

 **Oberg Industries**  
PASSION FOR PRECISION MANUFACTURING

September 13, 2017

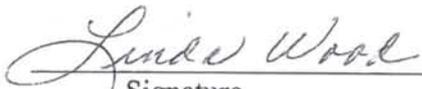
Dear Regina Hiler,

RE: Letter of Support – PDE

As an employer in the Butler County Area, I am writing this letter of support for the Butler County Area Vocational-Technical School. The Butler County Area Vocational-Technical School is a learning facility that offers courses to students designed to meet the needs of the students as well as the occupational requirements in the labor market. The Butler County Area Vocational-Technical School empowers students with skills necessary for continuous development, education and employment.

The Program of Study CIP Code 48.0501 Machine Tool Technology/Machinist at the Butler County Area Vocational-Technical School prepares graduates to be qualified employees, meets our needs within industry, as well as the needs of the community.

I encourage and support the approval of Program of Study for CIP Code 48.0501 Machine Tool Technology/Machinist.

  
Signature

9/13/2017  
Date

NAME: Linda Wood      TITLE: Training Programs Manager

BUSINESS NAME: Oberg Industries

ADDRESS: 2301 Silvertown Rd., PO Box 368, Freeport, PA 16229





**CAREER AND TECHNICAL EDUCATION INFORMATION SYSTEM  
PENNSYLVANIA DEPARTMENT OF EDUCATION  
SCOPE AND SEQUENCE  
FOR SCHOOL YEAR 2017-2018**

**DATE : 10/31/2017**

**Articulation Agreement between** Butler County AVTS

**and** Butler County Community Coll ( 404100852 )

**Secondary School Name :** Butler County AVTS

**AUN:** 104101307

**CIP Code Number and Title :** 48.0501 Machine Tool Technology/Machinist

**Program Type:** Program of Study

Subject (Hours)	Secondary School				Postsecondary Institution			
	Grade 9 (Hours)	Grade 10 (Hours)	Grade 11 (Hours)	Grade 12 (Hours)	First Semester	Second Semester	Third Semester	Fourth Semester
Technical (1086)		Orientation I, Safety I, Blueprint Reading I(30)	Orientation II, Safety II, Blueprint Reading II(30)	Orientation III, Safety III, Blueprint Reading III(30)	DRFT 220 Intro to CADD	MECH 103 Manufacturing Processes and Materials	ELEC 110 Electrical Fundamentals	MECH 220 Automation and Robotics
		Layout & Bench Work I(50)	Layout & Bench Work II(50)	Metallurgical Processes & Application(20)	MECH 114 CNC Machining		QUAL 133 Quality Assurance	MECH 281 Product Realization Capstone Project
		Inspection of Parts & Machine Maintenance I(30)	Inspection of Parts & Machine Maintenance II (30)	CNC Process & Operations(80)	MACH 101 Introduction to Metalworks		DRFT 115 Engineering Graphics	
		NIMS Certification Review & Testing I (75)	NIMS Certification Review & Testing II(75)	Quality Control Operations & Technical Math (30)	MACH 111 Lathe I			
		Drill Presses I(20)	Drill Presses II (20)	Power Saws & Lathes(60)	MACH 131 Mill I			
		Grinding Machines I (70)	Grinding Machines II(70)	Milling Machine Operations(60)	MACH 121 Grind I			
		Manual Lathes I(60)	Manual Lathes II (60)	Professional Career Development (25)	MACH 132 Mill II			
		Technical Math Applications I(27)	Technical Math Applications II (27)	NIMS Certification Review & Testing III(57)				
English	College Prep I	College Prep II	College Prep III	College Prep IV	ENGL 101 English I	COMM 201 Speech		
Math	Algebra I	Algebra II	Geometry	Recommended College Prep Math	MATH 117 Technical Math I	MATH 118 Technical Math II		
Science	Biology I	Chemistry I with Lab	Physics	Recommended College Prep Science	COMP210 Introduction to Microcomputing	PHYS 101 Physics		CHEM 112 Descriptive Chemistry



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Humanities	Civics	US History	World History	Government		ECON 101 Principles of Economics		
Other	Recommended Foreign Language I	Recommended Foreign Language II		Recommended Cooperative Education	PHED 125 Physical Wellness		Elective	Elective
	Recommended Computer Technology	Recommended Computer Technology	Recommended Computer Technology	Recommended Computer Technology				
	Recommended Industrial Technology	Recommended Industrial Technology	Recommended Industrial Technology	Recommended Industrial Technology				
	Recommended STEM Coursework	Recommended STEM Coursework	Recommended STEM Coursework	Recommended STEM Coursework				

Subject	Dual Enrollment Credits			Articulated Credits		
	Course Number	Course Description	Credit Hours	Course Number	Course Description	Credit Hours
Technical				MACH101	Introduction to Metalworking	3.0
				MACH111	Lathe I	3.0
				MACH131	Mill I	3.0
				MACH121	Grind I	3.0
				MACH 132	Mill II	3.0
English						
Math						
Science						



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**Secondary School Name :** Butler County AVTS

**AUN:** 104101307

**CIP Code Number and Title :** 48.0501 Machine Tool  
Technology/Machinist

**Program Type:** Program of Study

Subject	Dual Enrollment Credits			Articulated Credits		
	Course Number	Course Description	Credit Hours	Course Number	Course Description	Credit Hours
Science						
Humanities						
Other						

Unit/Standard Number	<p style="text-align: center;"><u>High School Graduation Years 2016, 2017 and 2018</u></p> <p style="text-align: center;"><b>Machine Tool Technology/Machinist CIP 48.0501 Task Grid</b></p>	<p style="text-align: center;"><b>Proficiency Level Achieved: (X) Indicates Competency Achieved to Industry Proficiency Level</b></p>
<b>Secondary Competency Task List</b>		
<b>100</b>	<b>ORIENTATION / SAFETY</b>	
101	Describe the Occupational Safety and Health Administration (OSHA) and its role in the machining industry.	
102	Identify and explain safety equipment and procedures.	
103	Identify and explain general safety precautions.	
104	Identify and describe personal/lab safety requirements.	
105	Explain Right to Know Law.	
106	Explain location of SDS.	
107	Explain potential hazardous trade materials.	
<b>200</b>	<b>PERFORMING LAYOUT WORK</b>	
201	Perform layout work for NIMS certification.	
202	Prepare materials for layout.	
203	Identify and use basic and precision layout tools.	
<b>300</b>	<b>PART INSPECTION</b>	
301	Identify, care for, and use precision measuring instruments.	
302	Calibrate precision measuring instruments.	
303	Describe methods used for quality control.	
<b>400</b>	<b>BENCH WORK</b>	
401	Demonstrate safety procedures when performing bench work.	
402	Cut material with a hand hacksaw.	
403	File work to specifications.	
404	Cut threads with hand taps and dies.	
405	Assemble and disassemble parts.	
406	Identify and use bench hand tools.	

Unit/Standard Number	<p style="text-align: center;"><u>High School Graduation Years 2016, 2017 and 2018</u></p> <p style="text-align: center;"><b>Machine Tool Technology/Machinist CIP 48.0501 Task Grid</b></p>	<p style="text-align: center;">Proficiency Level Achieved: (X) Indicates Competency Achieved to Industry Proficiency Level</p>
407	Identify and use a hand arbor and/or hydraulic press.	
<b>500</b>	<b>DRILL PRESSES</b>	
501	Demonstrate safety precautions when using the drill press.	
502	Select and demonstrate proper use of drill work holding devices.	
503	Calculate speeds and feeds.	
504	Demonstrate the use of center drill.	
505	Select correct drill sizes for various application.	
506	Pre-drill and ream various size holes.	
507	Demonstrate counterboring, spotfacing and countersinking.	
508	Pre-drill and tap holes.	
509	RESERVED	
510	Sharpen various size twist drills.	
511	Select & demonstrate workholding devices.	
<b>600</b>	<b>GRINDING MACHINES</b>	
601	Demonstrate knowledge and application of OSHA safety rules using pedestal and surface grinding machines.	
602	Identify parts of pedestal grinder.	
603	Demonstrate the proper way to test, mount and dress grinding wheels.	
604	Grind and sharpen various lathe tools.	
605	RESERVED	
606	RESERVED	
607	Identify and demonstrate surface grinding safety procedures.	
608	Identify parts of surface grinder.	
609	Grind surfaces flat and parallel using a magnetic chuck.	
610	Grind work surfaces square with a vise or angle plate.	
611	Grind precision angles using a sine plate or sine bar.	

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<b>700</b>	<b>LATHES</b>	
701	Identify and demonstrate lathe safety procedures.	
702	Mount and true work piece in 3-jaw and 4-jaw chucks.	
703	Align centers.	
704	Face workpiece.	
705	Turn outside diameters.	
706	Turn inside and outside diameters to shoulders.	
707	Turn tapers.	
708	Demonstrate knurling.	
709	Part off and groove workpiece.	
710	Cut internal and external threads.	
711	Demonstrate machine tapping for internal threads.	
712	Demonstrate filing and polishing.	
713	Demonstrate die thread cutting.	
714	Demonstrate boring.	
715	Demonstrate various tool holders and their correct use.	
716	Demonstrate the use of a collect attachment.	
717	Demonstrate the proper lathe maintenance procedure.	
718	Set machine correctly for various speeds and feeds.	
719	Demonstrate proper gear selection for threading operations.	
<b>800</b>	<b>MILLING MACHINES</b>	
801	Identify and demonstrate safety procedures for using a milling machine.	
802	Demonstrate tramming a milling head.	
803	Select, mount and indicate vise.	
804	Machine angles.	
805	Machine keyways.	
806	Select and demonstrate the use of face mills.	
807	Demonstrate the use of a digital indexing procedures.	

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808	Demonstrate use of digital readout.	
809	Demonstrate use of edge finder.	
810	Identify the difference between climb and conventional milling.	
811	Demonstrate use of adjustable boring head.	
812	Calculate speeds and feeds.	
813	Install and remove cutting tool holding devices properly.	
814	Select appropriate cutter for various milling operations.	
815	Demonstrate how to square part.	
<b>900</b>	<b>POWER SAW</b>	
901	Identify and demonstrate safety procedures for using vertical and horizontal power saws.	
902	Demonstrate cutting and welding saw blades.	
903	Remove and replace saw blades.	
904	Demonstrate 3 tooth rule for selecting blades.	
905	Demonstrate accurate sawing.	
906	Select and set speeds for various sawing operations.	
<b>1000</b>	<b>MACHINES AND TOOLS</b>	
1001	Demonstrate proper lubrication and maintenance of machinery.	
1002	Clean and store hand tools, cutters, fixtures and attachments.	
1003	Inspect and adjust machine guards.	
1004	Select, prepare and store coolants, cutting oils and compounds.	
1005	Inspect, clean, and maintain a safe working area.	
<b>1100</b>	<b>METALLURGY</b>	
1101	Identify and explain metals classifications.	
1102	Identify and explain metal property applications.	
1103	Identify and explain heat-treating and annealing processes.	

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<b>1200</b>	<b>CHARTS AND REFERENCES</b>	
1201	Use the numeric decimal equivalent chart.	
1202	Use speed and feed charts.	
1203	Utilize tap and drill charts.	
1204	Demonstrate use of the Machinery's Handbook to locate specific information.	
<b>1300</b>	<b>BLUEPRINT READING</b>	
1301	Identify and explain orthographic views and projections.	
1302	Demonstrate basic sketching and dimensioning.	
1303	Identify and explain the alphabet of lines.	
1304	Demonstrate knowledge of dimensioning of machine parts, as well as tolerance and fits.	
1305	Calculate material sizes based upon job needs.	
1306	Demonstrate knowledge of third angle projections.	
1307	Identify and interpret geometric dimensioning and tolerancing.	
<b>1400</b>	<b>CNC PROGRAMMING</b>	
1401	Explain and demonstrate CNC safety procedures.	
1402	Demonstrate basic use of G and M codes.	
1403	Demonstrate use of numerical controls.	
1404	Identify and demonstrate use of Cartesian and polar coordinate systems.	
1405	Demonstrate absolute and incremental positioning.	
1406	Demonstrate the dry or practice run of a CNC program before machining.	
1407	Identify and explain advantages and disadvantages of CNC machining.	
1408	Calculate and apply machine feeds and speeds.	
1409	Set part zero and tool offsets.	
1410	Transfer data files to and from a CNC machine.	
1411	Identify and demonstrate use of MDI applications.	
1412	Program and produce a part using linear and circular interpolation.	

