June, 2008

Mathematics Alignment Guide

Mason-Lake Tech Prep

Course: Graphic Communications

*** *Note: If a standard is covered partially, then the part that is covered is underlined.*

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		
L2.3.1 Convert units of measurement within and between systems; explain how arithmetic operations on measurements affect units, and carry units through calculations correctly.	x		Students convert various units of measure including, but not limited to: 1) converting points to inches, 2) converting picas to inches.	x	x	Students demonstrate proficiency by: 1) in-class assignments, 2) quizzes that incorporate these assessments, 3) in-class projects.	Incorporated into numerous activities throughout the school 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 determine the degree of accuracy that is necessary when reading a ruler and using the units in applied situations.	x	x	Students demonstrate proficiency by: 1) in-class assignments, 2) quizzes that incorporate these assessments, 3) in-class projects.	Incorporated into numerous activities throughout the school year

L2.4.2 Describe and explain round-off error, rounding, and truncating.	x		Students do story problems from their *Mathematics in Graphic Communications* book.	x	x	Students demonstrate proficiency by: 1) story problems from text, 2) in-class activities, 3) quiz, 4) final exam.	Incorporated into numerous activities throughout the school year
G2.2.1 Identify or sketch a possible 3-dimensional figure, given 2-dimensional views. Create a 2-dimensional representation of a 3-dimensional figure.	x		Students draw thumbnail sketches prior to beginning assignments on the computer. Some examples include airbrushing on a 3-D figure or sketching a press with the process.	x	x	Students demonstrate proficiency by: 1) in-class activities, 2) quiz, 3) final exam.	Incorporated into numerous activities throughout the school year
L1.2.3 Use vectors to represent quantities that have magnitude and direction; interpret direction and magnitude of a vector numerically, and calculate the sum and difference of two vectors.	x		Students use vectors with Clipart Software to draw images.	x	x	Students demonstrate proficiency by: 1) in-class activities, 2) quiz, 3) final exam.	Approximately 8 – 10 days
L2.4.3 Know the meaning of and interpret statistical significance, margin of error, and confidence level.	x		Students identify the appropriate margin of error for placing images on paper to reduce waste. (Imposition)	x	x	Students demonstrate proficiency by: 1) in-class activities, 2) quiz, 3) final exam.	2 weeks
S1.2.2 Estimate the position of the mean, median, and mode in both symmetrical and skewed distributions, and from a frequency distribution or histogram.	x		Students read histograms and their relationship to photographs for lightness and darkness.	x		Students demonstrate proficiency on in-class assignments.	1 week

ACT Standards							
Perform one-operation computation with whole numbers and decimals (Range 13 – 15)		x	Students do story problems from their *Mathematics in Graphic Communications* book.	x	x	Students demonstrate proficiency by: 1) in-class activities, 2) quiz, 3) final exam.	Incorporated into numerous activities throughout the school year
Perform common conversions (e.g., inches to feet or hours to minutes) (Range 13 – 15)	x		Students convert various units of measure including, but not limited to: 1) converting points to inches, 2) converting picas to inches.	x	x	Students demonstrate proficiency by: 1) in-class assignments, 2) quizzes that incorporate these assessments, 3) in-class projects.	Incorporated into numerous activities throughout the school year
Solve problems in one or two steps using whole numbers (Range 13 – 15)		x	Students do story problems from their *Mathematics in Graphic Communications* book.	x	x	Students demonstrate proficiency by: 1) in-class activities, 2) quiz, 3) final exam.	Incorporated into numerous activities throughout the school year
Perform a single computation using information from a table or chart (Range 13 – 15)		x	Students do story problems from their *Mathematics in Graphic Communications* book. Students read charts for conversions and measurements.	x	x	Students demonstrate proficiency by: 1) in-class activities, 2) quiz, 3) final exam.	Incorporated into numerous activities throughout the school year

