Mathematics Curriculum

Subject Area: Technical Math 11-12 CTC
CCSS Conceptual Category: Number and Quantity
CCSS Domain: The Real Number System (N-RN)
Show-Me Standards

CCSS Cluster	Common Core Standard (D)=District Standard	Show Me Standards	DOK	Instructional Strategies Student Activities/Resources	Assessment
	The students will:				
Extend the properties of exponents to rational exponents	1. rewrite expressions involving radicals and rational exponents using the properties of exponents.	MA5 2.1	Strategic Thinking	1. Demonstrate the properties of exponents and their relationship with radicals using base examples as models.	Teacher/Student Conference Teacher/Student Review Reteach if necessary Summative Exam

Mathematics Curriculum

Subject Area: Technical Math 11-12 CTC
CCSS Conceptual Category: Number and Quantity
CCSS Domain: Quantities (N-Q)
Show-Me Standards

CCSS Cluster	Common Core Standard (D)=District Standard	Show Me Standards	DOK	Instructional Strategies Student Activities/Resources	Assessment
	The students will:				
Reason quantitatively and use units to solve problems	1. use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays. 2. define appropriate quantities for the purpose of descriptive modeling. 3. choose a level of accuracy appropriate to limitations on measurement when reporting quantities.	MA5 1.5	Skill/Concept	1. Use multiples measuring tools such as rulers, tape measures, calipers etc. to describe and interpret different units of measure. 2. Use the tools of measuring to help determine appropriate measuring quantities. 3. Give examples of rounding and place value in order to understand accuracy of measurement.	Teacher/Student Conference Teacher/Student Review Reteach if necessary Summative Exam

Mathematics Curriculum

Subject Area: Technical Math 11-12 CTC
CCSS Conceptual Category: Algebra
CCSS Domain: Seeing Structure in Expressions (A-SSE)
Show-Me Standards

CCSS Cluster	Common Core Standard (D)=District Standard	Show Me Standards	DOK	Instructional Strategies Student Activities/Resources	Assessment
	The students will:				
Interpret the structure of expressions	1. interpret expressions that represent a quantity in terms of its context.★ a. interpret parts of an expression, such as terms, factors, and coefficients. b. interpret complicated expressions by viewing one or more of their parts as a single entity. For example, interpret P(1+r)n as the product of P and a factor not depending on P.	MA1 3.1 MA5 1.6	Skill/Concept	1. Demonstrate, with examples of algebraic expressions, the individual parts of the expression and explain independent/dependent variables.	Teacher/Student Conference Teacher/Student Review Reteach if necessary Summative Exam

Mathematics Curriculum

Subject Area: Technical Math 11-12 CTC
CCSS Conceptual Category: Algebra
CCSS Domain: Creating Equations (A-CED)
Show-Me Standards

CCSS Cluster	Common Core Standard (D)=District Standard	Show Me Standards	DOK	Instructional Strategies Student Activities/Resources	Assessment
	The students will:				
Create equations that describe numbers of relationships	1. create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions, and simple rational and exponential function.

2. rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. For example, rearrange Ohm's law V =IR to highlight resistance R. | MA1 1.6 MA5 1.10 | Extended Thinking | 1. Take several applicable algebraic equations/formulas such as Ohm's Law , simple interest, compound interest, percent mark-up, Board Feet, etc. and evaluate them given appropriate values.

2. Manipulate the applicable equations/formulas to solve for different variables involved in the equation. | Teacher/Student Conference Teacher/Student Review Reteach if necessary Summative Exam |

Mathematics Curriculum

Subject Area: Technical Math 11-12 CTC
CCSS Conceptual Category: Algebra
CCSS Domain: Reasoning with Equations and Inequalities (A-REI)

CCSS Cluster	Common Core Standard (D)=District Standard	Show Me Standards	DOK	Instructional Strategies Student Activities/Resources	Assessment
	The students will:				
Understand solving equations as a process of reasoning and explain the reasoning	1. explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.		Skill/Concept	1. Model a balanced scale and the fact that a scale must have the same operation done to both sides in order to stay equal.	Teacher/Student Conference Teacher/Student Review Reteach if necessary Summative Exam
	2. solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise.	MA1 3.4 MA5 3.4 MA3 1.5		2. Demonstrate with examples several exponent products and their relationship as radicals.	
	3. solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.			3. Use several applicable formulas(Ohm's Law, Simple Interest, D=RT, etc.) and solve for a variable.	
	4. understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane, often forming a curve (which could be a line).			4. Take several solutions to one of the applicable formulas and plot them on a Cartesian plane naming the axes appropriately.	