# Machine Tool Technology/Machinist, Classification of Instructional Program (CIP) 48.0501

*Units of Instruction and Task Grid Linked to Pennsylvania Core Standards*

## 100 Orientation/Safety

Secondary Competency Task Grid with Unit and Task Numbers	Common Career Technical Core Standards	Pennsylvania Core Standards for Reading for Technical Subjects Standard 3.5	Pennsylvania Core Standards for Writing for Technical Subjects Standard 3.6	Pennsylvania Core Standards for Mathematics Standard 2.1
<p><b>101</b> Describe the Occupational Safety and Health Administration (OSHA) and its role in the machining industry.</p> <p><b>102</b> Identify and explain safety equipment and procedures.</p> <p><b>103</b> Identify and explain general safety precautions.</p> <p><b>104</b> Identify and describe personal/lab safety requirements.</p> <p><b>105</b> Explain Right to Know Law.</p> <p><b>106</b> Explain location of SDS.</p> <p><b>107</b> Explain potential hazardous trade materials.</p>	<p><b>CAREER CLUSTER</b> <b>Manufacturing Career Cluster</b> (Choose Standards) 1-2-3-4-5-6-7</p> <p><b>CAREER PATHWAYS INCLUDE:</b> <b>Maintenance, Installation and Repair Career Pathway</b> (Choose Standards) 1-2-3-4-5-6</p> <p><b>NOTE:</b> <b>Refer to the Common Career Technical Core Standards booklet if you wish to add more Career Pathways to meet the needs of your local Area.</b></p>	<p><b>KEY IDEAS/DETAILS</b> <b>GRADES 9-10-11-12</b> <b>Standard CC.3.5.9-10. A</b> <b>Standard CC.3.5.11-12 A</b> Cite specific textual evidence, etc. <b>Standard CC.3.5.9-10 B</b> <b>Standard CC.3.5.11-12. B</b> Determine the central ideas or conclusions of a text; etc. <b>Standard CC.3.5.9-10.C</b> <b>Standard CC.3.5.11-12.C</b> Follow precisely a complex multistep procedure, etc.</p> <p><b>CRAFT &amp; STRUCTURE</b> <b>GRADES 9-10-11-12</b> <b>Standard CC.3.5.9-10. D</b> <b>Standard CC.3.5.11-12.D</b> Determine the meaning of symbols, key terms, and other domain specific words. <b>Standard CC.3.5.9-10.E</b> <b>Standard CC.3.5.11-12.E</b> Analyze the structure of the relationships among concepts in a text, etc. <b>Standard CC.3.5.9-10.F</b> <b>Standard CC.3.5.11-12.F</b> Analyze the author's purpose in</p>	<p><b>TEXT TYPES AND PURPOSE</b> <b>GRADES 9-10-11-12</b> <b>Standard CC.3.6.9-10.A</b> <b>Standard CC.3.6.11-12.A</b> Write arguments focused on discipline specific content. <b>Standard CC.3.6.9-10.B</b> <b>Standard CC.3.6.11-12.B</b> Write informative or explanatory texts, including the narration of technical processes, etc.</p> <p><b>PRODUCTION &amp; DISTRIBUTION OF WRITING</b> <b>GRADES 9-10-11-12</b> <b>Standard CC.3.6.9-10.C</b> <b>Standard CC.3.6.11-12 C</b> Produce clear and coherent writing...appropriate to task, purpose, and audience. <b>Standard CC.3.6.9-10 D</b> <b>Standard CC.3.6.11-12.D</b> Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience. <b>Standard CC.3.6.9-10.E</b></p>	

Secondary Competency Task Grid with Unit and Task Numbers	Common Career Technical Core Standards	Pennsylvania Core Standards for Reading for Technical Subjects Standard 3.5	Pennsylvania Core Standards for Writing for Technical Subjects Standard 3.6	Pennsylvania Core Standards for Mathematics Standard 2.1
		<p>providing an explanation, describing a procedure...and Analyze the structure of the relationships among concepts in a text.</p> <p><b>INTEGRATE KNOWLEDGE &amp; IDEAS</b> <b>GRADES 9-10</b> • <b>Standard CC.3.5.9-10.G</b> Translate quantitative or technical information expressed in a text into visual form (e.g. a table or chart). <b>Standard CC.3.5.9-10. H</b> Assess the reasoning in a text to support the author's claim for solving a technical problem. <b>Standard CC.3.5.9-10. I</b> Compare and contrast findings presented in a text to those from other sources, etc.</p> <p><b>INTEGRATE KNOWLEDGE &amp; IDEAS</b> <b>GRADES 11-12</b> <b>Standard CC.3.5.11-12. G</b> Integrate and evaluate multiple sources of information presented in diverse formats...to solve a problem. <b>Standard CC.3.5.11-12. H</b> Evaluate the hypotheses, data, analysis, and conclusions in a technical text, verifying the data when possible. <b>Standard CC.3.5.11-12. I</b> Synthesize information from a range of sources into a coherent understanding.</p> <p><b>RANGE OF READING GRADES 9-10-11-12</b> <b>Standard CC.3.5.9-10.J Standard CC.3.5.11-12.J</b></p>	<p><b>Standard CC.3.6.11-12.E.</b> Use technology, including the internet, to produce, publish, and update individual or shared writing products.</p> <p><b>RESEARCH</b> <b>GRADES 9-10-11-12</b> <b>Standard CC.3.6.9-10.F</b> <b>Standard CC.3.6.11-12.F</b> Conduct short and more sustained research to answer a question or solve a problem. <b>Standard CC.3.6.9-10.G.</b> <b>Standard CC.3.6.11-12.G</b> Gather relevant information from multiple authoritative print and digital sources, following a standard format for citation. <b>Standard CC.3.6.9-10.H.</b> <b>Standard CC.3.6.11-12.H.</b> Draw evidence from informational texts to support analysis, reflection, and research.</p> <p><b>RANGE OF WRITING</b> <b>GRADES 9-10-11-12</b> <b>Standard CC.3.5.9-10.I &amp; Standard CC.3.5.11-12.I.</b> Write routinely over extended time frames and shorter time frames for a range of tasks, purposes and audiences...etc.</p>	

Secondary Competency Task Grid with Unit and Task Numbers	Common Career Technical Core Standards	Pennsylvania Core Standards for Reading for Technical Subjects Standard 3.5	Pennsylvania Core Standards for Writing for Technical Subjects Standard 3.6	Pennsylvania Core Standards for Mathematics Standard 2.1
		By the end of grades 9- 10, AND 11- 12, read and comprehend technical texts independently and proficiently.		

## 200 Performing Layout Work

Secondary Competency Task Grid with Unit and Task Numbers	Common Career Technical Core Standards	Pennsylvania Core Standards for Reading for Technical Subjects Standard 3.5	Pennsylvania Core Standards for Writing for Technical Subjects Standard 3.6	Pennsylvania Core Standards for Mathematics Standard 2.1
<p><b>201</b> Perform layout work for NIMS certification.</p> <p><b>202</b> Prepare materials for layout.</p> <p><b>203</b> Identify and use basic and precision layout tools.</p>	<p><b>CAREER CLUSTER</b>  <b>Manufacturing Career Cluster</b>            (Choose Standards)            1-2-3-4-5-6-7</p> <p><b>CAREER PATHWAYS INCLUDE:</b>  <b>Maintenance, Installation and Repair Career Pathway</b>            (Choose Standards)            1-2-3-4-5-6</p> <p><b>NOTE:</b>  <b>Refer to the Common Career Technical Core Standards booklet if you wish to add more Career Pathways to meet the needs of your local Area.</b></p>	<p><b>KEY IDEAS/DETAILS</b>  <b>GRADES 9-10-11-12</b>  <b>Standard CC.3.5.9-10. A</b>  <b>Standard CC.3.5.11-12 A</b>            Cite specific textual evidence, etc.  <b>Standard CC.3.5.9-10 B</b>  <b>Standard CC.3.5.11-12. B</b>            Determine the central ideas or conclusions of a text; etc.  <b>Standard CC.3.5.9-10.C</b>  <b>Standard CC.3.5.11-12.C</b>            Follow precisely a complex multistep procedure, etc.</p> <p><b>CRAFT &amp; STRUCTURE</b>  <b>GRADES 9-10-11-12</b>  <b>Standard CC.3.5.9-10. D</b>  <b>Standard CC.3.5.11-12.D</b>            Determine the meaning of symbols, key terms, and other domain specific words.  <b>Standard CC.3.5.9-10.E</b>  <b>Standard CC.3.5.11-12.E</b>            Analyze the structure of the relationships among concepts in a text, etc.  <b>Standard CC.3.5.9-10.F</b>  <b>Standard CC.3.5.11-12.F</b>            Analyze the author's purpose in providing an explanation, describing a procedure...and            Analyze the structure of the relationships among concepts in a text.</p> <p><b>INTEGRATE KNOWLEDGE &amp; IDEAS</b>  <b>GRADES 9-10</b>  <ul style="list-style-type: none"> <li><b>Standard CC.3.5.9-10.G</b>                Translate quantitative or technical information expressed in a text into</li> </ul> </p>	<p><b>TEXT TYPES AND PURPOSE</b>  <b>GRADES 9-10-11-12</b>  <b>Standard CC.3.6.9-10.A</b>  <b>Standard CC.3.6.11-12.A</b>            Write arguments focused on discipline specific content.  <b>Standard CC.3.6.9-10.B</b>  <b>Standard CC.3.6.11-12.B</b>            Write informative or explanatory texts, including the narration of technical processes, etc.</p> <p><b>PRODUCTION &amp; DISTRIBUTION OF WRITING</b>  <b>GRADES 9-10-11-12</b>  <b>Standard CC.3.6.9-10.C</b>  <b>Standard CC.3.6.11-12 C</b>            Produce clear and coherent writing...appropriate to task, purpose, and audience.  <b>Standard CC.3.6.9-10 D</b>  <b>Standard CC.3.6.11-12.D</b>            Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.  <b>Standard CC.3.6.9-10.E</b>  <b>Standard CC.3.6.11-12.E.</b>            Use technology, including the internet, to produce, publish, and update individual or shared writing products.</p> <p><b>RESEARCH</b>  <b>GRADES 9-10-11-12</b>  <b>Standard CC.3.6.9-10.F</b>  <b>Standard CC.3.6.11-12.F</b>            Conduct short and more sustained research to answer a question or solve a problem.</p>	<p><b>NUMBERS AND OPERATIONS</b>  <b>Standard 2.1.HS.F.2</b>            Apply properties of rational and irrational numbers to solve real world or mathematical problems.  <b>Standard 2.1.HS.F.4</b>            Use units as a way to understand problems and to guide the solution of multistep problems.  <b>Standard 2.1.HS.F.5</b>            Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.  <b>Standard 2.1.HS.F.6</b>            Extend the knowledge of arithmetic operations and apply to complex numbers.</p> <p><b>ALGEBRA</b>  <b>Standard 2.2.HS.C.9</b>            Prove the Pythagorean identity and use it to calculate trigonometric ratios.</p> <p><b>GEOMETRY</b>  <b>Standard 2.3.HS.A.7</b>            Apply trigonometric ratios to solve problems involving right triangles.  <b>Standard 2.3.HS.A.3</b>            Verify and apply geometric theorems as they relate to Geometric figures.  <b>Standard 2.3.HS.A.13</b>            Analyze relationships between two dimensional and three dimensional</p>

Secondary Competency Task Grid with Unit and Task Numbers	Common Career Technical Core Standards	Pennsylvania Core Standards for Reading for Technical Subjects Standard 3.5	Pennsylvania Core Standards for Writing for Technical Subjects Standard 3.6	Pennsylvania Core Standards for Mathematics Standard 2.1
		<p>visual form (e.g. a table or chart).</p> <p><b>Standard CC.3.5.9-10. H</b> Assess the reasoning in a text to support the author's claim for solving a technical problem.</p> <p><b>Standard CC.3.5.9-10. I</b> Compare and contrast findings presented in a text to those from other sources, etc.</p> <p><b>INTEGRATE KNOWLEDGE &amp; IDEAS</b> <b>GRADES 11-12</b> <b>Standard CC.3.5.11-12. G</b> Integrate and evaluate multiple sources of information presented in diverse formats...to solve a problem. <b>Standard CC.3.5.11-12. H</b> Evaluate the hypotheses, data, analysis, and conclusions in a technical text, verifying the data when possible. <b>Standard CC.3.5.11-12. I</b> Synthesize information from a range of sources into a coherent understanding.</p> <p><b>RANGE OF READING GRADES 9-10-11-12</b> <b>Standard CC.3.5.9-10.J Standard CC.3.5.11-12.J</b> By the end of grades 9- 10, AND 11-12, read and comprehend technical texts independently and proficiently.</p>	<p><b>Standard CC.3.6.9-10.G.</b> <b>Standard CC.3.6.11-12.G</b> Gather relevant information from multiple authoritative print and digital sources, following a standard format for citation.</p> <p><b>Standard CC.3.6.9-10.H.</b> <b>Standard CC.3.6.11-12.H.</b> Draw evidence from informational texts to support analysis, reflection, and research.</p> <p><b>RANGE OF WRITING</b> <b>GRADES 9-10-11-12</b> <b>Standard CC.3.5.9-10.I &amp; Standard CC.3.5.11-12.I.</b> Write routinely over extended time frames and shorter time frames for a range of tasks, purposes and audiences...etc.</p>	<p>objects.</p>

