

GRADE 9 MATH: Coordinate Algebra Unit 4A Assessment Review

Describing Data

UNIT OVERVIEW

This is a 4 to 5 week unit that will help students compute and analyze data in context.

In this unit, the student will:

- Assess how a model fits data
- Choose a summary statistic appropriate to the characteristics of the data distribution, such as the shape of the distribution or the existence of extreme data points
- Use regression techniques to describe approximately linear relationships between quantities.
- Use graphical representations and knowledge of the context to make judgments about the appropriateness of linear models
- Look at residuals to analyze the goodness of fit. Students take a more sophisticated look at using a linear function to model the relationship between two numerical variables.

TASK DETAILS

Students will compute and analyze data and be able to explain what the data means in its context.

Task Description:

This task consists of 3 problems with some computation, short response answers, and interpreting the results.

STANDARDS ASSESSED

Interpreting Categorical and Quantitative Data

Summarize, represent, and interpret data on a single count or measurement variable.

MCC9-12.S.ID.1 Represent data with plots on the real number line (dot plots, histograms, and box plots). Choose appropriate graphs to be consistent with numerical data: dot plots, histograms, and box plots.

MCC9-12.S.ID.2 Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation-Advanced Algebra) of two or more different data sets. Include review of Mean Absolute Deviation as a measure of variation.

MCC9-12.S.ID.3 Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers). Students will examine graphical representations to determine if data are symmetric, skewed left, or skewed right and how the shape of the data affects descriptive statistics.

Summarize, represent, and interpret data on two categorical and quantitative variables.

MCC9-12.S.ID.5 Summarize categorical data for two categories in two-way frequency tables. Interpret relative frequencies in the context of the data (including joint, marginal, and conditional relative frequencies). Recognize possible associations and trends in the data.

MCC9-12.S.ID.6 Represent data on two quantitative variables on a scatter plot, and describe how the variables are related.

MCC9-12.S.ID.6a Fit a function to the data; use functions fitted to data to solve problems in the context of the data. Use given functions or choose a function suggested by the context. Emphasize linear, quadratic, and exponential models.

MCC9-12.S.ID.6b Informally assess the fit of a function by plotting and analyzing residuals.

MCC9-12.S.ID.6c Fit a linear function for a scatter plot that suggests a linear association.

Interpret linear models

MCC9-12.S.ID.7 Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data.

MCC9-12.S.ID.8 Compute (using technology) and interpret the correlation coefficient of a linear fit.

MCC9-12.S.ID.9 Distinguish between correlation and causation.

Incorporated Standards:

MCC6.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 was gathered.

Name: _____

School: _____

Date: _____

Teacher: _____

GRADE 9 MATH: Unit 4A Describing Data

Performance Assessment 4A

Directions: Complete all of the problems on this review sheet and turn it in at the beginning of the class on Friday. **Show ALL of you work** for full credit. This will be counted as a daily grade.

- 1) I decided to compare the Math IV grades of my female student/athletes with the grades of my female students who did not play sports. For the females who did not play sports, the following was their mean, five number summary, and Interquartile range:

Mean = 88.6

Minimum=76

1st Quartile=81

Median=89

3rd Quartile=94

Maximum=99

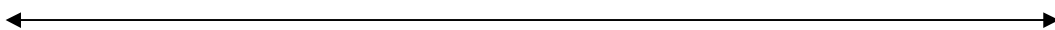
Interquartile Range=13

The following were the grades of my female student/athletes.

79 99 92 91 100 93 89 97 87 96 87

- a) Analyze these grades by calculating the mean, five number summary, and interquartile range.

- b) Represent **both** of these data sets as a box and whisker plot using the line provided.(Use an appropriate scale)



c) Which group of students performed better? Why do you think that (which values lead you to that conclusion)?

2) A survey was conducted to discover peoples' opinions about texting while driving. The results are found in the following two-way frequency table.

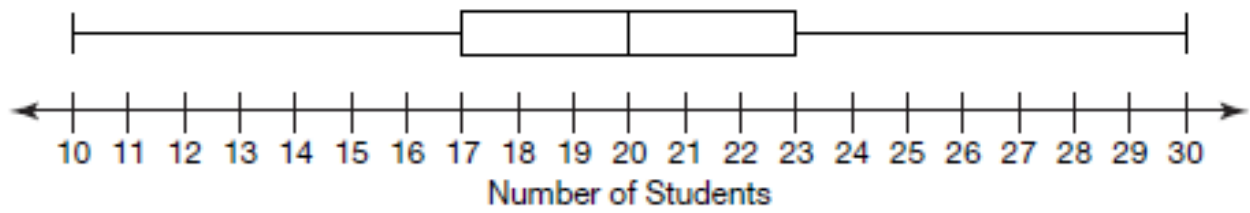
	Allow	Not allow	No opinion	TOTAL
Ages 16-25	50	5	5	60
Ages 26-50	30	35	10	75
Over 50	10	55	0	65
TOTAL	90	95	15	200

- i. In the 26-50 age group, what percent supports allowing texting and driving? Explain how you arrived at your percentage.

- ii. What numbers/data in the table are the marginal frequencies?

- iii. What numbers/data in the table are the joint frequencies?

This box-and-whisker plot represents the number of students in classrooms at a school.



- Is the median or the mean a better measure of center of the data set? Explain your reasoning.
- How many students are represented on the box-and-whisker plot?
- What percent of classrooms have 23 or more students? Explain your reasoning.
- What percent of classrooms have between 17 to 23 students? Explain your reasoning.

A restaurant manager compared the number of hours different servers worked over one week. The table shows the number of hours worked per server.

Hours Per Server	20	21	14	21	21	12	18	23	20	23	12
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a. Construct a dot plot to represent the data. Use the number line provided.



b. Determine the values indicated for the data set.

Minimum = _____

Maximum = _____

Q1 = _____

Median = _____

Q3 = _____

IQR = _____

Lower Fence = _____

Upper Fence = _____

c. Does the data set have any outliers? Explain your reasoning.

d. Construct a box-and-whisker plot of the data. Use the number line provided.