Recognize equivalent fractions and fractions in lowest terms (Range 13 – 15)		x	Students do story problems from their *Mathematics in Graphic Communications* book. Students recognize and use equivalent fractions when reading a ruler and applying the measurements to projects.	x	x	Students demonstrate proficiency by: 1) in-class activities, 2) quiz, 3) final exam.	Incorporated into numerous activities throughout the school year
Identify the location of a point with a positive coordinate on the number line (Range 13 – 15)		x	Students use the concept of a number line when working with rulers and paper cutter.		x	Students apply this concept on a ruler quiz.	Incorporated into numerous activities throughout the school year
Estimate or calculate the length of a line segment based on other lengths given on a geometric figure (Range 13 – 15)		x	Students calculate the number of images per sheet based on the size of the image and the size of the paper.	x		Students demonstrate proficiency by on various in-class activities and story problems in class.	Incorporated into numerous activities throughout the school year
Solve routine one-step arithmetic problems (using whole numbers, fractions, and decimals) such as single-step percent (Range 16 – 19)	x		Students do story problems from their *Mathematics in Graphic Communications* book. Students solve problems that involve measurements using decimals, whole numbers and fractions.	x	x	Students demonstrate proficiency by: 1) in-class activities, 2) quiz, 3) final exam.	Incorporated into numerous activities throughout the school year

Solve some routine two-step arithmetic problems (Range 16 – 19)		x	Students do story problems from their *Mathematics in Graphic Communications* book. In a lab setting, students multiply to get the total number of items and then use division to determine the number of sheets needed to print.	x	x	Students demonstrate proficiency by: 1) in-class activities, 2) quiz, 3) final exam.	Incorporated into numerous activities throughout the school year
Read tables and graphs (Range 16 – 19)		x	Students do story problems from their *Mathematics in Graphic Communications* book. Students read charts for conversions and measurements.	x	x	Students demonstrate proficiency by: 1) in-class activities, 2) quiz, 3) final exam.	Incorporated into numerous activities throughout the school year
Perform computations on data from tables and graphs (Range 16 -19)		x	Students do story problems from their *Mathematics in Graphic Communications* book. Students read charts and tables and use the information to do conversions.	x	x	Students demonstrate proficiency by: 1) in-class activities, 2) quiz, 3) final exam.	Incorporated into numerous activities throughout the school year

Solve routine two-step or three-step arithmetic problems involving concepts such as rate and proportion (Range 20 – 23)		x	Students do story problems from their *Mathematics in Graphic Communications* book. Students use proportions to determine how many images can be printed on larger sheets of paper based on a known number of images fit on a smaller sheet of paper.	x	x	Students demonstrate proficiency by: 1) in-class activities, 2) quiz, 3) final exam.	Incorporated into numerous activities throughout the school year
Exhibit knowledge of elementary number concepts including rounding, the ordering of decimals, pattern identification (Range 20 – 23)		x	Students do story problems from their *Mathematics in Graphic Communications* book. Students round decimals to whole numbers when calculating the number of sheets to print. Students know the order of decimals when placing images on a page. Students recognize how to create repeated patterns.	x	x	Students demonstrate proficiency by: 1) in-class activities, 2) quiz, 3) final exam.	Incorporated into numerous activities throughout the school year

Perform straightforward word-to-symbol translations (Range 20 – 23)		x	Students do story problems from their *Mathematics in Graphic Communications* book.		x	Students demonstrate proficiency on quizzes and on the final exam.	Approximately 8 – 10 weeks
Exhibit knowledge of basic angle properties and special sums of angle measures (e.g., 90°, 180°, and 360°) (Range 20 – 23)	x		Students use a T-square to determine perpendicularity of lines and angle sums of 90^{o}.		x	Students demonstrate proficiency by: 1) in-class activities, 2) quiz.	Incorporated into numerous activities throughout the school year
Compute the area and perimeter of triangles and rectangles in simple problems (Range 20 – 23)		x	Students do story problems from their *Mathematics in Graphic Communications* book.		x	Students demonstrate proficiency on worksheets from the *Mathematics in Graphic Communications* book.	Approximately 1 week
Manipulate data from tables and graphs (Range 24 – 27)		x	Students do story problems from their *Mathematics in Graphic Communications* book. Students read charts and tables and use the information to do conversions.	x	x	Students demonstrate proficiency by: 1) in-class activities, 2) quiz, 3) final exam.	Incorporated into numerous activities throughout the school year