## 300 Part Inspection

Secondary Competency Task Grid with Unit and Task Numbers	Common Career Technical Core Standards	Pennsylvania Core Standards for Reading for Technical Subjects Standard 3.5	Pennsylvania Core Standards for Writing for Technical Subjects Standard 3.6	Pennsylvania Core Standards for Mathematics Standard 2.1
<p><b>301</b> Identify, care for, and use precision measuring instruments.</p> <p><b>302</b> Calibrate precision measuring instruments.</p> <p><b>303</b> Describe methods used for quality control.</p>	<p><b>CAREER CLUSTER</b>  <b>Manufacturing Career Cluster</b>            (Choose Standards)            1-2-3-4-5-6-7</p> <p><b>CAREER PATHWAYS INCLUDE:</b>  <b>Maintenance, Installation and Repair Career Pathway</b>            (Choose Standards)            1-2-3-4-5-6</p> <p><b>NOTE:</b>  <b>Refer to the Common Career Technical Core Standards booklet if you wish to add more Career Pathways to meet the needs of your local Area.</b></p>	<p><b>KEY IDEAS/DETAILS</b>  <b>GRADES 9-10-11-12</b>  <b>Standard CC.3.5.9-10. A</b>  <b>Standard CC.3.5.11-12 A</b>            Cite specific textual evidence, etc.  <b>Standard CC.3.5.9-10 B</b>  <b>Standard CC.3.5.11-12. B</b>            Determine the central ideas or conclusions of a text; etc.  <b>Standard CC.3.5.9-10.C</b>  <b>Standard CC.3.5.11-12.C</b>            Follow precisely a complex multistep procedure, etc.</p> <p><b>CRAFT &amp; STRUCTURE</b>  <b>GRADES 9-10-11-12</b>  <b>Standard CC.3.5.9-10. D</b>  <b>Standard CC.3.5.11-12.D</b>            Determine the meaning of symbols, key terms, and other domain specific words.  <b>Standard CC.3.5.9-10.E</b>  <b>Standard CC.3.5.11-12.E</b>            Analyze the structure of the relationships among concepts in a text, etc.  <b>Standard CC.3.5.9-10.F</b>  <b>Standard CC.3.5.11-12.F</b>            Analyze the author's purpose in providing an explanation, describing a procedure...and            Analyze the structure of the relationships among concepts in a text.</p> <p><b>INTEGRATE KNOWLEDGE &amp; IDEAS</b>  <b>GRADES 9-10</b>  <ul style="list-style-type: none"> <li>• <b>Standard CC.3.5.9-10.G</b>                Translate quantitative or technical information expressed in a text into</li> </ul> </p>	<p><b>TEXT TYPES AND PURPOSE</b>  <b>GRADES 9-10-11-12</b>  <b>Standard CC.3.6.9-10.A</b>  <b>Standard CC.3.6.11-12.A</b>            Write arguments focused on discipline specific content.  <b>Standard CC.3.6.9-10.B</b>  <b>Standard CC.3.6.11-12.B</b>            Write informative or explanatory texts, including the narration of technical processes, etc.</p> <p><b>PRODUCTION &amp; DISTRIBUTION OF WRITING</b>  <b>GRADES 9-10-11-12</b>  <b>Standard CC.3.6.9-10.C</b>  <b>Standard CC.3.6.11-12 C</b>            Produce clear and coherent writing...appropriate to task, purpose, and audience.  <b>Standard CC.3.6.9-10 D</b>  <b>Standard CC.3.6.11-12.D</b>            Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.  <b>Standard CC.3.6.9-10.E</b>  <b>Standard CC.3.6.11-12.E.</b>            Use technology, including the internet, to produce, publish, and update individual or shared writing products.</p> <p><b>RESEARCH</b>  <b>GRADES 9-10-11-12</b>  <b>Standard CC.3.6.9-10.F</b>  <b>Standard CC.3.6.11-12.F</b>            Conduct short and more sustained research to answer a question or solve a problem.</p>	<p><b>NUMBERS AND OPERATIONS</b>  <b>Standard 2.1.HS.F.2</b>            Apply properties of rational and irrational numbers to solve real world or mathematical problems.  <b>Standard 2.1.HS.F.4</b>            Use units as a way to understand problems and to guide the solution of multistep problems.  <b>Standard 2.1.HS.F.5</b>            Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.  <b>Standard 2.1.HS.F.6</b>            Extend the knowledge of arithmetic operations and apply to complex numbers.</p> <p><b>ALGEBRA</b>  <b>Standard 2.2.HS.C.9</b>            Prove the Pythagorean identity and use it to calculate trigonometric ratios.</p> <p><b>GEOMETRY</b>  <b>Standard 2.3.HS.A.7</b>            Apply trigonometric ratios to solve problems involving right triangles.  <b>Standard 2.3.HS.A.3</b>            Verify and apply geometric theorems as they relate to Geometric figures.  <b>Standard 2.3.HS.A.13</b>            Analyze relationships between two dimensional and three dimensional</p>

Secondary Competency Task Grid with Unit and Task Numbers	Common Career Technical Core Standards	Pennsylvania Core Standards for Reading for Technical Subjects Standard 3.5	Pennsylvania Core Standards for Writing for Technical Subjects Standard 3.6	Pennsylvania Core Standards for Mathematics Standard 2.1
		<p>visual form (e.g. a table or chart).</p> <p><b>Standard CC.3.5.9-10. H</b> Assess the reasoning in a text to support the author's claim for solving a technical problem.</p> <p><b>Standard CC.3.5.9-10. I</b> Compare and contrast findings presented in a text to those from other sources, etc.</p> <p><b>INTEGRATE KNOWLEDGE &amp; IDEAS GRADES 11-12</b> <b>Standard CC.3.5.11-12. G</b> Integrate and evaluate multiple sources of information presented in diverse formats...to solve a problem. <b>Standard CC.3.5.11-12. H</b> Evaluate the hypotheses, data, analysis, and conclusions in a technical text, verifying the data when possible. <b>Standard CC.3.5.11-12. I</b> Synthesize information from a range of sources into a coherent understanding.</p> <p><b>RANGE OF READING GRADES 9-10-11-12</b> <b>Standard CC.3.5.9-10.J Standard CC.3.5.11-12.J</b> By the end of grades 9- 10, AND 11-12, read and comprehend technical texts independently and proficiently.</p>	<p><b>Standard CC.3.6.9-10.G.</b> <b>Standard CC.3.6.11-12.G</b> Gather relevant information from multiple authoritative print and digital sources, following a standard format for citation.</p> <p><b>Standard CC.3.6.9-10.H.</b> <b>Standard CC.3.6.11-12.H.</b> Draw evidence from informational texts to support analysis, reflection, and research.</p> <p><b>RANGE OF WRITING GRADES 9-10-11-12</b> <b>Standard CC.3.5.9-10.I &amp; Standard CC.3.5.11-12.I.</b> Write routinely over extended time frames and shorter time frames for a range of tasks, purposes and audiences...etc.</p>	<p>objects.</p>

## 400 Bench Work

Secondary Competency Task Grid with Unit and Task Numbers	Common Career Technical Core Standards	Pennsylvania Core Standards for Reading for Technical Subjects Standard 3.5	Pennsylvania Core Standards for Writing for Technical Subjects Standard 3.6	Pennsylvania Core Standards for Mathematics Standard 2.1
<p>401 Demonstrate safety procedures when performing bench work.</p> <p>402 Cut material with a hand hacksaw.</p> <p>403 File work to specifications.</p> <p>404 Cut threads with hand taps and dies.</p> <p>405 Assemble and disassemble parts.</p> <p>406 Identify and use bench hand tools.</p> <p>407 Identify and use a hand arbor and/or hydraulic press.</p>	<p><b>CAREER CLUSTER</b>  <b>Manufacturing Career Cluster</b>            (Choose Standards)            1-2-3-4-5-6-7</p> <p><b>CAREER PATHWAYS INCLUDE:</b>  <b>Maintenance, Installation and Repair Career Pathway</b>            (Choose Standards)            1-2-3-4-5-6</p> <p><b>NOTE:</b>  <b>Refer to the Common Career Technical Core Standards booklet if you wish to add more Career Pathways to meet the needs of your local Area.</b></p>	<p><b>KEY IDEAS/DETAILS</b>  <b>GRADES 9-10-11-12</b>  <b>Standard CC.3.5.9-10. A</b>  <b>Standard CC.3.5.11-12 A</b>            Cite specific textual evidence, etc.  <b>Standard CC.3.5.9-10 B</b>  <b>Standard CC.3.5.11-12. B</b>            Determine the central ideas or conclusions of a text; etc.  <b>Standard CC.3.5.9-10.C</b>  <b>Standard CC.3.5.11-12.C</b>            Follow precisely a complex multistep procedure, etc.</p> <p><b>CRAFT &amp; STRUCTURE</b>  <b>GRADES 9-10-11-12</b>  <b>Standard CC.3.5.9-10. D</b>  <b>Standard CC.3.5.11-12.D</b>            Determine the meaning of symbols, key terms, and other domain specific words.  <b>Standard CC.3.5.9-10.E</b>  <b>Standard CC.3.5.11-12.E</b>            Analyze the structure of the relationships among concepts in a text, etc.  <b>Standard CC.3.5.9-10.F</b>  <b>Standard CC.3.5.11-12.F</b>            Analyze the author’s purpose in providing an explanation, describing a procedure...and            Analyze the structure of the relationships among concepts in a text.</p> <p><b>INTEGRATE KNOWLEDGE &amp; IDEAS</b>  <b>GRADES 9-10</b>  <ul style="list-style-type: none"> <li>• <b>Standard CC.3.5.9-10.G</b></li> </ul>           Translate quantitative or technical information expressed in a text into</p>	<p><b>TEXT TYPES AND PURPOSE</b>  <b>GRADES 9-10-11-12</b>  <b>Standard CC.3.6.9-10.A</b>  <b>Standard CC.3.6.11-12.A</b>            Write arguments focused on discipline specific content.  <b>Standard CC.3.6.9-10.B</b>  <b>Standard CC.3.6.11-12.B</b>            Write informative or explanatory texts, including the narration of technical processes, etc.</p> <p><b>PRODUCTION &amp; DISTRIBUTION OF WRITING</b>  <b>GRADES 9-10-11-12</b>  <b>Standard CC.3.6.9-10.C</b>  <b>Standard CC.3.6.11-12 C</b>            Produce clear and coherent writing...appropriate to task, purpose, and audience.  <b>Standard CC.3.6.9-10 D</b>  <b>Standard CC.3.6.11-12.D</b>            Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.  <b>Standard CC.3.6.9-10.E</b>  <b>Standard CC.3.6.11-12.E.</b>            Use technology, including the internet, to produce, publish, and update individual or shared writing products.</p> <p><b>RESEARCH</b>  <b>GRADES 9-10-11-12</b>  <b>Standard CC.3.6.9-10.F</b>  <b>Standard CC.3.6.11-12.F</b>            Conduct short and more sustained research to answer a question or solve a problem.</p>	<p><b>NUMBERS AND OPERATIONS</b>  <b>Standard 2.1.HS.F.2</b>            Apply properties of rational and irrational numbers to solve real world or mathematical problems.  <b>Standard 2.1.HS.F.4</b>            Use units as a way to understand problems and to guide the solution of multistep problems.  <b>Standard 2.1.HS.F.5</b>            Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.  <b>Standard 2.1.HS.F.6</b>            Extend the knowledge of arithmetic operations and apply to complex numbers.</p> <p><b>ALGEBRA</b>  <b>Standard 2.2.HS.C.9</b>            Prove the Pythagorean identity and use it to calculate trigonometric ratios.</p> <p><b>GEOMETRY</b>  <b>Standard 2.3.HS.A.7</b>            Apply trigonometric ratios to solve problems involving right triangles.  <b>Standard 2.3.HS.A.3</b>            Verify and apply geometric theorems as they relate to Geometric figures.  <b>Standard 2.3.HS.A.13</b>            Analyze relationships between two dimensional</p>

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# 500 Drill Presses

Secondary Competency Task Grid with Unit and Task Numbers	Common Career Technical Core Standards	Pennsylvania Core Standards for Reading for Technical Subjects Standard 3.5	Pennsylvania Core Standards for Writing for Technical Subjects Standard 3.6	Pennsylvania Core Standards for Mathematics Standard 2.1
<p>501 Demonstrate safety precautions when using the drill press.</p> <p>502 Select and demonstrate proper use of drill work holding devices.</p> <p>503 Calculate speeds and feeds.</p> <p>504 Demonstrate the use of center drill.</p> <p>505 Select correct drill sizes for various application.</p> <p>506 Pre-drill and ream various size holes.</p> <p>507 Demonstrate counter-boring, spot-facing and countersinking.</p> <p>508 Pre-drill and tap holes.</p> <p>509 RESERVED</p> <p>510 Sharpen various size twist drills.</p> <p>511 Select and demonstrate work-holding devices.</p>	<p><b>CAREER CLUSTER</b>  <b>Manufacturing Career Cluster</b>            (Choose Standards)            1-2-3-4-5-6-7</p> <p><b>CAREER PATHWAYS INCLUDE:</b>  <b>Maintenance, Installation and Repair Career Pathway</b>            (Choose Standards)            1-2-3-4-5-6</p> <p><b>NOTE:</b>  <b>Refer to the Common Career Technical Core Standards booklet if you wish to add more Career Pathways to meet the needs of your local Area.</b></p>	<p><b>KEY IDEAS/DETAILS</b>  <b>GRADES 9-10-11-12</b>  <b>Standard CC.3.5.9-10. A</b>  <b>Standard CC.3.5.11-12. A</b>            Cite specific textual evidence, etc.  <b>Standard CC.3.5.9-10 B</b>  <b>Standard CC.3.5.11-12. B</b>            Determine the central ideas or conclusions of a text; etc.  <b>Standard CC.3.5.9-10.C</b>  <b>Standard CC.3.5.11-12.C</b>            Follow precisely a complex multistep procedure, etc.</p> <p><b>CRAFT &amp; STRUCTURE</b>  <b>GRADES 9-10-11-12</b>  <b>Standard CC.3.5.9-10. D</b>  <b>Standard CC.3.5.11-12.D</b>            Determine the meaning of symbols, key terms, and other domain specific words.  <b>Standard CC.3.5.9-10.E</b>  <b>Standard CC.3.5.11-12.E</b>            Analyze the structure of the relationships among concepts in a text, etc.  <b>Standard CC.3.5.9-10.F</b>  <b>Standard CC.3.5.11-12.F</b>            Analyze the author's purpose in providing an explanation, describing a procedure...and            Analyze the structure of the relationships among concepts in a text.</p> <p><b>INTEGRATE KNOWLEDGE &amp; IDEAS</b>  <b>GRADES 9-10</b>  <ul style="list-style-type: none"> <li><b>Standard CC.3.5.9-10.G</b>                Translate quantitative or technical information expressed in a text into</li> </ul> </p>	<p><b>TEXT TYPES AND PURPOSE</b>  <b>GRADES 9-10-11-12</b>  <b>Standard CC.3.6.9-10.A</b>  <b>Standard CC.3.6.11-12.A</b>            Write arguments focused on discipline specific content.  <b>Standard CC.3.6.9-10.B</b>  <b>Standard CC.3.6.11-12.B</b>            Write informative or explanatory texts, including the narration of technical processes, etc.</p> <p><b>PRODUCTION &amp; DISTRIBUTION OF WRITING</b>  <b>GRADES 9-10-11-12</b>  <b>Standard CC.3.6.9-10.C</b>  <b>Standard CC.3.6.11-12 C</b>            Produce clear and coherent writing...appropriate to task, purpose, and audience.  <b>Standard CC.3.6.9-10 D</b>  <b>Standard CC.3.6.11-12.D</b>            Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.  <b>Standard CC.3.6.9-10.E</b>  <b>Standard CC.3.6.11-12.E.</b>            Use technology, including the internet, to produce, publish, and update individual or shared writing products.</p> <p><b>RESEARCH</b>  <b>GRADES 9-10-11-12</b>  <b>Standard CC.3.6.9-10.F</b>  <b>Standard CC.3.6.11-12.F</b>            Conduct short and more sustained research to answer a question or solve a problem.</p>	<p><b>NUMBERS AND OPERATIONS</b>  <b>Standard 2.1.HS.F.2</b>            Apply properties of rational and irrational numbers to solve real world or mathematical problems.  <b>Standard 2.1.HS.F.4</b>            Use units as a way to understand problems and to guide the solution of multistep problems.  <b>Standard 2.1.HS.F.5</b>            Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.  <b>Standard 2.1.HS.F.6</b>            Extend the knowledge of arithmetic operations and apply to complex numbers.</p> <p><b>ALGEBRA</b>  <b>Standard 2.2.HS.C.9</b>            Prove the Pythagorean identity and use it to calculate trigonometric ratios.</p> <p><b>GEOMETRY</b>  <b>Standard 2.3.HS.A.7</b>            Apply trigonometric ratios to solve problems involving right triangles.  <b>Standard 2.3.HS.A.3</b>            Verify and apply geometric theorems as they relate to Geometric figures.  <b>Standard 2.3.HS.A.13</b>            Analyze relationships between two dimensional and three dimensional</p>