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Mathematics Curriculum

Subject Area: Technical Math 11-12 CTC
CCSS Conceptual Category: Geometry
CCSS Domain: Congruence (G-CO)
Show-Me Standards

CCSS Cluster	Common Core Standard (D)=District Standard	Show Me Standards	DOK	Instructional Strategies Student Activities/Resources	Assessment
	The students will:				
Experiment with transformations in the plane	1. know precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, distance along a line, and distance around a circular arc.	MA2	Recall	1. Use angle cut pieces of wood and circle cut pieces of wood in order to measure angle size, radius, diameter, circumference with protractors, calipers and string.	Teacher/Student Conference Teacher/Student Review Reteach if necessary Summative Exam

Mathematics Curriculum

Subject Area: Technical Math 11-12 CTC
CCSS Conceptual Category: Geometry
CCSS Domain: Similarity, Right Triangles, and Trigonometry (G-SRT)

Show-Me Standards

CCSS Cluster	Common Core Standard (D)=District Standard	Show Me Standards	DOK	Instructional Strategies Student Activities/Resources	Assessment
	The students will:				
Prove theorems involving similarity	1. use congruence and similarity criteria for plane figures to solve problems and to prove relationships in geometric figures.	MA2 1.6	Skill\Concept	1. Use two cut pieces of sheet metal that are similar in shape but not in size and discuss properties of congruence and proportion. Use the cross-multiplication scheme to solve the proportion.	Teacher/Student Conference Teacher/Student Review Reteach if necessary Summative Exam

Mathematics Curriculum

Subject Area: Technical Math 11-12 CTC
CCSS Conceptual Category: Geometry
CCSS Domain: Similarity, Right Triangles, and Trigonometry (G-SRT)

CCSS Cluster	Common Core Standard (D)=District Standard	Show Me Standards	DOK	Instructional Strategies Student Activities/Resources	Assessment
	The students will:				
Define trigonometric ratios and solve problems involving right triangles	1. use the Pythagorean Theorem to solve right triangles in applied problems.★	MA2 3.4	Skill\Concept	1. Model several applicable instances for the use of the Pythagorean Theorem. such as: Shadow lengths, travel distances, cutting distances, etc.	Teacher/Student Conference Teacher/Student Review Reteach if necessary Summative Exam

Mathematics Curriculum

Subject Area: Technical Math 11-12 CTC
CCSS Conceptual Category: Geometry
CCSS Domain: Expressing Geometric Properties with Equations (G-GPE)
Show-Me Standards

CCSS Cluster	Common Core Standard (D)=District Standard	Show Me Standards	DOK	Instructional Strategies Student Activities/Resources	Assessment
	The students will:				
Use coordinates to prove simple geometric theorems algebraically	1. use coordinates to prove simple geometric theorems algebraically. For example, prove or disprove that a figure defined by four given points in the coordinate plane is a rectangle; prove or disprove that the point (1, √3) lies on the circle centered at the origin and containing the point (0, 2). 2. use coordinates to compute perimeters of polygons and areas of triangles and rectangles, e.g., using the distance formula.★	MA2 3.2 MA2 3.3 MA2 3.4	Extended Thinking	1. Use fold together boxes and the coordinate plane to prove figures such as rectangles, squares, circles, and right triangles have consistent theorems. 2. Use the coordinate plane and demonstrate with measuring tools how to compute perimeter and area of plane figures.	Teacher/Student Conference Teacher/Student Review Reteach if necessary Summative Exam

Mathematics Curriculum

Subject Area: Technical Math 11-12 CTC
CCSS Conceptual Category: Geometry
CCSS Domain: Geometric Measurement and Dimension (G-GMD)

