
Coal City Unit District #1
Statistics
Math Curriculum

MA.S:1 Students will describe data in a variety of ways. (ID.2, ID.3, IC.1, IC.3)

- MA.S:1-1 Describe a distribution of data discussing shape, outliers, center, and variation
- MA.S:1-2 Identify different methods of sampling. (e.g. systematic, cluster, random, stratified, convenience)
- MA.S:1-3 Determine when a sampling method is not valid or introduces potential bias
- MA.S:1-4 Determine if a survey is experimental or observational.
- MA.S:1-5 Classify data as discrete or continuous.
- MA.S:1-6 Find the central tendencies and measures of dispersion of a set of data using technology (stapplet, statcrunch).
- MA.S:1-7 Find the mean and standard deviation for data in a frequency table.
- MA.S:1-8 Find the percentile of a particular score given all the scores.
- MA.S:1-9 Find the interquartile range of a set of data.
- MA.S:1-10 Determine how a change in the data set will affect the shape of the data. (e.g. adding an outlier, changing the standard deviation)
- MA.S:1-11 Find the score that will be a percentile given all the scores.
- MA.S:1-12 Interpret boxplots, dotplots, histograms, stem-leaf plots, and bar charts

MA.S:2 Students will calculate probabilities. (CP.2, CP.3, CP.5, CP.6, CP.7, CP.8, CP.9, MD.1, MD.2, MD.3, MD.4, MD.5)

- MA.S:2-1 Calculate compound probabilities using the addition rule and/or the multiplication rule.
- MA.S:2-2 Find a probability by using the complement of the event.
- MA.S:2-3 Find a probability using methods of counting (e.g. permutations, combinations, factorials, multiplication rule).
- MA.S:2-4 Use data represented in a two-way frequency table and/or Venn diagrams to find probabilities, and recognize trends. (e.g. Determine if two events are independent, find conditional probabilities)
- MA.S:2-5 Determine the expected value of an experiment. (e.g. Find the expected payoff from a game of chance.)

MA.S:3 Students will work with binomial experiments. (MD.1)

- MA.S:3-1 Determine if an experiment is a binomial experiment.
- MA.S:3-2 Find the probability of a simple event given the experiment is binomial.
- MA.S:3-3 Find the probability of a compound event given the experiment is binomial.
- MA.S:3-4 Find the mean (expected value), variance, and standard deviation of a binomial experiment.

MA.S:4 Students will work with the normal distribution. (ID.4)

- MA.S:4-1 Use a table and/or a calculator to find the probability of an event given that the scores are part of a part of a standard normal population.
- MA.S:4-2 Use a table and/or a calculator to find the probability of an event given that the scores are part of a non-standard normal population.
- MA.S:4-3 Find the scores that meet criteria from a normally distributed population. (e.g. If scores are normally distributed with a mean of 100 and a standard deviation of 15, what score will be the 70th percentile?)
- MA.S:4-4 Use the empirical rule to approximate areas under a normal curve
- MA.S:4-5 Identify the differences between the population distribution, sample distribution, and sampling distribution of a set of data

MA.S:5 Students will test a hypothesis about a population or about two populations. (IC.4, IC.5, IC.6)

- MA.S:5-1 Determine if conditions have been met to perform a confidence interval or hypothesis test for both discrete and continuous data
- MA.S:5-2 Use the Central Limit Theorem when appropriate.
- MA.S:5-3 Test a claim about the mean of a population and determine if the data supports a given hypothesis.
- MA.S:5-4 Test a claim comparing the means of two samples and determine if the data supports a given hypothesis.
- MA.S:5-5 Calculate and interpret confidence interval for the mean of a population or for the difference of two populations.
- MA.S:5-6 Calculate and interpret confidence intervals for a proportion and for the difference of two population proportions given data from two independent samples.

**MA.S:6 Students will demonstrate knowledge of correlation and regression.
(ID.6, ID.8, ID.9)**

- MA.S:6-1 Summarize data represented on a scatter plot. (e.g. Determine if data represents a positive, negative, or no linear correlation.)
- MA.S:6-2 Using a graphing calculator find the correlation coefficient for a set of paired data and determine if a linear correlation exists.
- MA.S:6-3 Distinguish between correlation and causation.
- MA.S:6-4 Using technology (stapplet, graphing calculator, statcrunch) find the equation of the least squares line for a set of paired data.
- MA.S:6-5 Use a least squares line to predict a value.
- MA.S:6-6 Perform Chi-Square tests for the homogeneity of proportions, goodness of fit, and estimating slope of a LSRL
- MA.S:6-7 Test the equity of three or more population means using one-way analysis of variance.