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## 600 Grinding Machines

Secondary Competency Task Grid with Unit and Task Numbers	Common Career Technical Core Standards	Pennsylvania Core Standards for Reading for Technical Subjects Standard 3.5	Pennsylvania Core Standards for Writing for Technical Subjects Standard 3.6	Pennsylvania Core Standards for Mathematics Standard 2.1
<p><b>601</b> Demonstrate knowledge and application of OSHA safety rules using pedestal and surface grinding machines.</p> <p><b>602</b> Identify parts of pedestal grinder.</p> <p><b>603</b> Demonstrate the proper way to test, mount and dress grinding wheels.</p> <p><b>604</b> Grind and sharpen various lathe tools.</p> <p><b>605</b> RESERVED</p> <p><b>606</b> RESERVED</p> <p><b>607</b> Identify and demonstrate surface grinding safety procedures.</p> <p><b>608</b> Identify parts of surface grinder.</p> <p><b>609</b> Grind surfaces flat and parallel using a magnetic chuck.</p> <p><b>610</b> Grind work surfaces square with a vise or angle plate.</p> <p><b>611</b> Grind precision angles using a sine plate or sine bar.</p>	<p><b>CAREER CLUSTER</b>  <b>Manufacturing Career Cluster</b>            (Choose Standards)            1-2-3-4-5-6-7</p> <p><b>CAREER PATHWAYS INCLUDE:</b>  <b>Maintenance, Installation and Repair Career Pathway</b>            (Choose Standards)            1-2-3-4-5-6</p> <p><b>NOTE:</b>  <b>Refer to the Common Career Technical Core Standards booklet if you wish to add more Career Pathways to meet the needs of your local Area.</b></p>	<p><b>KEY IDEAS/DETAILS</b>  <b>GRADES 9-10-11-12</b>  <b>Standard CC.3.5.9-10. A</b>  <b>Standard CC.3.5.11-12. A</b>            Cite specific textual evidence, etc.  <b>Standard CC.3.5.9-10. B</b>  <b>Standard CC.3.5.11-12. B</b>            Determine the central ideas or conclusions of a text; etc.  <b>Standard CC.3.5.9-10.C</b>  <b>Standard CC.3.5.11-12.C</b>            Follow precisely a complex multistep procedure, etc.</p> <p><b>CRAFT &amp; STRUCTURE</b>  <b>GRADES 9-10-11-12</b>  <b>Standard CC.3.5.9-10. D</b>  <b>Standard CC.3.5.11-12.D</b>            Determine the meaning of symbols, key terms, and other domain specific words.  <b>Standard CC.3.5.9-10.E</b>  <b>Standard CC.3.5.11-12.E</b>            Analyze the structure of the relationships among concepts in a text, etc.  <b>Standard CC.3.5.9-10.F</b>  <b>Standard CC.3.5.11-12.F</b>            Analyze the author's purpose in providing an explanation, describing a procedure...and            Analyze the structure of the relationships among concepts in a text.</p> <p><b>INTEGRATE KNOWLEDGE &amp; IDEAS</b>  <b>GRADES 9-10</b>  <b>• <u>Standard CC.3.5.9-10.G</u></b>            Translate quantitative or technical information expressed in a text into</p>	<p><b>TEXT TYPES AND PURPOSE</b>  <b>GRADES 9-10-11-12</b>  <b>Standard CC.3.6.9-10.A</b>  <b>Standard CC.3.6.11-12.A</b>            Write arguments focused on discipline specific content.  <b>Standard CC.3.6.9-10.B</b>  <b>Standard CC.3.6.11-12.B</b>            Write informative or explanatory texts, including the narration of technical processes, etc.</p> <p><b>PRODUCTION &amp; DISTRIBUTION OF WRITING</b>  <b>GRADES 9-10-11-12</b>  <b>Standard CC.3.6.9-10.C</b>  <b>Standard CC.3.6.11-12 C</b>            Produce clear and coherent writing...appropriate to task, purpose, and audience.  <b>Standard CC.3.6.9-10 D</b>  <b>Standard CC.3.6.11-12.D</b>            Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.  <b>Standard CC.3.6.9-10.E</b>  <b>Standard CC.3.6.11-12.E.</b>            Use technology, including the internet, to produce, publish, and update individual or shared writing products.</p> <p><b>RESEARCH</b>  <b>GRADES 9-10-11-12</b>  <b>Standard CC.3.6.9-10.F</b>  <b>Standard CC.3.6.11-12.F</b>            Conduct short and more sustained research to answer a question or solve a problem.</p>	<p><b>NUMBERS AND OPERATIONS</b>  <b>Standard 2.1.HS.F.2</b>            Apply properties of rational and irrational numbers to solve real world or mathematical problems.  <b>Standard 2.1.HS.F.4</b>            Use units as a way to understand problems and to guide the solution of multistep problems.  <b>Standard 2.1.HS.F.5</b>            Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.  <b>Standard 2.1.HS.F.6</b>            Extend the knowledge of arithmetic operations and apply to complex numbers.</p> <p><b>ALGEBRA</b>  <b>Standard 2.2.HS.C.9</b>            Prove the Pythagorean identity and use it to calculate trigonometric ratios.</p> <p><b>GEOMETRY</b>  <b>Standard 2.3.HS.A.7</b>            Apply trigonometric ratios to solve problems involving right triangles.  <b>Standard 2.3.HS.A.3</b>            Verify and apply geometric theorems as they relate to Geometric figures.  <b>Standard 2.3.HS.A.13</b>            Analyze relationships between two dimensional and three dimensional</p>

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# 700 Lathes

Secondary Competency Task Grid with Unit and Task Numbers	Common Career Technical Core Standards	Pennsylvania Core Standards for Reading for Technical Subjects Standard 3.5	Pennsylvania Core Standards for Writing for Technical Subjects Standard 3.6	Pennsylvania Core Standards for Mathematics Standard 2.1
<p>701 Identify and demonstrate lathe safety procedures.</p> <p>702 Mount and true work piece in 3-jaw and 4-jaw chucks.</p> <p>703 Align centers.</p> <p>704 Face work-piece.</p> <p>705 Turn outside diameters.</p> <p>706 Turn inside and outside diameters to shoulders.</p> <p>707 Turn tapers.</p> <p>708 Demonstrate knurling.</p> <p>709 Part off and groove work-piece.</p> <p>710 Cut internal and external threads.</p> <p>711 Demonstrate machine tapping for internal threads.</p> <p>712 Demonstrate filing and polishing.</p> <p>713 Demonstrate die thread cutting.</p> <p>714 Demonstrate boring.</p> <p>715 Demonstrate various tool holders and their correct use.</p> <p>716 Demonstrate the use of a collect attachment.</p> <p>717 Demonstrate the proper lathe maintenance procedure.</p> <p>718 Set machine correctly for various speeds and feeds.</p> <p>719 Demonstrate proper gear selection for threading operations.</p>	<p><b>CAREER CLUSTER</b>  <b>Manufacturing Career Cluster</b>            (Choose Standards)            1-2-3-4-5-6-7</p> <p><b>CAREER PATHWAYS INCLUDE:</b>  <b>Maintenance, Installation and Repair Career Pathway</b>            (Choose Standards)            1-2-3-4-5-6</p> <p><b>NOTE:</b>  <b>Refer to the Common Career Technical Core Standards booklet if you wish to add more Career Pathways to meet the needs of your local Area.</b></p>	<p><b>KEY IDEAS/DETAILS</b>  <b>GRADES 9-10-11-12</b>  <b>Standard CC.3.5.9-10. A</b>  <b>Standard CC.3.5.11-12. A</b>            Cite specific textual evidence, etc.  <b>Standard CC.3.5.9-10. B</b>  <b>Standard CC.3.5.11-12. B</b>            Determine the central ideas or conclusions of a text; etc.  <b>Standard CC.3.5.9-10.C</b>  <b>Standard CC.3.5.11-12.C</b>            Follow precisely a complex multistep procedure, etc.</p> <p><b>CRAFT &amp; STRUCTURE</b>  <b>GRADES 9-10-11-12</b>  <b>Standard CC.3.5.9-10. D</b>  <b>Standard CC.3.5.11-12.D</b>            Determine the meaning of symbols, key terms, and other domain specific words.  <b>Standard CC.3.5.9-10.E</b>  <b>Standard CC.3.5.11-12.E</b>            Analyze the structure of the relationships among concepts in a text, etc.  <b>Standard CC.3.5.9-10.F</b>  <b>Standard CC.3.5.11-12.F</b>            Analyze the author's purpose in providing an explanation, describing a procedure...and            Analyze the structure of the relationships among concepts in a text.</p> <p><b>INTEGRATE KNOWLEDGE &amp; IDEAS</b>  <b>GRADES 9-10</b>  <b>• Standard CC.3.5.9-10.G</b>            Translate quantitative or technical information expressed in a text into</p>	<p><b>TEXT TYPES AND PURPOSE</b>  <b>GRADES 9-10-11-12</b>  <b>Standard CC.3.6.9-10.A</b>  <b>Standard CC.3.6.11-12.A</b>            Write arguments focused on discipline specific content.  <b>Standard CC.3.6.9-10.B</b>  <b>Standard CC.3.6.11-12.B</b>            Write informative or explanatory texts, including the narration of technical processes, etc.</p> <p><b>PRODUCTION &amp; DISTRIBUTION OF WRITING</b>  <b>GRADES 9-10-11-12</b>  <b>Standard CC.3.6.9-10.C</b>  <b>Standard CC.3.6.11-12 C</b>            Produce clear and coherent writing...appropriate to task, purpose, and audience.  <b>Standard CC.3.6.9-10 D</b>  <b>Standard CC.3.6.11-12.D</b>            Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.  <b>Standard CC.3.6.9-10.E</b>  <b>Standard CC.3.6.11-12.E.</b>            Use technology, including the internet, to produce, publish, and update individual or shared writing products.</p> <p><b>RESEARCH</b>  <b>GRADES 9-10-11-12</b>  <b>Standard CC.3.6.9-10.F</b>  <b>Standard CC.3.6.11-12.F</b>            Conduct short and more sustained research to answer a question or solve a problem.</p>	<p><b>NUMBERS AND OPERATIONS</b>  <b>Standard 2.1.HS.F.2</b>            Apply properties of rational and irrational numbers to solve real world or mathematical problems.  <b>Standard 2.1.HS.F.4</b>            Use units as a way to understand problems and to guide the solution of multistep problems.  <b>Standard 2.1.HS.F.5</b>            Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.  <b>Standard 2.1.HS.F.6</b>            Extend the knowledge of arithmetic operations and apply to complex numbers.</p> <p><b>ALGEBRA</b>  <b>Standard 2.2.HS.C.9</b>            Prove the Pythagorean identity and use it to calculate trigonometric ratios.</p> <p><b>GEOMETRY</b>  <b>Standard 2.3.HS.A.7</b>            Apply trigonometric ratios to solve problems involving right triangles.  <b>Standard 2.3.HS.A.3</b>            Verify and apply geometric theorems as they relate to Geometric figures.  <b>Standard 2.3.HS.A.13</b>            Analyze relationships between two dimensional and three dimensional</p>