CCSS Cluster	Common Core Standard (D)=District Standard	Show Me Standards	DOK	Instructional Strategies Student Activities/Resources	Assessment
	The students will:				
Explain volume formulas and use them to solve problems	1. use volume formulas for cylinders, pyramids, cones, and spheres to solve problems.★	MA2 3.4	Skill/Concept	1. Using a formula sheet with all the volume formulas needed, solve several examples of finding volume. Also, describe the importance of accuracy of the solution and identification of proper cubic units.	Teacher/Student Conference Teacher/Student Review Reteach if necessary Summative Exam

Mathematics Curriculum

Subject Area: Technical Math 11-12 CTC
CCSS Conceptual Category: Geometry
CCSS Domain: Geometric Measurement and Dimension (G-GMD)
Show-Me Standards

CCSS Cluster	Common Core Standard (D)=District Standard	Show Me Standards	DOK	Instructional Strategies Student Activities/Resources	Assessment
	The students will:				
Visualize relationships between two-dimensional and three-dimensional objects	1. identify the shapes of two-dimensional cross-sections of three-dimensional objects, and identify three-dimensional objects generated by rotations of two-dimensional objects.	MA2 1.6	Recall	1. Use computer animation tools/programs such as the ones in the PLTW class to demonstrate two-dimensional cross sections of three-dimensional figures and the different rotational views of three-dimensional objects.	Teacher/Student Conference Teacher/Student Review Reteach if necessary Summative Exam

Mathematics Curriculum

Subject Area: Technical Math 11-12 CTC
CCSS Conceptual Category: Geometry
CCSS Domain: Modeling with Geometry (G-MG)

Show-Me Standards

CCSS Cluster	Common Core Standard (D)=District Standard	Show Me Standards	DOK	Instructional Strategies Student Activities/Resources	Assessment
	The students will:				
Apply geometric concepts in modeling situations	1. use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder).★		Extended Thinking	1. Use a set of plastic shapes to identify geometric figures and ask students to relate the shape with an applicable figure they've experienced	Teacher/Student Conference Teacher/Student Review Reteach if necessary Summative Exam
	2. apply concepts of density based on area and volume in modeling situations (e.g., persons per square mile, BTUs per cubic foot).★	MA2 3.2 MA2 3.3		2. Use several examples of converting area and volume to a mass density such as cubic feet to fluid ounces, gallons per square foot, etc.	
	3. apply geometric methods to solve design problems (e.g., designing an object or structure to satisfy physical constraints or minimize cost; working with typographic grid systems based on ratios).★			3. Show an example of 100 ft. of fence built in the shape of a circle covers more surface area that one built in the shape of a square.	

Mathematics Curriculum

Subject Area: Technical Math 11-12 CTC
CCSS Conceptual Category: Statistics and Probability
CCSS Domain: Interpreting Categorical and Quantitative Data (S-ID)

Show-Me Standards

CCSS Cluster	Common Core Standard (D)=District Standard	Show Me Standards	DOK	Instructional Strategies Student Activities/Resources	Assessment
	The students will:				
Summarize, represent, and interpret data on a single count or measurement variable	1. use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets.	MA3 1.8	Skill/Concept	1. Use anonymous grade percentages of students to demonstrate the measures of central tendency and their spread.	Teacher/Student Conference Teacher/Student Review Reteach if necessary Summative Exam

Mathematics Curriculum

Subject Area: Technical Math 11-12 CTC
CCSS Conceptual Category: Statistics and Probability
CCSS Domain: Making Inferences and Justifying Conclusions (S-IC)
Show-Me Standards

CCSS Cluster	Common Core Standard (D)=District Standard	Show Me Standards	DOK	Instructional Strategies Student Activities/Resources	Assessment
	The students will:				
Make inferences and justify conclusions from sample surveys, experiments, and observational studies	1. evaluate reports based on data.	MA3 1.8	Extended Thinking	1. Use building estimates of space and cost from several different construction company bids to make a decision on what company will be contracted to build the new building.	Teacher/Student Conference Teacher/Student Review Reteach if necessary Summative Exam