June, 2008

Mathematics Alignment Guide

Mason-Lake Tech Prep

Course: Criminal Justice

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High School Content Expectations							
Standard	Level of Coverage		Activities linked to this standard	Assessment Method		Assessment Correlation	Approximate Time Spent on the Standard
	Partial	Complete		Performance Based	Written		
L1.2.4 Organize and summarize a data set in a table, plot, chart, or spreadsheet; find patterns in a display of data; understand and critique data displays in the media.	x		Students demonstrate knowledge of data management in crime statistics. Students find trends in data related to crime over the years and types of crimes in certain locations. Students understand and critique data in the media by looking at how celebrities are treated compared to everyday people related to crimes.		x	Students demonstrate proficiency by: 1) unit tests (particularly in chapters 1 and 2), 2) in-class assignments.	This is an on going concept throughout the year

L2.4.1 Determine what degree of accuracy is reasonable for measurements in a given situation; express accuracy through use of significant digits, error tolerance, or percent of error; describe how errors in measurements are magnified by computation; recognize accumulated error in applied situations.	x		Students recognize that there is always "error" in crime statistics due to the number of crimes that are not reported. Due to the unreported error, the difference between the number of crimes relative to the reported crimes magnifies as data is summed.		x	Students demonstrate proficiency by: 1) unit tests (particularly on Chapter 2 where students compare reporting systems), 2) ungraded class discussions (formative assessment measures).	Students are exposed to this concept in the beginning of the school year and are expected to apply the information as needed throughout the year
L3.1.1 Distinguish between inductive and deductive reasoning, identifying and providing examples of each.	x		Students distinguish between inductive and deductive reasoning while explaining a crime to somebody else (jury, judge, reports). Students need to use skid test ratios to determine if the rate of speed reported matches the rate of speed determined through calculation at the time of impact. Students use reasoning to recommend traffic engineering changes.	x	x	Students demonstrate proficiency by: 1) a unit test on chapter 2 (reporting crimes), 2) UD-10 Crash Report, 3) unit test on chapter 6 (traffic engineering and investigation).	Approximately 2 weeks for the accident report, approximately 3 – 4 weeks for the crime scene

L3.2.2 Use the connectives "NOT," "AND," "OR," and "IF…,THEN," in mathematical and everyday settings. Know the truth table of each connective and how to logically negate statements involving these connectives.	x		Students use connectives (not, and, or, and if/then) in determining mitigating and aggravating factors (consequences and sentencing of a crime).	x	x	Students demonstrate proficiency by: 1) a research paper, 2) chapter 9 test, 3) quiz in chapter 9.	Students spend approximately 9 weeks on the research paper and approximately 2 weeks in chapter 9
L3.2.3 Use the quantifiers "THERE EXISTS" and "ALL" in mathematical and everyday settings and know how to logically negate statements involving them.	x		Students use qualifiers (there exists and all) in determining mitigating and aggravating factors (consequences and sentencing of a crime).		x	Students demonstrate proficiency by: 1) a research paper, 2) chapter 9 test, 3) quiz in chapter 9.	Students spend approximately 9 weeks on the research paper and approximately 2 weeks in chapter 9
A2.1.3 Represent functions in symbols, graphs, tables, diagrams, or words, and translate among representations.	x		Students represent skid mark ratios in symbols and translate the calculations into verbal descriptions.		x	Students demonstrate proficiency by: 1) a unit test on chapter 2 (reporting crimes), 2) UD-10 Crash Report.	Approximately 3 – 4 weeks

A2.4.2 Adapt the general symbolic form of a function to one that fits the specifications of a given situation by using the information to replace arbitrary constants with numbers.	x		Students use the formula for a skid ratio, replace variables with constants based on the situation, and determine who was at fault based on the calculations.	x	x	Students demonstrate proficiency by: 1) a unit test on chapter 2 (reporting crimes), 2) UD-10 Crash Report.	Approximately 3 – 4 weeks
A2.4.3 Using the adapted general symbolic form, draw reasonable conclusions about the situation being modeled.	x (Only some general symbolic forms are used.)		Students use the formula for a skid ratio, replace variables with constants based on the situation, and determine who was at fault based on the calculations.	x	x	Students demonstrate proficiency by: 1) a unit test on chapter 2 (reporting crimes), 2) UD-10 Crash Report.	Approximately 3 – 4 weeks
S1.1.1 Construct and interpret dot plots, histograms, relative frequency histograms, bar graphs, basic control charts, and box plots with appropriate labels and scales; determine which kinds of plots are appropriate for different types of data; compare data sets and interpret differences based on graphs and summary statistics.	x		Students interpret data about crimes on histograms, relative frequency histograms, and bar graphs. Students need to understand the importance of the labels and scales of these graphs when interpreting the data. Students need to determine which type of representation best fits the data. (For example, pie charts are good for working with percentage data.) Students compare data sets and interpret differences in data based on the graphs.		x	Students demonstrate proficiency by: 1) various unit tests, 2) ungraded class discussions formative assessment).	Students are expected to interpret data in various forms throughout the year

S4.2.2 Apply probability concepts to practical situations, in such settings as finance, health, ecology, or epidemiology, to make informed decisions.	x		Students analyze probability of crime based on race, gender, age, residency, fear. Students look at victimization trends.	x	x	Students demonstrate proficiency by: 1) unit tests (particularly unit 2), 2) ungraded class discussions (formative assessment).	Approximately 2 – 3 weeks
***S3.1.4** Design simple experiments or investigations to collect data to answer questions of interest; interpret and present results.		x	Students design an investigation, collect data, interpret results, and write reports on crime scene. Students use the information to answer questions of interest from attorneys, judges, and juries.	x		Students demonstrate proficiency on the crime scene investigation.	Approximately 2 – 3 weeks