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# 800 Milling Machines

Secondary Competency Task Grid with Unit and Task Numbers	Common Career Technical Core Standards	Pennsylvania Core Standards for Reading for Technical Subjects Standard 3.5	Pennsylvania Core Standards for Writing for Technical Subjects Standard 3.6	Pennsylvania Core Standards for Mathematics Standard 2.1
<p><b>801</b> Identify and demonstrate safety procedures for using a milling machine.</p> <p><b>802</b> Demonstrate tramming a milling head.</p> <p><b>803</b> Select, mount and indicate vise.</p> <p><b>804</b> Machine angles.</p> <p><b>805</b> Machine keyways.</p> <p><b>806</b> Select and demonstrate the use of face mills.</p> <p><b>807</b> Demonstrate the use of a digital indexing procedure.</p> <p><b>808</b> Demonstrate use of digital readout.</p> <p><b>809</b> Demonstrate use of edge finder.</p> <p><b>810</b> Identify the difference between climb and conventional milling.</p> <p><b>811</b> Demonstrate use of adjustable boring head.</p> <p><b>812</b> Calculate speeds and feeds.</p> <p><b>813</b> Install and remove cutting tool holding devices properly.</p> <p><b>814</b> Select appropriate cutter for various milling operations.</p> <p><b>815</b> Demonstrate how to square part.</p>	<p><b>CAREER CLUSTER</b>  <b>Manufacturing Career Cluster</b>            (Choose Standards)            1-2-3-4-5-6-7</p> <p><b>CAREER PATHWAYS INCLUDE:</b>  <b>Maintenance, Installation and Repair Career Pathway</b>            (Choose Standards)            1-2-3-4-5-6</p> <p><b>NOTE:</b>  <b>Refer to the Common Career Technical Core Standards booklet if you wish to add more Career Pathways to meet the needs of your local Area.</b></p>	<p><b>KEY IDEAS/DETAILS</b>  <b>GRADES 9-10-11-12</b>  <b>Standard CC.3.5.9-10. A</b>  <b>Standard CC.3.5.11-12. A</b>            Cite specific textual evidence, etc.  <b>Standard CC.3.5.9-10. B</b>  <b>Standard CC.3.5.11-12. B</b>            Determine the central ideas or conclusions of a text; etc.  <b>Standard CC.3.5.9-10.C</b>  <b>Standard CC.3.5.11-12.C</b>            Follow precisely a complex multistep procedure, etc.</p> <p><b>CRAFT &amp; STRUCTURE</b>  <b>GRADES 9-10-11-12</b>  <b>Standard CC.3.5.9-10. D</b>  <b>Standard CC.3.5.11-12.D</b>            Determine the meaning of symbols, key terms, and other domain specific words.  <b>Standard CC.3.5.9-10.E</b>  <b>Standard CC.3.5.11-12.E</b>            Analyze the structure of the relationships among concepts in a text, etc.  <b>Standard CC.3.5.9-10.F</b>  <b>Standard CC.3.5.11-12.F</b>            Analyze the author's purpose in providing an explanation, describing a procedure...and            Analyze the structure of the relationships among concepts in a text.</p> <p><b>INTEGRATE KNOWLEDGE &amp; IDEAS</b>  <b>GRADES 9-10</b>  <b>• <u>Standard CC.3.5.9-10.G</u></b>            Translate quantitative or technical information expressed in a text into</p>	<p><b>TEXT TYPES AND PURPOSE</b>  <b>GRADES 9-10-11-12</b>  <b>Standard CC.3.6.9-10.A</b>  <b>Standard CC.3.6.11-12.A</b>            Write arguments focused on discipline specific content.  <b>Standard CC.3.6.9-10.B</b>  <b>Standard CC.3.6.11-12.B</b>            Write informative or explanatory texts, including the narration of technical processes, etc.</p> <p><b>PRODUCTION &amp; DISTRIBUTION OF WRITING</b>  <b>GRADES 9-10-11-12</b>  <b>Standard CC.3.6.9-10.C</b>  <b>Standard CC.3.6.11-12. C</b>            Produce clear and coherent writing...appropriate to task, purpose, and audience.  <b>Standard CC.3.6.9-10. D</b>  <b>Standard CC.3.6.11-12.D</b>            Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.  <b>Standard CC.3.6.9-10.E</b>  <b>Standard CC.3.6.11-12.E.</b>            Use technology, including the internet, to produce, publish, and update individual or shared writing products.</p> <p><b>RESEARCH</b>  <b>GRADES 9-10-11-12</b>  <b>Standard CC.3.6.9-10.F</b>  <b>Standard CC.3.6.11-12.F</b>            Conduct short and more sustained research to answer a question or solve a problem.</p>	<p><b>NUMBERS AND OPERATIONS</b>  <b>Standard 2.1.HS.F.2</b>            Apply properties of rational and irrational numbers to solve real world or mathematical problems.  <b>Standard 2.1.HS.F.4</b>            Use units as a way to understand problems and to guide the solution of multistep problems.  <b>Standard 2.1.HS.F.5</b>            Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.  <b>Standard 2.1.HS.F.6</b>            Extend the knowledge of arithmetic operations and apply to complex numbers.</p> <p><b>ALGEBRA</b>  <b>Standard 2.2.HS.C.9</b>            Prove the Pythagorean identity and use it to calculate trigonometric ratios.</p> <p><b>GEOMETRY</b>  <b>Standard 2.3.HS.A.7</b>            Apply trigonometric ratios to solve problems involving right triangles.  <b>Standard 2.3.HS.A.3</b>            Verify and apply geometric theorems as they relate to Geometric figures.  <b>Standard 2.3.HS.A.13</b>            Analyze relationships between two dimensional and three dimensional</p>

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# 900 Power Saw

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<p><b>901</b> Identify and demonstrate safety procedures for using vertical and horizontal power saws.</p> <p><b>902</b> Demonstrate cutting and welding saw blades.</p> <p><b>903</b> Remove and replace saw blades.</p> <p><b>904</b> Demonstrate 3 tooth rule for selecting blades.</p> <p><b>905</b> Demonstrate accurate sawing.</p> <p><b>906</b> Select and set speeds for various sawing operations.</p>	<p><b>CAREER CLUSTER</b>  <b>Manufacturing Career Cluster</b>            (Choose Standards)            1-2-3-4-5-6-7</p> <p><b>CAREER PATHWAYS INCLUDE:</b>  <b>Maintenance, Installation and Repair Career Pathway</b>            (Choose Standards)            1-2-3-4-5-6</p> <p><b>NOTE:</b>  <b>Refer to the Common Career Technical Core Standards booklet if you wish to add more Career Pathways to meet the needs of your local Area.</b></p>	<p><b>KEY IDEAS/DETAILS</b>  <b>GRADES 9-10-11-12</b>  <b>Standard CC.3.5.9-10. A</b>  <b>Standard CC.3.5.11-12 A</b>            Cite specific textual evidence, etc.  <b>Standard CC.3.5.9-10 B</b>  <b>Standard CC.3.5.11-12. B</b>            Determine the central ideas or conclusions of a text; etc.  <b>Standard CC.3.5.9-10.C</b>  <b>Standard CC.3.5.11-12.C</b>            Follow precisely a complex multistep procedure, etc.</p> <p><b>CRAFT &amp; STRUCTURE</b>  <b>GRADES 9-10-11-12</b>  <b>Standard CC.3.5.9-10. D</b>  <b>Standard CC.3.5.11-12.D</b>            Determine the meaning of symbols, key terms, and other domain specific words.  <b>Standard CC.3.5.9-10.E</b>  <b>Standard CC.3.5.11-12.E</b>            Analyze the structure of the relationships among concepts in a text, etc.  <b>Standard CC.3.5.9-10.F</b>  <b>Standard CC.3.5.11-12.F</b>            Analyze the author’s purpose in providing an explanation, describing a procedure...and            Analyze the structure of the relationships among concepts in a text.</p> <p><b>INTEGRATE KNOWLEDGE &amp; IDEAS</b>  <b>GRADES 9-10</b>  <ul style="list-style-type: none"> <li><b>Standard CC.3.5.9-10.G</b>                Translate quantitative or technical information expressed in a text into</li> </ul> </p>	<p><b>TEXT TYPES AND PURPOSE</b>  <b>GRADES 9-10-11-12</b>  <b>Standard CC.3.6.9-10.A</b>  <b>Standard CC.3.6.11-12.A</b>            Write arguments focused on discipline specific content.  <b>Standard CC.3.6.9-10.B</b>  <b>Standard CC.3.6.11-12.B</b>            Write informative or explanatory texts, including the narration of technical processes, etc.</p> <p><b>PRODUCTION &amp; DISTRIBUTION OF WRITING</b>  <b>GRADES 9-10-11-12</b>  <b>Standard CC.3.6.9-10.C</b>  <b>Standard CC.3.6.11-12 C</b>            Produce clear and coherent writing...appropriate to task, purpose, and audience.  <b>Standard CC.3.6.9-10 D</b>  <b>Standard CC.3.6.11-12.D</b>            Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.  <b>Standard CC.3.6.9-10.E</b>  <b>Standard CC.3.6.11-12.E.</b>            Use technology, including the internet, to produce, publish, and update individual or shared writing products.</p> <p><b>RESEARCH</b>  <b>GRADES 9-10-11-12</b>  <b>Standard CC.3.6.9-10.F</b>  <b>Standard CC.3.6.11-12.F</b>            Conduct short and more sustained research to answer a question or solve a problem.</p>	<p><b>NUMBERS AND OPERATIONS</b>  <b>Standard 2.1.HS.F.2</b>            Apply properties of rational and irrational numbers to solve real world or mathematical problems.  <b>Standard 2.1.HS.F.4</b>            Use units as a way to understand problems and to guide the solution of multistep problems.  <b>Standard 2.1.HS.F.5</b>            Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.  <b>Standard 2.1.HS.F.6</b>            Extend the knowledge of arithmetic operations and apply to complex numbers.</p> <p><b>ALGEBRA</b>  <b>Standard 2.2.HS.C.9</b>            Prove the Pythagorean identity and use it to calculate trigonometric ratios.</p> <p><b>GEOMETRY</b>  <b>Standard 2.3.HS.A.7</b>            Apply trigonometric ratios to solve problems involving right triangles.  <b>Standard 2.3.HS.A.3</b>            Verify and apply geometric theorems as they relate to Geometric figures.  <b>Standard 2.3.HS.A.13</b>            Analyze relationships between two dimensional and three dimensional</p>

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# 1000 Machines and Tools

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<p><b>1001</b> Demonstrate proper lubrication and maintenance of machinery.</p> <p><b>1002</b> Clean and store hand tools, cutters, fixtures and attachments.</p> <p><b>1003</b> Inspect and adjust machine guards.</p> <p><b>1004</b> Select, prepare and store coolants, cutting oils and compounds.</p> <p><b>1005</b> Inspect, clean, and maintain a safe working area.</p>	<p><b>CAREER CLUSTER</b>  <b>Manufacturing Career Cluster</b>            (Choose Standards)            1-2-3-4-5-6-7</p> <p><b>CAREER PATHWAYS INCLUDE:</b>  <b>Maintenance, Installation and Repair Career Pathway</b>            (Choose Standards)            1-2-3-4-5-6</p> <p><b>NOTE:</b>  <b>Refer to the Common Career Technical Core Standards booklet if you wish to add more Career Pathways to meet the needs of your local Area.</b></p>	<p><b>KEY IDEAS/DETAILS</b>  <b>GRADES 9-10-11-12</b>  <b>Standard CC.3.5.9-10. A</b>  <b>Standard CC.3.5.11-12. A</b>            Cite specific textual evidence, etc.  <b>Standard CC.3.5.9-10. B</b>  <b>Standard CC.3.5.11-12. B</b>            Determine the central ideas or conclusions of a text; etc.  <b>Standard CC.3.5.9-10.C</b>  <b>Standard CC.3.5.11-12.C</b>            Follow precisely a complex multistep procedure, etc.</p> <p><b>CRAFT &amp; STRUCTURE</b>  <b>GRADES 9-10-11-12</b>  <b>Standard CC.3.5.9-10. D</b>  <b>Standard CC.3.5.11-12.D</b>            Determine the meaning of symbols, key terms, and other domain specific words.  <b>Standard CC.3.5.9-10.E</b>  <b>Standard CC.3.5.11-12.E</b>            Analyze the structure of the relationships among concepts in a text, etc.  <b>Standard CC.3.5.9-10.F</b>  <b>Standard CC.3.5.11-12.F</b>            Analyze the author's purpose in providing an explanation, describing a procedure...and            Analyze the structure of the relationships among concepts in a text.</p> <p><b>INTEGRATE KNOWLEDGE &amp; IDEAS</b>  <b>GRADES 9-10</b>  <ul style="list-style-type: none"> <li><b>Standard CC.3.5.9-10.G</b>                Translate quantitative or technical information expressed in a text into</li> </ul> </p>	<p><b>TEXT TYPES AND PURPOSE</b>  <b>GRADES 9-10-11-12</b>  <b>Standard CC.3.6.9-10.A</b>  <b>Standard CC.3.6.11-12.A</b>            Write arguments focused on discipline specific content.  <b>Standard CC.3.6.9-10.B</b>  <b>Standard CC.3.6.11-12.B</b>            Write informative or explanatory texts, including the narration of technical processes, etc.</p> <p><b>PRODUCTION &amp; DISTRIBUTION OF WRITING</b>  <b>GRADES 9-10-11-12</b>  <b>Standard CC.3.6.9-10.C</b>  <b>Standard CC.3.6.11-12. C</b>            Produce clear and coherent writing...appropriate to task, purpose, and audience.  <b>Standard CC.3.6.9-10. D</b>  <b>Standard CC.3.6.11-12.D</b>            Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.  <b>Standard CC.3.6.9-10.E</b>  <b>Standard CC.3.6.11-12.E.</b>            Use technology, including the internet, to produce, publish, and update individual or shared writing products.</p> <p><b>RESEARCH</b>  <b>GRADES 9-10-11-12</b>  <b>Standard CC.3.6.9-10.F</b>  <b>Standard CC.3.6.11-12.F</b>            Conduct short and more sustained research to answer a question or solve a problem.</p>	<p><b>NUMBERS AND OPERATIONS</b>  <b>Standard 2.1.HS.F.2</b>            Apply properties of rational and irrational numbers to solve real world or mathematical problems.  <b>Standard 2.1.HS.F.4</b>            Use units as a way to understand problems and to guide the solution of multistep problems.  <b>Standard 2.1.HS.F.5</b>            Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.  <b>Standard 2.1.HS.F.6</b>            Extend the knowledge of arithmetic operations and apply to complex numbers.</p>

