Classroom Teacher Preparation

Scientific Practices 11: Mean, Median, and Mode

Please use the following to prepare for the next SfS lesson.

Description:

In this lesson students explore different ways to analyze data including calculating the mean, median, and mode for a given data set. Students will collect measurements of height for students in the classroom to use as their data set.

Lesson Objectives – SWBAT ("Students Will Be Able To…"):

5th-8th

- Collect measurements of student height for analysis
- Perform mean, median, and mode calculations on the data collected

Disciplinary Core Idea (DCI)

None.

Science & Engineering Practice (SEP)

Analyzing and Interpreting Data

- (4th-5th) Analyze and interpret data to make sense of phenomena, using logical reasoning, mathematics, and/or computation.
- (6th-8th) Apply concepts of statistics and probability (including mean, median, mode, and variability) to analyze and characterize data, using digital tools when feasible.

Using Mathematics and Computational Thinking

- (4th-5th) Organize simple data sets to reveal patterns that suggest relationships.
- (6th-8th) Use mathematical representations to describe and/or support scientific conclusions and design solutions.

Crosscutting Concept (CCC)

Patterns

- (4th-5th) Patterns can be used as evidence to support an explanation.
- (6th-8th) Graphs, charts, and images can be used to identify patterns in data.

Preparation:

This lesson serves as an introduction to the topic of mean, median, and mode calculations.

Room Set Up for Activities:

Students will work in small groups to measure the height of their group members. No special setup will be required.

Safety:

None.

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Related Modules:

This lesson could be taught when reviewing **measurement and statistics** or part of **experimental design.** Related modules include:

Scientific Practices 5: Measurement and Estimation – In this lesson students explore different ways to analyze data including calculating the central tendencies of mean, median, and mode. Students will focus on correlating their data to real world applications.

Scientific Practices 8: Experimental Design – Using a ruler drop procedure (testing reaction time) as a starting point, students will develop a testable hypothesis and design an experiment around it.

For other module sequences and groups, look here: www.sciencefromscientists.org/sequences

Standards Covered:

Please click the following link to our website to review the standards covered by this lesson, listed by state: www.sciencefromscientists.org/standards/

Lessons are matched to both national NGSS and local state standards.

After Our Visit:

Extend this lesson by using favorite sports teams to calculate the central tendencies of mean, median, mode, and more!

Access this Extension activity by visiting the Classroom Post found on our website at sciencefromscientists.org/cohorts. Use the name of your school/cohort and password to log in.

To help Evaluate, check out our Open Response questions online at sciencefromscientists.org/open-response-questions. They are freely available for all of our lessons for current teachers. Use the password supplied by your instructor to log in.

Additional Resources:

- "The Mean, Median and Mode Toads" (3:46): https://www.youtube.com/watch?v=5C9LBF3b65s
- "7 Billion: Are You Typical?" (2:55). Shows who the "typical" person on Earth is right now! https://www.youtube.com/watch?v=4B2xOvKFFz4
- Actuarial Foundation's Math Academy: Play Ball! Lessons on using sports data in math class: https://www.actuarialfoundation.org/portfolio/are-you-game/ **(may need to copy & paste link)**

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