Is it Specific, Measurable, Achievable, Relevant, and Timely?)
Texts, Materials, Resources (also see checklist below):	Google Slides Answer examples and notes	• Are the recommended texts relevant to adult learners, culturally responsive, and useful for building knowledge and achieving the objectives?

Topic	Your Objectives, Materials, Vocabulary, and Culturally Responsive Teaching	Tips/Questions to Consider
Lesson Vocabulary:	mean, median, mode (These terms should not be brand new to students, but they are defined.)	• Include 5 -10 vocabulary terms. • Include instructional strategies below for teaching the vocabulary.
Culturally Responsive Teaching Notes:	Students begin by connecting to the context of screen time by thinking about their own screen time and what they think is appropriate for teenagers. They also have the freedom to create their own sets of data, allowing them to customize as desired.	• Is it evident that students will connect content to their own lives and to what they already know? • Do the student resources regularly include authors, images, and ideas from a range of racial, cultural, linguistic, gender, and (dis)ability representations and backgrounds, especially those of our students? • Do cultural representations and varied perspectives seem to be fair and accurate? Are stereotypes avoided?

Instructional Activities

Topic	Lesson Information	Tips/Questions to Consider
Lesson Introduction:	The instructor should go over the objectives of the lesson and share the slides with the student, letting them know that the link will force the student to make a copy of the presentation. It is a good idea to provide students with a plan for how to contact you if they run into technology issues. There are instructions for the digital skills embedded in the lesson, but some students may require additional support. If this is the first time you have assigned a lesson using Google Slides, you may want to ask students to open the slides and read slide 1 or 2 while you are available.	• Explain how the lesson objectives will be shared with learners. • Make connections to learners' goals and prior and future lessons.
Lesson Body: • **Direct Instruction** • **Guided Practice** • **Independent Practice**	Students will follow the instructions in the asynchronous lesson.	• Provide enough detail that another instructor could teach this lesson based on the information in this lesson plan. • Include how the students will be grouped, approximate timeframes for each activity, and how technology will be integrated. • Describe how and where in the lesson sequence, the instructor will model the target skills and/or tasks for the learners.

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Differentiation:	Students control the pace of the lesson and may watch the videos multiple times if necessary. For several activities, students will think about how to solve the problem while already knowing the correct answer. They will then see a correct solution, which they can compare to their own. Accessibility features include: ● The ability to change the background color and font or zoom in and out to make the material more legible ● Subtitles on the videos ● Compatibility with most screen reading software ● The option to use voice typing if the student's device has that functionality ● Compatibility with mobile devices A Flesch-Kinkaid analysis of the first several slides gave a readability score of 4.7.	● How can you and/or other teachers adapt this lesson to support learners with varying levels or needs (e.g., texts at different levels, broad topics, or compelling tasks that allow teacher/student flexibility)? ● What kinds of choices are students able to make within the lesson plan (e.g., text selection, project topics, or products)?

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Assessment:	A document with example answers and notes is included in the materials section, but instructors are encouraged to complete the lesson themselves to fully understand what skills are needed for students to be successful. Instructors should read student responses carefully, noting what students already know and can do and considering how to support students in building on their knowledge. Because the objectives are all related to mathematics, leniency with regard to writing conventions and technological fluency are appropriate, though instructors may make note of topics to address in future lessons.	• Describe the ongoing assessments that will be used to check learners' progress toward the lesson objectives. • Describe the cumulative assessments that will measure the extent to which learners met the lesson objectives.
Lesson Conclusion:	The student will reflect on what they learned and what they would like to learn next. Once the completed work is received, the instructor should respond to it verbally or in writing (use of the comment feature in Google Slides is encouraged). It is probably sufficient to comment on 2-4 of the activities, noting particularly creative responses and asking questions designed to clarify or extend students' thinking.	• Review lesson objectives. • Provide an opportunity for student reflection. • Connect to prior and future learning.
Lesson Extension, Homework:	Since this is an asynchronous lesson, homework is not included.	• Include opportunities for learners to practice skills outside of class time.

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Lesson Extension, Additional Enrichment/Practice Opportunities:	Students who are successful with this lesson may be interested to learn more about outliers and/or measures of variability. Consider activities from Illustrated Mathematics grade 6, unit 8.	• Include opportunities for learners to extend their learning through additional resources (print and online), readings, and practice of skills.

Instructor Reflection Before the Lesson

Instructor Reflection Questions (to be completed before teaching the lesson):

- Are there opportunities to position students as experts on topics?
- What implicit bias might be reflected in the lesson or instructional design of the lesson?
- Were sufficient instructions on the use of digital tools provided, and do students have an opportunity to practice?
- Were students provided with the opportunity to make choices regarding the lesson topic, project, etc.?

Instructor Reflection After the Lesson

Instructor Reflection Questions (to be completed after teaching the lesson):

- What went well in the lesson?
- What did not go well in the lesson?
- Did the learners meet the lesson objectives? How do you know? If not, why?
- What changes should be made for next time the lesson is taught?