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# 1100 Metallurgy

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<p><b>1101</b> Identify and explain metals classifications.</p> <p><b>1102</b> Identify and explain metal property applications.</p> <p><b>1103</b> Identify and explain heat-treating and annealing processes.</p>	<p><b>CAREER CLUSTER</b>  <b>Manufacturing Career Cluster</b>            (Choose Standards)            1-2-3-4-5-6-7</p> <p><b>CAREER PATHWAYS INCLUDE:</b>  <b>Maintenance, Installation and Repair Career Pathway</b>            (Choose Standards)            1-2-3-4-5-6</p> <p><b>NOTE:</b>  <b>Refer to the Common Career Technical Core Standards booklet if you wish to add more Career Pathways to meet the needs of your local Area.</b></p>	<p><b>KEY IDEAS/DETAILS</b>  <b>GRADES 9-10-11-12</b>  <b>Standard CC.3.5.9-10. A</b>  <b>Standard CC.3.5.11-12 A</b>            Cite specific textual evidence, etc.  <b>Standard CC.3.5.9-10 B</b>  <b>Standard CC.3.5.11-12. B</b>            Determine the central ideas or conclusions of a text; etc.  <b>Standard CC.3.5.9-10.C</b>  <b>Standard CC.3.5.11-12.C</b>            Follow precisely a complex multistep procedure, etc.</p> <p><b>CRAFT &amp; STRUCTURE</b>  <b>GRADES 9-10-11-12</b>  <b>Standard CC.3.5.9-10. D</b>  <b>Standard CC.3.5.11-12.D</b>            Determine the meaning of symbols, key terms, and other domain specific words.  <b>Standard CC.3.5.9-10.E</b>  <b>Standard CC.3.5.11-12.E</b>            Analyze the structure of the relationships among concepts in a text, etc.  <b>Standard CC.3.5.9-10.F</b>  <b>Standard CC.3.5.11-12.F</b>            Analyze the author's purpose in providing an explanation, describing a procedure...and            Analyze the structure of the relationships among concepts in a text.</p> <p><b>INTEGRATE KNOWLEDGE &amp; IDEAS</b>  <b>GRADES 9-10</b>  <ul style="list-style-type: none"> <li><b>Standard CC.3.5.9-10.G</b>                Translate quantitative or technical information expressed in a text into</li> </ul> </p>	<p><b>TEXT TYPES AND PURPOSE</b>  <b>GRADES 9-10-11-12</b>  <b>Standard CC.3.6.9-10.A</b>  <b>Standard CC.3.6.11-12.A</b>            Write arguments focused on discipline specific content.  <b>Standard CC.3.6.9-10.B</b>  <b>Standard CC.3.6.11-12.B</b>            Write informative or explanatory texts, including the narration of technical processes, etc.</p> <p><b>PRODUCTION &amp; DISTRIBUTION OF WRITING</b>  <b>GRADES 9-10-11-12</b>  <b>Standard CC.3.6.9-10.C</b>  <b>Standard CC.3.6.11-12 C</b>            Produce clear and coherent writing...appropriate to task, purpose, and audience.  <b>Standard CC.3.6.9-10 D</b>  <b>Standard CC.3.6.11-12.D</b>            Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.  <b>Standard CC.3.6.9-10.E</b>  <b>Standard CC.3.6.11-12.E.</b>            Use technology, including the internet, to produce, publish, and update individual or shared writing products.</p> <p><b>RESEARCH</b>  <b>GRADES 9-10-11-12</b>  <b>Standard CC.3.6.9-10.F</b>  <b>Standard CC.3.6.11-12.F</b>            Conduct short and more sustained research to answer a question or solve a problem.</p>	<p><b>NUMBERS AND OPERATIONS</b>  <b>Standard 2.1.HS.F.2</b>            Apply properties of rational and irrational numbers to solve real world or mathematical problems.  <b>Standard 2.1.HS.F.4</b>            Use units as a way to understand problems and to guide the solution of multistep problems.  <b>Standard 2.1.HS.F.5</b>            Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.  <b>Standard 2.1.HS.F.6</b>            Extend the knowledge of arithmetic operations and apply to complex numbers.</p>

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		<p>visual form (e.g. a table or chart).  <b>Standard CC.3.5.9-10. H</b>  Assess the reasoning in a text to support the author's claim for solving a technical problem.  <b>Standard CC.3.5.9-10. I</b>  Compare and contrast findings presented in a text to those from other sources, etc.</p> <p><b>INTEGRATE KNOWLEDGE &amp; IDEAS GRADES 11-12</b>  <b>Standard CC.3.5.11-12. G</b>  Integrate and evaluate multiple sources of information presented in diverse formats...to solve a problem.  <b>Standard CC.3.5.11-12. H</b>  Evaluate the hypotheses, data, analysis, and conclusions in a technical text, verifying the data when possible.  <b>Standard CC.3.5.11-12. I</b>  Synthesize information from a range of sources into a coherent understanding.</p> <p><b>RANGE OF READING GRADES 9-10-11-12</b>  <b>Standard CC.3.5.9-10.J Standard CC.3.5.11-12.J</b>  By the end of grades 9- 10, AND 11-12, read and comprehend technical texts independently and proficiently.</p>	<p><b>Standard CC.3.6.9-10.G.</b>  <b>Standard CC.3.6.11-12.G</b>  Gather relevant information from multiple authoritative print and digital sources, following a standard format for citation.  <b>Standard CC.3.6.9-10.H.</b>  <b>Standard CC.3.6.11-12.H.</b>  Draw evidence from informational texts to support analysis, reflection, and research.</p> <p><b>RANGE OF WRITING GRADES 9-10-11-12</b>  <b>Standard CC.3.5.9-10.I &amp; Standard CC.3.5.11-12.I.</b>  Write routinely over extended time frames and shorter time frames for a range of tasks, purposes and audiences...etc.</p>	

## 1200 Charts and References

Secondary Competency Task Grid with Unit and Task Numbers	Common Career Technical Core Standards	Pennsylvania Core Standards for Reading for Technical Subjects Standard 3.5	Pennsylvania Core Standards for Writing for Technical Subjects Standard 3.6	Pennsylvania Core Standards for Mathematics Standard 2.1
<p><b>1201</b> Use the numeric decimal equivalent chart.</p> <p><b>1202</b> Use speed and feed charts.</p> <p><b>1203</b> Utilize tap and drill charts.</p> <p><b>1204</b> Demonstrate use of the Machinery's Handbook to locate specific information.</p>	<p><b>CAREER CLUSTER</b>  <b>Manufacturing Career Cluster</b>            (Choose Standards)            1-2-3-4-5-6-7</p> <p><b>CAREER PATHWAYS INCLUDE:</b>  <b>Maintenance, Installation and Repair Career Pathway</b>            (Choose Standards)            1-2-3-4-5-6</p> <p><b>NOTE:</b>  <b>Refer to the Common Career Technical Core Standards booklet if you wish to add more Career Pathways to meet the needs of your local Area.</b></p>	<p><b>KEY IDEAS/DETAILS</b>  <b>GRADES 9-10-11-12</b>  <b>Standard CC.3.5.9-10. A</b>  <b>Standard CC.3.5.11-12. A</b>            Cite specific textual evidence, etc.  <b>Standard CC.3.5.9-10. B</b>  <b>Standard CC.3.5.11-12. B</b>            Determine the central ideas or conclusions of a text; etc.  <b>Standard CC.3.5.9-10.C</b>  <b>Standard CC.3.5.11-12.C</b>            Follow precisely a complex multistep procedure, etc.</p> <p><b>CRAFT &amp; STRUCTURE</b>  <b>GRADES 9-10-11-12</b>  <b>Standard CC.3.5.9-10. D</b>  <b>Standard CC.3.5.11-12.D</b>            Determine the meaning of symbols, key terms, and other domain specific words.  <b>Standard CC.3.5.9-10.E</b>  <b>Standard CC.3.5.11-12.E</b>            Analyze the structure of the relationships among concepts in a text, etc.  <b>Standard CC.3.5.9-10.F</b>  <b>Standard CC.3.5.11-12.F</b>            Analyze the author's purpose in providing an explanation, describing a procedure...and            Analyze the structure of the relationships among concepts in a text.</p> <p><b>INTEGRATE KNOWLEDGE &amp; IDEAS</b>  <b>GRADES 9-10</b>  <ul style="list-style-type: none"> <li><b>Standard CC.3.5.9-10.G</b>                Translate quantitative or technical information expressed in a text into</li> </ul> </p>	<p><b>TEXT TYPES AND PURPOSE</b>  <b>GRADES 9-10-11-12</b>  <b>Standard CC.3.6.9-10.A</b>  <b>Standard CC.3.6.11-12.A</b>            Write arguments focused on discipline specific content.  <b>Standard CC.3.6.9-10.B</b>  <b>Standard CC.3.6.11-12.B</b>            Write informative or explanatory texts, including the narration of technical processes, etc.</p> <p><b>PRODUCTION &amp; DISTRIBUTION OF WRITING</b>  <b>GRADES 9-10-11-12</b>  <b>Standard CC.3.6.9-10.C</b>  <b>Standard CC.3.6.11-12 C</b>            Produce clear and coherent writing...appropriate to task, purpose, and audience.  <b>Standard CC.3.6.9-10 D</b>  <b>Standard CC.3.6.11-12.D</b>            Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.  <b>Standard CC.3.6.9-10.E</b>  <b>Standard CC.3.6.11-12.E.</b>            Use technology, including the internet, to produce, publish, and update individual or shared writing products.</p> <p><b>RESEARCH</b>  <b>GRADES 9-10-11-12</b>  <b>Standard CC.3.6.9-10.F</b>  <b>Standard CC.3.6.11-12.F</b>            Conduct short and more sustained research to answer a question or solve a problem.</p>	<p><b>NUMBERS AND OPERATIONS</b>  <b>Standard 2.1.HS.F.2</b>            Apply properties of rational and irrational numbers to solve real world or mathematical problems.  <b>Standard 2.1.HS.F.4</b>            Use units as a way to understand problems and to guide the solution of multistep problems.  <b>Standard 2.1.HS.F.5</b>            Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.  <b>Standard 2.1.HS.F.6</b>            Extend the knowledge of arithmetic operations and apply to complex numbers.</p>

Secondary Competency Task Grid with Unit and Task Numbers	Common Career Technical Core Standards	Pennsylvania Core Standards for Reading for Technical Subjects Standard 3.5	Pennsylvania Core Standards for Writing for Technical Subjects Standard 3.6	Pennsylvania Core Standards for Mathematics Standard 2.1
		<p>visual form (e.g. a table or chart).</p> <p><b>Standard CC.3.5.9-10. H</b> Assess the reasoning in a text to support the author's claim for solving a technical problem.</p> <p><b>Standard CC.3.5.9-10. I</b> Compare and contrast findings presented in a text to those from other sources, etc.</p> <p><b>INTEGRATE KNOWLEDGE &amp; IDEAS GRADES 11-12</b> <b>Standard CC.3.5.11-12. G</b> Integrate and evaluate multiple sources of information presented in diverse formats...to solve a problem.</p> <p><b>Standard CC.3.5.11-12. H</b> Evaluate the hypotheses, data, analysis, and conclusions in a technical text, verifying the data when possible.</p> <p><b>Standard CC.3.5.11-12. I</b> Synthesize information from a range of sources into a coherent understanding.</p> <p><b>RANGE OF READING GRADES 9-10-11-12</b> <b>Standard CC.3.5.9-10.J Standard CC.3.5.11-12.J</b> By the end of grades 9- 10, AND 11-12, read and comprehend technical texts independently and proficiently.</p>	<p><b>Standard CC.3.6.9-10.G.</b> <b>Standard CC.3.6.11-12.G</b> Gather relevant information from multiple authoritative print and digital sources, following a standard format for citation.</p> <p><b>Standard CC.3.6.9-10.H.</b> <b>Standard CC.3.6.11-12.H.</b> Draw evidence from informational texts to support analysis, reflection, and research.</p> <p><b>RANGE OF WRITING GRADES 9-10-11-12</b> <b>Standard CC.3.5.9-10.I &amp; Standard CC.3.5.11-12.I.</b> Write routinely over extended time frames and shorter time frames for a range of tasks, purposes and audiences...etc.</p>	

# 1300 Blueprint Reading

Secondary Competency Task Grid with Unit and Task Numbers	Common Career Technical Core Standards	Pennsylvania Core Standards for Reading for Technical Subjects Standard 3.5	Pennsylvania Core Standards for Writing for Technical Subjects Standard 3.6	Pennsylvania Core Standards for Mathematics Standard 2.1
<p><b>1301</b> Identify and explain orthographic views and projections.</p> <p><b>1302</b> Demonstrate basic sketching and dimensioning.</p> <p><b>1303</b> Identify and explain the alphabet of lines.</p> <p><b>1304</b> Demonstrate knowledge of dimensioning of machine parts, as well as tolerance and fits.</p> <p><b>1305</b> Calculate material sizes based upon job needs.</p> <p><b>1306</b> Demonstrate knowledge of third angle projections.</p> <p><b>1307</b> Identify and interpret geometric dimensioning and tolerancing.</p>	<p><b>CAREER CLUSTER</b>  <b>Manufacturing Career Cluster</b>            (Choose Standards)            1-2-3-4-5-6-7</p> <p><b>CAREER PATHWAYS INCLUDE:</b>  <b>Maintenance, Installation and Repair Career Pathway</b>            (Choose Standards)            1-2-3-4-5-6</p> <p><b>NOTE:</b>  <b>Refer to the Common Career Technical Core Standards booklet if you wish to add more Career Pathways to meet the needs of your local Area.</b></p>	<p><b>KEY IDEAS/DETAILS</b>  <b>GRADES 9-10-11-12</b>  <b>Standard CC.3.5.9-10. A</b>  <b>Standard CC.3.5.11-12. A</b>            Cite specific textual evidence, etc.  <b>Standard CC.3.5.9-10. B</b>  <b>Standard CC.3.5.11-12. B</b>            Determine the central ideas or conclusions of a text; etc.  <b>Standard CC.3.5.9-10.C</b>  <b>Standard CC.3.5.11-12.C</b>            Follow precisely a complex multistep procedure, etc.</p> <p><b>CRAFT &amp; STRUCTURE</b>  <b>GRADES 9-10-11-12</b>  <b>Standard CC.3.5.9-10. D</b>  <b>Standard CC.3.5.11-12.D</b>            Determine the meaning of symbols, key terms, and other domain specific words.  <b>Standard CC.3.5.9-10.E</b>  <b>Standard CC.3.5.11-12.E</b>            Analyze the structure of the relationships among concepts in a text, etc.  <b>Standard CC.3.5.9-10.F</b>  <b>Standard CC.3.5.11-12.F</b>            Analyze the author's purpose in providing an explanation, describing a procedure...and            Analyze the structure of the relationships among concepts in a text.</p> <p><b>INTEGRATE KNOWLEDGE &amp; IDEAS</b>  <b>GRADES 9-10</b>  <ul style="list-style-type: none"> <li><b>Standard CC.3.5.9-10.G</b>                Translate quantitative or technical information expressed in a text into</li> </ul> </p>	<p><b>TEXT TYPES AND PURPOSE</b>  <b>GRADES 9-10-11-12</b>  <b>Standard CC.3.6.9-10.A</b>  <b>Standard CC.3.6.11-12.A</b>            Write arguments focused on discipline specific content.  <b>Standard CC.3.6.9-10.B</b>  <b>Standard CC.3.6.11-12.B</b>            Write informative or explanatory texts, including the narration of technical processes, etc.</p> <p><b>PRODUCTION &amp; DISTRIBUTION OF WRITING</b>  <b>GRADES 9-10-11-12</b>  <b>Standard CC.3.6.9-10.C</b>  <b>Standard CC.3.6.11-12. C</b>            Produce clear and coherent writing...appropriate to task, purpose, and audience.  <b>Standard CC.3.6.9-10. D</b>  <b>Standard CC.3.6.11-12.D</b>            Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.  <b>Standard CC.3.6.9-10.E</b>  <b>Standard CC.3.6.11-12.E.</b>            Use technology, including the internet, to produce, publish, and update individual or shared writing products.</p> <p><b>RESEARCH</b>  <b>GRADES 9-10-11-12</b>  <b>Standard CC.3.6.9-10.F</b>  <b>Standard CC.3.6.11-12.F</b>            Conduct short and more sustained research to answer a question or solve a problem.</p>	<p><b>NUMBERS AND OPERATIONS</b>  <b>Standard 2.1.HS.F.2</b>            Apply properties of rational and irrational numbers to solve real world or mathematical problems.  <b>Standard 2.1.HS.F.4</b>            Use units as a way to understand problems and to guide the solution of multistep problems.  <b>Standard 2.1.HS.F.5</b>            Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.  <b>Standard 2.1.HS.F.6</b>            Extend the knowledge of arithmetic operations and apply to complex numbers.</p>