ACT Standards							
Perform one-operation computation with whole numbers and decimals (Range 13 – 15)		x	Students perform one-operation computations while measuring and doing calculations on a crime scene.	x	x	Students demonstrate proficiency on the crime scene investigation and crime scene report.	Approximately 2 – 3 weeks
Solve problems in one or two steps using whole numbers (Range 13 – 15)		x	Students solve one and two step problems while measuring and doing calculations on a crime scene.	x	x	Students demonstrate proficiency on the crime scene investigation and crime scene report.	Approximately 2 – 3 weeks
Perform common conversions (e.g., inches to feet or hours to minutes) (Range 13 – 15)		x	Students convert between inches and feet when doing the skid mark ratio.	x	x	Students demonstrate proficiency on the accident scene investigation.	Approximately 2 – 3 weeks
Solve routine one-step arithmetic problems (using whole numbers, fractions, and decimals) such as single-step percent (Range 16 – 19)	x		Students calculate a skid ratio in an accident scene.	x	x	Students demonstrate proficiency on the accident scene investigation.	Approximately 2 – 3 weeks
Read tables and graphs (Range 16 – 19)		x	Students demonstrate knowledge of data management in crime statistics. Students find trends in data related to crime over the years and types of crimes in certain locations.		x	Students demonstrate proficiency by: 1) unit tests (particularly in chapters 1 and 2), 2) in-class assignments 3) ungraded discussions.	This is an on going concept throughout the year

Translate from one representation of data to another (e.g., a bar graph to a circle graph) (Range 20 – 23)	x		Students represent skid mark ratios in symbols and translate the calculations into verbal descriptions. Students translate information from charts, tables, and graphs into verbal descriptions and make interpretations of the data.	x	x	Students demonstrate proficiency by: 1) unit test, (particularly chapter 2 on reporting crimes), 2) UD-10 Crash Report.	This concept is incorporated throughout the year
Interpret and use information from figures, tables, and graphs (Range 28 – 32)		x	Students demonstrate knowledge of data management in crime statistics. Students find trends in data related to crime over the years and types of crimes in certain locations.		x	Students demonstrate proficiency by: 1) unit tests (particularly in chapters 1 and 2), 2) in-class assignments, 3) ungraded discussions.	This is an on going concept throughout the year
Analyze and draw conclusions based on information from figures, tables, and graphs (Range 33 – 36)		x	Students demonstrate knowledge of data management in crime statistics. Students find trends in data related to crime over the years and types of crimes in certain locations.		x	Students demonstrate proficiency by: 1) unit tests (particularly in chapters 1 and 2), 2) in-class assignments, 3) ungraded discussions.	This is an on going concept throughout the year
Draw conclusions based on a set of conditions (Range 33 – 36)		x	Students draw conclusions in the crime scene investigation and the accident scene investigation based on calculations, observations, reports from witnesses, etc.	x	x	Students demonstrate proficiency by a report.	Approximately 2 – 3 weeks

WorkKeys Standards							
Solve problems that require a single type of mathematics operation (addition, subtraction, multiplication, and division) using whole numbers (Level 3)		x	Students perform one-operation computation while measuring and doing calculations on a crime scene.	x	x	Students demonstrate proficiency on the crime scene investigation and crime scene report.	Approximately 2 – 3 weeks
Solve problems that require one or two operations (Level 4)		x	Students perform two-operation computations while measuring and doing calculations on a crime scene.	x	x	Students demonstrate proficiency on the crime scene investigation, crime scene report, and accident investigation report.	Approximately 4 – 6 weeks
Put the information in the right order before performing calculations (Level 4)		x	Students put information in the right order before performing computations on a crime scene or an accident investigation.	x	x	Students demonstrate proficiency on the crime scene investigation, crime scene report, and accident investigation report.	Approximately 4 – 6 weeks

Decide what information, calculations, or unit conversions to use to solve the problem (Level 5)		x	Students determine what measurements to take, what unit conversions are necessary and what calculations are appropriate in performing computations on a crime scene and when calculating a skid ratio at an accident investigation.	x	x	Students demonstrate proficiency on the crime scene investigation and crime scene report. Students demonstrate proficiency in the accident investigation report.	Approximately 4 – 6 weeks
Use fractions, negative numbers, ratios, percentages, or mixed numbers (Level 6)	x		Students use fractions and ratios when calculating the skid ratio. Students use fractions when doing measurements at a crime scene or accident. Students use percentages in crime scene statistics to determine trends.	x	x	Students demonstrate proficiency on the crime scene investigation and crime scene report. Students demonstrate proficiency in the accident investigation report. Students are formatively (ungraded) assessed in class discussions on percentages and trends in data.	Approximately 4 – 6 weeks

Find mistakes in questions that belong at levels 3, 4, and 5 (Level 6)		x	Students find any mistakes in calculations in levels 3, 4, and 5 prior to filing a report.	x	x	Students demonstrate proficiency on the crime scene investigation and crime scene report. Students demonstrate proficiency in the accident investigation report.	Approximately 4 – 6 weeks
Find mistakes in level 6 problems (Level 7)		x	Students find any mistakes in calculations in levels 3, 4, and 5 prior to filing a report.	x	x	Students demonstrate proficiency on the crime scene investigation and crime scene report. Students demonstrate proficiency in the accident investigation report.	Approximately 4 – 6 weeks

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