Title: Mean, Median, Mode (medical fields)

Objectives

Students will be able to collect data and determine mean, median, mode, and range.

Time frame to Complete

30 minutes

NRS EFL

4

Stackable Cert. Documentation	Technology	Study / Life skills	EL-Civics	Career Pathways	Police	Paramedic	Fire Rescue	Medical Asst.	EKG / Cardio	Phlebotomy	Practical Nursing	Healthcare Admin	Pharmacy Tech	IMT	AMT	HVAC	Welding	Other:	STNA				
X								X			X								X				

Standard(s) Addressed in Lesson

Use Math to Solve Problems and Communicate

Benchmark(s) Addressed in Lesson

M.4.20 Collect, organize and interpret data sets involving a single variable.
M.4.21 Create and interpret data sets using simple frequency distributions and appropriate graphs.
M.4.22 Calculate basic measures of central tendency (mean, median, mode) and variability (range).
M.4.25 Solve multi-step problems.

Materials

- Pencil
- *Mean, Median, Mode* worksheet
- Yardstick, ruler, or tape measure
- Calculator (optional)

Learner Prior Knowledge

Addition, subtraction, multiplication, division

Activities

Step 1 Distribute the *Mean, Median, Mode* worksheet. Review the definitions and formulas for each with students.

Step 2 Work together to find the mean, median, mode, and range in the sample problem (pain level).

Step 3 Students measure the height of each member of the class by using paper, tape, and a ruler (or tape measure or yardstick). Students record their results on the *Mean, Median, Mode* worksheet.

Step 4 Students complete the remainder of the worksheet independently and check their answers with a calculator.

Step 5 Check worksheets and re-teach as necessary.

Assessment/Evidence

Completed worksheet. This worksheet may be saved in student portfolios as documentation for a Basic Stackable Certificate.

Adaptations for Beginning Students

Beginning students may use a calculator and have extended time to complete the assignment.

Adaptations for Advanced Students

Advanced students may collect additional data for comparison such as temperature, BMI, or age.

Teacher Reflection/Lesson Evaluation

This lesson was created by Middletown ABLE.

Mean The average of a set of numbers. To find the mean, add all of the numbers in the set, then divide by how many numbers were added together.

Median The number that appears in the middle of the data set. To find the median, write all numbers in the data set in order from lowest to highest, then find the value that appears exactly in the middle. If using a data set with an even number, you will have to find the average of the two numbers that appear in the middle of the set.

Mode The value that appears most often in a data set. If no values repeat, there is no mode. There can be more than one mode.

Range The range is the difference between the lowest and highest numbers in the data set. To calculate the range, subtract the lowest value from the highest value in the set.

Consider this example:

A patient was asked to rate her level of pain each time her vital signs were checked. Ten means extreme pain (the worst pain of her life) and a zero means that she is experiencing no pain or discomfort. Her pain levels over the course of the day:

6:00 AM	5	What is the mean?
9:00 AM	7	
12:00 PM	8	What is the median?
3:00 PM	6	
6:00 PM	5	What is the mode?
9:00 PM	4	
12:00 AM	2	What is the range?
3:00 AM	2	

1. Measure the heights of your classmates. Record your findings.

2. Find the **average** height of your classmates.

3. What is the **range?**

4. What height is the **median** height of your classmates?

5. If one exists, identify the **mode**.

6. Create a graph that illustrates heights of your classmates.

A pregnant patient is weighed during each of her pre-natal doctor appointments. Use the chart of her weight to answer the following questions.

6 weeks	135
10 weeks	136
14 weeks	138
18 weeks	140
20 weeks	145
24 weeks	150
28 weeks	152
32 weeks	156
34 weeks	156
36 weeks	158
37 weeks	159
38 weeks	160
39 weeks	163
40 weeks	164

7. What is the range of weight during her pregnancy?

8. What is her median weight?

9. Identify the mode in this data set.

10. Calculate the mean of this set of weights.

Mean The average of a set of numbers. To find the mean, add all of the numbers in the set, then divide by how many numbers were added together.

Median The number that appears in the middle of the data set. To find the median, write all numbers in the data set in order from lowest to highest, then find the value that appears exactly in the middle. If using a data set with an even number, you will have to find the average of the two numbers that appear in the middle of the set.

Mode The value that appears most often in a data set. If no values repeat, there is no mode. There can be more than one mode.

Range The range is the difference between the lowest and highest numbers in the data set. To calculate the range, subtract the lowest value from the highest value in the set.

Consider this example:

A patient was asked to rate her level of pain each time her vital signs were checked. Ten means extreme pain (the worst pain of her life) and a zero means that she is experiencing no pain or discomfort. Her pain levels over the course of the day:

6:00 AM	5	What is the mean?	39/8 = 4.875
9:00 AM	7		
12:00 PM	8	What is the median?	(5+5)/2 = 5 (since there are
3:00 PM	6		two "middle" numbers)
6:00 PM	5	What is the mode?	Two modes = 2, 5
9:00 PM	4		
12:00 AM	2	What is the range?	8-2 = 6
3:00 AM	2		

1. Measure the heights of your classmates. Record your findings.

   Answers will vary.

2. Find the **average** height of your classmates.

   Answers will vary.

3. What is the **range?**

   Answers will vary.

4. What height is the **median** height of your classmates?

   Answers will vary.

5. If one exists, identify the **mode**.

Answers will vary.

6. Create a graph that illustrates heights of your classmates.

Answers will vary.

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28 weeks	152
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34 weeks	156
36 weeks	158
37 weeks	159
38 weeks	160
39 weeks	163
40 weeks	164

7. What is the range of weight during her pregnancy?

164-135 = 29

8. What is her median weight?

(152+156)/2 = 154

9. Identify the mode in this data set. 156

10. Calculate the mean of this set of weights.

2112/14 = 150.86