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		<p>visual form (e.g. a table or chart).  <b>Standard CC.3.5.9-10. H</b>  Assess the reasoning in a text to support the author's claim for solving a technical problem.  <b>Standard CC.3.5.9-10. I</b>  Compare and contrast findings presented in a text to those from other sources, etc.</p> <p><b>INTEGRATE KNOWLEDGE &amp; IDEAS GRADES 11-12</b>  <b>Standard CC.3.5.11-12. G</b>  Integrate and evaluate multiple sources of information presented in diverse formats...to solve a problem.  <b>Standard CC.3.5.11-12. H</b>  Evaluate the hypotheses, data, analysis, and conclusions in a technical text, verifying the data when possible.  <b>Standard CC.3.5.11-12. I</b>  Synthesize information from a range of sources into a coherent understanding.</p> <p><b>RANGE OF READING GRADES 9-10-11-12</b>  <b>Standard CC.3.5.9-10.J Standard CC.3.5.11-12.J</b>  By the end of grades 9- 10, AND 11-12, read and comprehend technical texts independently and proficiently.</p>	<p><b>Standard CC.3.6.9-10.G.</b>  <b>Standard CC.3.6.11-12.G</b>  Gather relevant information from multiple authoritative print and digital sources, following a standard format for citation.  <b>Standard CC.3.6.9-10.H.</b>  <b>Standard CC.3.6.11-12.H.</b>  Draw evidence from informational texts to support analysis, reflection, and research.</p> <p><b>RANGE OF WRITING GRADES 9-10-11-12</b>  <b>Standard CC.3.5.9-10.I &amp; Standard CC.3.5.11-12.I.</b>  Write routinely over extended time frames and shorter time frames for a range of tasks, purposes and audiences...etc.</p>	

# 1400 CNC Programming

Secondary Competency Task Grid with Unit and Task Numbers	Common Career Technical Core Standards	Pennsylvania Core Standards for Reading for Technical Subjects Standard 3.5	Pennsylvania Core Standards for Writing for Technical Subjects Standard 3.6	Pennsylvania Core Standards for Mathematics Standard 2.1
<p><b>1401</b> Explain and demonstrate CNC safety procedures.</p> <p><b>1402</b> Demonstrate basic use of G and M codes.</p> <p><b>1403</b> Demonstrate use of numerical controls.</p> <p><b>1404</b> Identify and demonstrate use of Cartesian and polar coordinate systems.</p> <p><b>1405</b> Demonstrate absolute and incremental positioning.</p> <p><b>1406</b> Demonstrate the dry or practice run of a CNC program before machining.</p> <p><b>1407</b> Identify and explain advantages and disadvantages of CNC machining.</p> <p><b>1408</b> Calculate and apply machine feeds and speeds.</p> <p><b>1409</b> Set part zero and tool offsets.</p> <p><b>1410</b> Transfer data files to and from a CNC machine.</p> <p><b>1411</b> Identify and demonstrate use of MDI applications.</p> <p><b>1412</b> Program and produce a part using linear and circular interpolation.</p>	<p><b>CAREER CLUSTER</b>  <b>Manufacturing Career Cluster</b>            (Choose Standards)            1-2-3-4-5-6-7</p> <p><b>CAREER PATHWAYS INCLUDE:</b>  <b>Maintenance, Installation and Repair Career Pathway</b>            (Choose Standards)            1-2-3-4-5-6</p> <p><b>NOTE:</b>  <b>Refer to the Common Career Technical Core Standards booklet if you wish to add more Career Pathways to meet the needs of your local Area.</b></p>	<p><b>KEY IDEAS/DETAILS</b>  <b>GRADES 9-10-11-12</b>  <b>Standard CC.3.5.9-10. A</b>  <b>Standard CC.3.5.11-12. A</b>            Cite specific textual evidence, etc.  <b>Standard CC.3.5.9-10. B</b>  <b>Standard CC.3.5.11-12. B</b>            Determine the central ideas or conclusions of a text; etc.  <b>Standard CC.3.5.9-10.C</b>  <b>Standard CC.3.5.11-12.C</b>            Follow precisely a complex multistep procedure, etc.</p> <p><b>CRAFT &amp; STRUCTURE</b>  <b>GRADES 9-10-11-12</b>  <b>Standard CC.3.5.9-10. D</b>  <b>Standard CC.3.5.11-12.D</b>            Determine the meaning of symbols, key terms, and other domain specific words.  <b>Standard CC.3.5.9-10.E</b>  <b>Standard CC.3.5.11-12.E</b>            Analyze the structure of the relationships among concepts in a text, etc.  <b>Standard CC.3.5.9-10.F</b>  <b>Standard CC.3.5.11-12.F</b>            Analyze the author's purpose in providing an explanation, describing a procedure...and            Analyze the structure of the relationships among concepts in a text.</p> <p><b>INTEGRATE KNOWLEDGE &amp; IDEAS</b>  <b>GRADES 9-10</b>  <ul style="list-style-type: none"> <li><b>Standard CC.3.5.9-10.G</b></li> </ul>           Translate quantitative or technical information expressed in a text into</p>	<p><b>TEXT TYPES AND PURPOSE</b>  <b>GRADES 9-10-11-12</b>  <b>Standard CC.3.6.9-10.A</b>  <b>Standard CC.3.6.11-12.A</b>            Write arguments focused on discipline specific content.  <b>Standard CC.3.6.9-10.B</b>  <b>Standard CC.3.6.11-12.B</b>            Write informative or explanatory texts, including the narration of technical processes, etc.</p> <p><b>PRODUCTION &amp; DISTRIBUTION OF WRITING</b>  <b>GRADES 9-10-11-12</b>  <b>Standard CC.3.6.9-10.C</b>  <b>Standard CC.3.6.11-12 C</b>            Produce clear and coherent writing...appropriate to task, purpose, and audience.  <b>Standard CC.3.6.9-10 D</b>  <b>Standard CC.3.6.11-12.D</b>            Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.  <b>Standard CC.3.6.9-10.E</b>  <b>Standard CC.3.6.11-12.E.</b>            Use technology, including the internet, to produce, publish, and update individual or shared writing products.</p> <p><b>RESEARCH</b>  <b>GRADES 9-10-11-12</b>  <b>Standard CC.3.6.9-10.F</b>  <b>Standard CC.3.6.11-12.F</b>            Conduct short and more sustained research to answer a question or solve a problem.</p>	<p><b>NUMBERS AND OPERATIONS</b>  <b>Standard 2.1.HS.F.2</b>            Apply properties of rational and irrational numbers to solve real world or mathematical problems.  <b>Standard 2.1.HS.F.4</b>            Use units as a way to understand problems and to guide the solution of multistep problems.  <b>Standard 2.1.HS.F.5</b>            Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.  <b>Standard 2.1.HS.F.6</b>            Extend the knowledge of arithmetic operations and apply to complex numbers.</p> <p><b>ALGEBRA</b>  <b>Standard 2.2.HS.D.1</b>            Interpret the structure of expressions to represent a quantity in terms of its context.  <b>Standard 2.2.HS.D.2</b>            Write expressions in equivalent forms to solve problems.  <b>Standard 2.2.HS.D.3</b>            Extend the knowledge of arithmetic operations and apply to polynomials.  <b>Standard HS.D.4</b>            Demonstrate the relationship between zeros and polynomials to make</p>

Secondary Competency Task Grid with Unit and Task Numbers	Common Career Technical Core Standards	Pennsylvania Core Standards for Reading for Technical Subjects Standard 3.5	Pennsylvania Core Standards for Writing for Technical Subjects Standard 3.6	Pennsylvania Core Standards for Mathematics Standard 2.1
		<p>visual form (e.g. a table or chart).  <b>Standard CC.3.5.9-10. H</b>  Assess the reasoning in a text to support the author's claim for solving a technical problem.  <b>Standard CC.3.5.9-10. I</b>  Compare and contrast findings presented in a text to those from other sources, etc.</p> <p><b>INTEGRATE KNOWLEDGE &amp; IDEAS GRADES 11-12</b>  <b>Standard CC.3.5.11-12. G</b>  Integrate and evaluate multiple sources of information presented in diverse formats...to solve a problem.  <b>Standard CC.3.5.11-12. H</b>  Evaluate the hypotheses, data, analysis, and conclusions in a technical text, verifying the data when possible.  <b>Standard CC.3.5.11-12. I</b>  Synthesize information from a range of sources into a coherent understanding.</p> <p><b>RANGE OF READING GRADES 9-10-11-12</b>  <b>Standard CC.3.5.9-10.J Standard CC.3.5.11-12.J</b>  By the end of grades 9- 10, AND 11-12, read and comprehend technical texts independently and proficiently.</p>	<p><b>Standard CC.3.6.9-10.G.</b>  <b>Standard CC.3.6.11-12.G</b>  Gather relevant information from multiple authoritative print and digital sources, following a standard format for citation.  <b>Standard CC.3.6.9-10.H.</b>  <b>Standard CC.3.6.11-12.H.</b>  Draw evidence from informational texts to support analysis, reflection, and research.</p> <p><b>RANGE OF WRITING GRADES 9-10-11-12</b>  <b>Standard CC.3.5.9-10.I &amp; Standard CC.3.5.11-12.I.</b>  Write routinely over extended time frames and shorter time frames for a range of tasks, purposes and audiences...etc.</p>	<p>generalizations about functions and their graphs.  <b>Standard 2.2.HS.D.5</b>  Use polynomial identities to solve problems.  <b>Standard 2.2.HS.D.6</b>  Extend the knowledge of rational functions to rewrite in equivalent forms.  <b>Standard 2.2.HS.D.7</b>  Create and graph equations or inequalities to describe numbers or relationships.  <b>Standard 2.2.HS.D.8</b>  Apply inverse operations to solve equations or formulas for a given variable.  <b>Standard 2.2.HS.D.9</b>  Use reasoning to solve equations and justify the solution method.  <b>Standard 2.2.HS.D.10</b>  Represent, solve and interpret equations/inequalities and systems of equations and inequalities.</p> <p><b>ALGEBRA</b>  <b>Standard 2.2.HS.C.1</b>  Use the concept and notation of functions to interpret and apply them in terms of their context.  <b>Standard 2.2.HS.C.2</b>  Graph and analyze functions.  <b>Standard 2.2.HS.C.3</b>  Write functions or sequences that model relationships between two quantities.  <b>Standard 2.2.HS.C.4</b>  Interpret the effects transformations have on</p>

Secondary Competency Task Grid with Unit and Task Numbers	Common Career Technical Core Standards	Pennsylvania Core Standards for Reading for Technical Subjects Standard 3.5	Pennsylvania Core Standards for Writing for Technical Subjects Standard 3.6	Pennsylvania Core Standards for Mathematics Standard 2.1
				<p>functions and find the inverses of functions.  <b>CC Standard 2.2.HS.C.5</b>  Construct and compare linear, quadratic and exponential models to solve problems.  <b>Standard 2.2.HS.C.6</b>  Interpret functions in terms of the situation they model.  <b>Standard 2.2.HS.C.7</b>  Apply radian measure of an angle and the unit circle to analyze the trigonometric functions.  <b>Standard 2.2.HS.C.8</b>  Choose trigonometric functions to model periodic phenomena and describe the properties of the graphs.  <b>Standard 2.2.HS.C.9</b>  Prove the Pythagorean identity and use it to calculate trigonometric ratios.</p> <p><b>GEOMETRY</b>  <b>Standard 2.3.HS.A.1</b>  Use geometric figures and their properties to represent transformations in the plane.  <b>Standard 2.3.HS.A.2</b>  Apply rigid transformations to determine and explain congruence.  <b>Standard 2.3.HS.A.3</b>  Verify and apply geometric theorems as they relate to geometric figures.  <b>Standard 2.3.HS.A.4</b>  Apply the concept of congruence to create geometric constructions.  <b>Standard 2.3.HS.A.5</b></p>

Secondary Competency Task Grid with Unit and Task Numbers	Common Career Technical Core Standards	Pennsylvania Core Standards for Reading for Technical Subjects Standard 3.5	Pennsylvania Core Standards for Writing for Technical Subjects Standard 3.6	Pennsylvania Core Standards for Mathematics Standard 2.1
				<p>Create justifications based on transformations to establish similarity of plane figures.</p> <p><b>Standard 2.3.HS.A.6</b> Verify and apply theorems involving similarity as they relate to plane figures.</p> <p><b>Standard 2.3.HS.A.7</b> Apply trigonometric ratios to solve problems involving right triangles.</p> <p><b>Standard 2.3.HS.A.8</b> Apply geometric theorems to verify properties of circles.</p> <p><b>Standard 2.3.HS.A.9</b> Extend the concept of similarity to determine arc lengths and areas of sectors of circles.</p> <p><b>Standard 2.3.HS.A.10</b> Translate between the geometric description and the equation for a conic section.</p> <p><b>Standard 2.3.HS.A.11</b> Apply coordinate geometry to prove simple geometric theorems algebraically.</p> <p><b>Standard 2.3.HS.A.12</b> Explain volume formulas and use them to solve problems.</p> <p><b>Standard 2.3.HS.A.13</b> Analyze relationships between two dimensional and three dimensional objects.</p> <p><b>Standard 2.3.HS.A.14</b> Apply geometric concepts to model and solve real world problems.</p>

