Statistics (IMRA)

Subject: Mathepn TJ0 -1.317 TD[(f)1.6 (o)2.1 (cus)3.7 (i)3.5 (n)6 (g o)8.1 (n)0.5 (f)1.6 (l)]TJ5.431 0 Td[(u)6 (e)3 (nc)5.8 (y)0.5 (a)7.9(nd)0.5 (s)

(i) use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process

(ii) use a problem-solving model that incorporates analyzing given information, formulating a plan or

(xvi) communicate [mathematical reasoning's] implications using multiple representations, including language as appropriate

(E) create and use representations to organize, record, and communicate mathematical ideas;

(i) create representations to organize mathematical ideas

(ii) create representations to record mathematical ideas

(iii) create representations to communicate mathematical ideas

(iv) use representations to organize mathematical ideas

(v) use representations to record mathematical ideas

(vi) use representations to communicate mathematical ideas

(F) analyze mathematical relationships to connect and communicate mathematical ideas; and

(i) analyze mathematical relationships to connect mathematical ideas

(ii) analyze mathematical relationships to communicate mathematical ideas

(G) display, explain, or justify mathematical ideas and arguments using precise mathematical language in written or oral communication.

(i) display mathematical ideas using precise mathematical language in written or oral communication

(ii) display mathematical arguments using precise mathematical language in written or oral communication

(iii) [illegible]

(ii) describe variability using sampling distributions

(iii) model variability using population distributions

(iv) model variability using sampling distributions

(4) Categorical and quantitative data. The student applies the mathematical process standards to represent and analyze both categorical and quantitative data. The student is expected to:

(A) distinguish between categorical and quantitative data;

(i) distinguish between categorical and quantitative data

(B) represent and summarize data and justify the representation;

(i) represent data

(ii) summarize data

(iii) justify the representation

(C) analyze the distribution characteristics of quantitative data, including determining the possible existence and impact of outliers;

(i) analyze the distribution characteristics of quantitative data including determining the possible existence of outliers

(ii) analyze the distribution characteristics of quantitative data including determining the possible impact of outliers

(D) compare and contrast different graphical or visual representations given the same data set;

(i) compare and contrast different graphical or visual representations given the same data set

(E) compare and contrast meaningful information derived from summary statistics given a data set; and

(i) compare and contrast meaningful information derived from summary statistics given a data set

(F) analyze categorical data, including determining marginal and conditional distributions, using two-way tables.

(i) analyze categorical data, including determining marginal distributions, using two-way tables

(ii) analyze categorical data, including determining conditional distributions, using two-way tables

(5) Probability and random variables. The student applies the mathematical process standards to connect probability and statistics. The student is expected to:

(A) determine probabilities, including the use of a two-way table;

(i) determine probabilities including the use of a two-way table

(B) describe the relationship between theoretical and empirical probabilities using the Law of Large Numbers;

(i) describe the relationship between theoretical and empirical probabilities using the Law of Large Numbers

(C) construct a distribution based on a technology-generated simulation or collected samples for a discrete random variable; and

(i) construct a distribution based on a technology generated simulation or collected samples for a discrete random variable

(D) compare statistical measures such as sample mean and standard deviation from a technology-simulated sampling distribution to the theoretical sampling distribution.

(i) compare statistical measures from a technology simulated sampling distribution to the theoretical sampling distribution

(6) Inference. The student applies the mathematical process standards to make inferences and justify conclusions from statistical studies. The student is expected to:

(A) explain how a sample statistic and a confidence level are used in the construction of a confidence interval;

(i) explain how a sample statistic [is] used in the construction of a confidence interval

(ii) explain how a a confidence level [is] used in the construction of a confidence interval

(B) explain how changes in the sample size, confidence level, and standard deviation affect the margin of error of a confidence interval;

(i) explain how changes in the sample size affect the margin of error of a confidence interval

(ii) explain how changes in the confidence level affect the margin of error of a confidence interval

(iii) explain how changes in the standard deviation affect the margin of error of a confidence interval

(C) calculate a confidence interval for the mean of a normally distributed population with a known standard deviation;

(i) calculate a confidence interval for the mean of a normally distributed population with a known standard deviation

(D) calculate a confidence interval for a population proportion;

(i) calculate a confidence interval for a population proportion

(E) interpret confidence intervals for a population parameter, including confidence intervals from media or statistical reports;

(i) interpret confidence intervals for a population parameter, including confidence intervals from media or statistical reports

(F) explain how a sample statistic provides evidence against a claim about a population parameter when using a hypothesis test;

(i) explain how a sample statistic provides evidence against a claim about a population parameter when using a hypothesis test

(G) construct null and alternative hypothesis statements about a population parameter;

(i) construct null hypothesis statements about a population parameter

(ii) construct alternative hypothesis statements about a population parameter

(H) explain the meaning of the p-value in relation to the significance level in providing evidence to reject or fail to reject the null hypothesis in the context of the situation;

(i) explain the meaning of the p-value in relation to the significance level in providing evidence to reject or fail to reject the null hypothesis in the context of the situation

(I) interpret the results of a hypothesis test using technology-generated results such as large sample tests for proportion, mean, difference between two proportions, and difference between two independent means; and

(i) interpret the results of a hypothesis test using technology generated results

(J) describe the potential impact of Type I and Type II Errors.

(i) describe the potential impact of Type I Errors

(ii) describe the potential impact of Type II Errors

(7) Bivariate data. The student applies the mathematical process standards to analyze relationships among bivariate quantitative data. The student is expected to:

(A) analyze scatterplots for patterns, linearity, outliers, and influential points;

(i) analyze scatterplots for patterns

(ii) analyze scatterplots for linearity

(iii) analyze scatterplots for outliers

(iv) analyze scatterplots for influential points

(B) transform a linear parent function to determine a line of best fit;

(i) transform a linear parent function to determine a line of best fit

(C) compare different linear models for the same set of data to determine best fit, including discussions about error;

(i) compare different linear models for the same set of data to determine best fit, including discussions about error

(D) compare different methods for determining best fit, including median-median and absolute value;

(i) compare different methods for determining best fit, including median-median

(ii) compare different methods for determining best fit, including absolute value

(E) describe the relationshipr m0h6 (e)5 i0.002 Tc -0.001( )0dna1(nB51 Twn( )Tjm0h6 (e.5)6.4 (d)-3.9l(di)3twn( )Tj.9(b)2.1 (o)-.1

(i)

ii) (