Order fractions (Range 24 – 27)		x	Students know the order of fractions when placing images on a page.	x	x	Students demonstrate proficiency by: 1) in-class activities, 2) quiz, 3) final exam.	Incorporated into numerous activities throughout the school year
Write expressions, equations, or inequalities with a single variable for common pre-algebra settings (e.g., rate and distance problems and problems that can be solved by using proportions) (Range 24 – 27)	x		Students do story problems from their *Mathematics in Graphic Communications* book. Students determine the number of newspapers printed per minutes on their Ludington Daily News field trip.		x	Students demonstrate proficiency on their in-class textbook assignments and during their field trip.	Approximately 1 week
Find the midpoint of a line segment (Range 24 – 27)		x	Students determine the ½ way point (midpoint) to center images and to cut paper into equal sections.	x	x	Students demonstrate proficiency by: 1) in-class activities, 2) quiz, 3) final exam.	Incorporated into numerous activities throughout the school year
Interpret and use information from figures, tables, and graphs (Range 28 – 32)		x	Students do story problems from their *Mathematics in Graphic Communications* book. Students read charts and tables and use the information to do conversions.	x	x	Students demonstrate proficiency by: 1) in-class activities, 2) quiz, 3) final exam.	Incorporated into numerous activities throughout the school year

Solve complex arithmetic problems involving percent of increase or decrease and problems requiring integration of several concepts from pre-algebra and/or pre-geometry (e.g., comparing percentages or averages, using several ratios, and finding ratios in geometry settings) (Range 33 – 36)	x		Students do story problems from their *Mathematics in Graphic Communications* book. Students use percent increase or percent decrease to scale images to fit appropriately on a page (proportion scale). Students compare average salaries of different careers in graphic communications. .	x		Students demonstrate proficiency on in-class projects.	Incorporated into numerous activities throughout the school year
Draw conclusions based on number concepts (Range 33 – 36)		x	Students do story problems from their *Mathematics in Graphic Communications* book. Students draw conclusions on the number of sheets they need for printing based on calculations and rounding.	x	x	Students demonstrate proficiency by: 1) in-class activities, 2) quiz, 3) final exam.	Incorporated into numerous activities throughout the school year

Draw conclusions based on a set of conditions (Range 33 – 36)		x	Students look at conditions to determine the proper timeline and process for completing projects.	x	x	Students demonstrate proficiency by: 1) in-class activities, 2) quiz, 3) final exam.	Incorporated into numerous activities throughout the school year
Solve multi-step geometry problems that involve integrating concepts, planning, visualization, and/or making connections with other content areas (Range 33 – 36)		x	Students visualize the final product, draw a 2-D view, measure appropriately, scale designs, and set the appropriate proportions to print the correct number of images.	x		Students demonstrate proficiency on long-range in-class projects.	Incorporated into numerous activities throughout the school year
Use scale factors to determine the magnitude of a size change (Range 33 – 36)		x	Students use scale factors to resize images proportionally.	x		Students demonstrate proficiency on long-range in-class projects.	Incorporated into numerous activities throughout the school year

WorkKeys Standards							
Solve problems that require a single type of mathematics operation (addition, subtraction, multiplication, and division) using whole numbers (Level 3)		x	Students do story problems from their *Mathematics in Graphic Communications* book and do single-step calculations in the lab setting; particularly based on measurement readings.	x	x	Students demonstrate proficiency by: 1) in-class activities, 2) quiz, 3) final exam.	Incorporated into numerous activities throughout the school year
Change numbers from one form to another using whole numbers, fractions, decimals, or percentages (Level 3)		x	Students convert numbers between fractions, decimals, and whole numbers when measuring.	x	x	Students demonstrate proficiency by: 1) in-class activities, 2) quiz, 3) final exam.	Incorporated into numerous activities throughout the school year

Solve problems that require one or two operations (Level 4)		x	Students do story problems from their *Mathematics in Graphic Communications* book and do single-step calculations in the lab setting; particularly based on measurement readings. Students may do multi-step calculations on measuring and calculating proportional sizes for cutting out images.	x	x	Students demonstrate proficiency by: 1) in-class activities, 2) quiz, 3) final exam.	Incorporated into numerous activities throughout the school year
Calculate averages, simple ratios, simple proportions, or rates using whole numbers and decimals (Level 4)	x		Students calculate averages of salaries for various careers in graphic communications. Students use simple ratios and proportions for resizing objects and for determining the proper number of pages to print.	x	x	Students demonstrate proficiency by: 1) in-class activities, 2) quiz, 3) final exam.	Incorporated into numerous activities throughout the school year

Add commonly known fractions, decimals, or percentages (e.g., 1/2, .75, 25%) (Level 4)		x	Students do story problems from their *Mathematics in Graphic Communications* book and add single-step calculations in the lab setting; particularly based on measurement readings and finding midpoints.	x	x	Students demonstrate proficiency by: 1) in-class activities, 2) quiz, 3) final exam.	Incorporated into numerous activities throughout the school year
Add up to three fractions that share a common denominator (Level 4)		x	Students do story problems from their *Mathematics in Graphic Communications* book and add single-step calculations in the lab setting; particularly based on measurement readings.	x	x	Students demonstrate proficiency by: 1) in-class activities, 2) quiz, 3) final exam.	Incorporated into numerous activities throughout the school year
Multiply a mixed number by a whole number or decimal (Level 4)		x	Students multiply mixed numbers by whole numbers when determining how many images (mixed number) fit on a page (whole number)	x	x	Students demonstrate proficiency by: 1) in-class activities, 2) quiz.	Incorporated into numerous activities throughout the school year

Put the information in the right order before performing calculations (Level 4)		x	After performing measurements, students label images appropriately and make sure the information is represented accurately before performing calculations for resizing or fitting to paper.	x		Students demonstrate proficiency on in-class projects.	Incorporated into numerous activities throughout the school year
Decide what information, calculations, or unit conversions to use to solve the problem (Level 5)		x	Students visualize the final product, draw a 2-D view, measure appropriately, perform needed conversions on measurements, scale designs, and set the appropriate proportions to print the correct number of images.	x		Students demonstrate proficiency on long-range in-class projects.	Incorporated into numerous activities throughout the school year
Look up a formula and perform single-step conversions within or between systems of measurement (Level 5)	x		Students convert various units of measure including, but not limited to: 1) Converting points to inches 2) Converting picas to inches	x	x	Students demonstrate proficiency by: 1) in-class assignments, 2) quizzes that incorporate these assessments, 3) in-class projects.	Incorporated into numerous activities throughout the school year

Use fractions, negative numbers, ratios, percentages, or mixed numbers (Level 6)	x		Students do story problems from their *Mathematics in Graphic Communications* book. Students use fractions in measurements and calculations for determining resizing of images. Students use ratios when determining how many pages to print or how many images to fit on a page. Students use mixed numbers in single-step calculations based on measurement readings and finding midpoints.	x	x	Students demonstrate proficiency by: 1) in-class activities, 2) quiz, 3) final exam.	Incorporated into numerous activities throughout the school year
Find mistakes in questions that belong at Levels 3, 4, and 5 (Level 6)		x	Students make corrections on their work to perform to the expectation.		x	The teacher uses mastery learning in some situations to ensure that the concepts are understood. (Mastery learning is not necessarily used if students show common mistakes or carelessness.)	On an as-needed basis

Convert between systems of measurement that involve fractions, mixed numbers, decimals, and/or percentages (Level 7)		x	Students convert various units of measure including, but not limited to: 1) converting points to inches, 2) converting picas to inches.	x	x	Students demonstrate proficiency by: 1) in-class assignments, 2) quizzes that incorporate these assessments, 3) in-class projects.	Incorporated into numerous activities throughout the school year

*** *Note: If a standard is covered partially, then the part that is covered is underlined.*