<b>BUTLER COUNTY AREA VOCATIONAL-TECHNICAL SCHOOL</b>  <b>Graduate Follow-Up Study</b>  <b>2015</b>	Total Surveyed	Information Not Available	Total Responses	% of Responses	Employed Related	Employed, Unrelated	Military Service	Pursuing Additional Education	Total Gainfully Placed	% Gainfully Placed	Unemployed, Looking for Work	Unemployed, Not Looking
<b>Air Conditioning/Electrical Occupations</b>	12	1	11	92	9	0	0	1	10	91	1	0
<b>Auto Body/Collision Repair</b>	18	2	16	89	6	6	0	4	16	100	0	0
<b>Automotive Mechanics</b>	20	3	17	85	8	6	0	1	15	88	2	0
<b>Building Construction</b>	15	3	12	80	7	2	0	2	11	92	1	0
<b>Carpentry</b>	6	1	5	83	3	1	0	1	5	100	0	0
<b>Commercial Art</b>	15	3	12	80	0	5	0	7	12	100	0	0
<b>Computer Networking &amp; Tele.</b>	11	2	9	82	0	1	1	7	9	100	0	0
<b>Cosmetology</b>	25	2	23	92	3	5	1	13	22	96	1	0
<b>Culinary Arts</b>	25	2	23	92	3	5	1	12	21	91	2	0
<b>Graphic Arts</b>	26	5	21	81	1	7	1	10	19	90	1	1
<b>Health Assistant</b>	51	10	41	80	5	5	0	25	35	85	4	2
<b>Heavy Equipment</b>	21	3	18	86	8	4	0	5	17	94	0	0
<b>Machine Technology</b>	29	4	25	86	12	7	0	5	24	96	1	0
<b>Protective Services</b>	13	2	11	85	0	5	3	3	11	100	0	0
<b>Welding</b>	27	4	23	85	7	7	3	5	22	96	1	0
<b>TOTALS</b>	<b>314</b>	<b>47</b>	<b>267</b>	<b>85</b>	<b>72</b>	<b>66</b>	<b>10</b>	<b>101</b>	<b>249</b>	<b>93</b>	<b>14</b>	<b>3</b>

Date: February 18, 2016

<b>BUTLER COUNTY AREA VOCATIONAL-TECHNICAL SCHOOL</b>  <b>Graduate Follow-Up Study</b>  <b>2016</b>	Total Surveyed	Information Not Available	Total Responses	% of Responses	Employed Related	Employed, Unrelated	Military Service	Pursuing Additional Education	Total Gainfully Placed	% Gainfully Placed	Unemployed, Looking for Work	Unemployed, Not Looking
<b>Air Conditioning/Electrical Occupations</b>	27	2	25	93%	11	6	4	2	23	92%	0	0
<b>Auto Body/Collision Repair</b>	20	0	20	100%	10	3	1	4	18	90%	0	2
<b>Automotive Mechanics</b>	27	2	25	93%	14	4	2	1	21	84%	1	3
<b>Building Construction</b>	20	1	19	95%	7	5	2	4	18	95%	0	0
<b>Carpentry</b>	20	2	18	90%	6	4	1	7	18	100%	0	0
<b>Commercial Art</b>	28	3	25	89%	0	9	1	15	25	100%	0	1
<b>Computer Networking &amp; Tele.</b>	20	2	18	90%	1	1	0	15	17	94%	0	1
<b>Cosmetology</b>	21	2	19	90%	6	3	0	9	18	95%	0	0
<b>Culinary Arts</b>	26	5	21	81%	3	2	0	8	13	62%	1	4
<b>Graphic Arts</b>	26	6	20	77%	1	8	0	9	18	90%	0	2
<b>Health Assistant</b>	50	8	42	84%	9	12	1	20	42	100%	0	0
<b>Heavy Equipment</b>	20	5	15	75%	3	6	0	5	14	93%	0	1
<b>Machine Technology</b>	29	2	27	93%	17	6	0	4	27	100%	0	0
<b>Protective Services</b>	17	3	14	82%	2	3	5	3	13	93%	0	1
<b>Welding</b>	19	1	18	95%	7	3	1	3	14	78%	1	1
<b>TOTALS</b>	<b>370</b>	<b>44</b>	<b>326</b>	<b>88%</b>	<b>97</b>	<b>75</b>	<b>18</b>	<b>109</b>	<b>299</b>	<b>92%</b>	<b>3</b>	<b>16</b>

Date: February 28, 2017

## Pennsylvania Secondary Career and Technical Education 4S1 - Student Graduation Rates - By School and Program

Numerator: Number of grade 12 CTE concentrators reported as graduated  
(excluding students graduating with GED).

Denominator: Number of grade 12 CTE concentrators who were reported as  
graduates or dropouts.

CTE Educating LEA Code	CTE Educating LEA Name	CTE Educating School Number	CTE Educating School	CIP Code	CIP Name	Numerator	Denominator	Ratio
104101307	Butler County AVTS	6999	Butler County AVTS	110901	Computer Network/Telecom	11	11	100.00%
				<b>Business Education</b>	<b>11</b>	<b>11</b>	<b>100.00%</b>	
		6999		510899	Health/Med Assts Other	51	51	100.00%
				<b>Health Occupations Education</b>	<b>51</b>	<b>51</b>	<b>100.00%</b>	
		6999		120508	Institutional Food Worker	25	25	100.00%
				<b>Occupational Home Economics</b>	<b>25</b>	<b>25</b>	<b>100.00%</b>	
		6999		100399	Graphic Communication Oth	26	26	100.00%
		6999		120401	Cosmetology General	22	22	100.00%
		6999		439999	Hmland Secr/Law Enforc Ot	13	13	100.00%
		6999		460201	Carpentry/Carpenter	6	6	100.00%
		6999		469999	Construction Trades Oth	15	15	100.00%
		6999		470201	Heating AC Refrig Mech	12	12	100.00%
		6999		470603	Autobody Repair Tech	18	18	100.00%
		6999		470604	Automotive Mechanic Tech	20	20	100.00%
		6999		470613	Medium/Heavy Vehicle Tech	20	20	100.00%
		6999		480501	Machine Tool Tech	29	29	100.00%
		6999		480508	Welding Technology/Welder	26	26	100.00%
		6999		500402	Commercial/Advertisng Art	15	15	100.00%
				<b>Trade &amp; Industrial Education</b>	<b>222</b>	<b>222</b>	<b>100.00%</b>	
				<b>Butler County AVTS</b>	<b>309</b>	<b>309</b>	<b>100.00%</b>	
				<b>Butler County AVTS</b>	<b>309</b>	<b>309</b>	<b>100.00%</b>	

**Pennsylvania Secondary Career and Technical Education**  
**4S1 - Student Graduation Rates - By School and Program**

Numerator: Number of grade 12 CTE concentrators reported as graduated (excluding students graduating with GED).  
 Denominator: Number of grade 12 CTE concentrators who were reported as graduates or dropouts.

**School Year:**

CTE Educating LEA	CTE Educating LEA Code	CTE Educating LEA Name	CTE Educating School Number	CTE Educating School	CIP Cluster	CIP Code	CIP Name	Numerator	Denominator	Ratio			
Butler	104101307	Butler County AVTS	6999	Butler County AVTS	Information Technology	110901	Computer Network/Telecom	19	19	100.00%			
					<b>Business Education</b>			<b>19</b>	<b>19</b>	<b>100.00%</b>			
			6999		Health Science	510899	Health/Med Assts Other	48	48	100.00%			
					<b>Health Occupations Education</b>			<b>48</b>	<b>48</b>	<b>100.00%</b>			
			6999		Hospitality & Tourism	120508	Institutional Food Worker	23	23	100.00%			
					<b>Occupational Home Economics Education</b>			<b>23</b>	<b>23</b>	<b>100.00%</b>			
			6999		Arts A/V Technology & Communications	100399	Graphic Communication Oth	23	23	100.00%			
			6999		Human Services	120401	Cosmetology General	20	20	100.00%			
			6999		Law Public Safety & Security	439999	Hmland Secr/Law Enforc Ot	16	16	100.00%			
			6999		Architecture & Construction	460201	Carpentry/Carpenter	18	18	100.00%			
			6999		Architecture & Construction	469999	Construction Trades Oth	20	20	100.00%			
			6999		Architecture & Construction	470201	Heating AC Refrig Mech	27	27	100.00%			
			6999		Transportation Distribution & Logistics	470603	Autobody Repair Tech	18	18	100.00%			
			6999		Transportation Distribution & Logistics	470604	Automotive Mechanic Tech	27	27	100.00%			
			6999		Transportation Distribution & Logistics	470613	Medium/Heavy Vehicle Tech	17	17	100.00%			
			6999		Manufacturing	480501	Machine Tool Tech	30	30	100.00%			
			6999		Manufacturing	480508	Welding Technology/Welder	19	19	100.00%			
			6999		Arts A/V Technology & Communications	500402	Commercial/Advertisng Art	26	26	100.00%			
					<b>Trade &amp; Industrial Education</b>			<b>261</b>	<b>261</b>	<b>100.00%</b>			
						<b>Butler County AVTS</b>					<b>351</b>	<b>351</b>	<b>100.00%</b>
						<b>Butler County AVTS</b>					<b>351</b>	<b>351</b>	<b>100.00%</b>

## PIMS CTE QC Report 12

### CTE Special Population Aggregate Statistical Review

School Year: 2014 - 2015

**CIP Totals**

AUN	LEA Name	CIP Location Code	CIP Location	CIP Code	CIP	Special Population	Total	Male	Female	Grade 9	Grade 10	Grade 11	Grade 12	SUG	ASP
104101307	Butler County AVTS	6999	Butler County AVTS	480501	Machine Tool Tech	1 Disabled (with IEP)	13	13	0	0	0	5	8	0	0
104101307	Butler County AVTS	6999	Butler County AVTS	480501	Machine Tool Tech	2 Section 504 Students	0	0	0	0	0	0	0	0	0
104101307	Butler County AVTS	6999	Butler County AVTS	480501	Machine Tool Tech	3 Economically Disadvantaged	14	14	0	0	0	4	10	0	0
104101307	Butler County AVTS	6999	Butler County AVTS	480501	Machine Tool Tech	4 Single Parents	0	0	0	0	0	0	0	0	0
104101307	Butler County AVTS	6999	Butler County AVTS	480501	Machine Tool Tech	5 Displaced Homemakers	0	0	0	0	0	0	0	0	0
104101307	Butler County AVTS	6999	Butler County AVTS	480501	Machine Tool Tech	6 Limited English Proficient	0	0	0	0	0	0	0	0	0
104101307	Butler County AVTS	6999	Butler County AVTS	480501	Machine Tool Tech	7 Migrant Students *	0	0	0	0	0	0	0	0	0
104101307	Butler County AVTS	6999	Butler County AVTS	480501	Machine Tool Tech	8 Nontraditional Enrollees	0	0	0	0	0	0	0	0	0
104101307	Butler County AVTS	6999	Butler County AVTS	480501	Machine Tool Tech	9 Gifted (with IEP)	0	0	0	0	0	0	0	0	0
104101307	Butler County AVTS	6999	Butler County AVTS	480501	Machine Tool Tech	10 Special Population Unduplicated Total	20	20	0	0	0	7	13	0	0
104101307	Butler County AVTS	6999	Butler County AVTS	480501	Machine Tool Tech	11 Non-Special Population	43	43	0	0	3	23	17	0	0
104101307	Butler County AVTS	6999	Butler County AVTS	480501	Machine Tool Tech	12 Total	63	63	0	0	3	30	30	0	0

# PIMS CTE QC Report 12

## CTE Special Population Aggregate Statistical Review

School Year: 2015 - 2016

### CIP Totals

AUN	LEA Name	CIP Location Code	CIP Location	CIP Code	CIP	Special Population	Total	Male	Female	Grade 9	Grade 10	Grade 11	Grade 12	SUG	ASP
	County AVTS		County AVTS		Tech	Students									
104101307	Butler County AVTS	6999	Butler County AVTS	480501	Machine Tool Tech	3 Economically Disadvantaged	5	5	0	0	0	0	5	0	0
104101307	Butler County AVTS	6999	Butler County AVTS	480501	Machine Tool Tech	4 Single Parents	0	0	0	0	0	0	0	0	0
104101307	Butler County AVTS	6999	Butler County AVTS	480501	Machine Tool Tech	5 Displaced Homemakers	0	0	0	0	0	0	0	0	0
104101307	Butler County AVTS	6999	Butler County AVTS	480501	Machine Tool Tech	6 Limited English Proficient	0	0	0	0	0	0	0	0	0
104101307	Butler County AVTS	6999	Butler County AVTS	480501	Machine Tool Tech	7 Migrant Students *	0	0	0	0	0	0	0	0	0
104101307	Butler County AVTS	6999	Butler County AVTS	480501	Machine Tool Tech	8 Nontraditional Enrollees	1	0	1	0	1	0	0	0	0
104101307	Butler County AVTS	6999	Butler County AVTS	480501	Machine Tool Tech	9 Gifted (with IEP)	0	0	0	0	0	0	0	0	0
104101307	Butler County AVTS	6999	Butler County AVTS	480501	Machine Tool Tech	10 Special Population Unduplicated Total	12	11	1	0	1	4	7	0	0
104101307	Butler County AVTS	6999	Butler County AVTS	480501	Machine Tool Tech	11 Non-Special Population	46	46	0	0	4	19	23	0	0
104101307	Butler County AVTS	6999	Butler County AVTS	480501	Machine Tool Tech	12 Total	58	57	1	0	5	23	30	0	0

# PIMS CTE QC Report 12

## CTE Special Population Aggregate Statistical Review

School Year: 2016 - 2017

### CIP Totals

AUN	LEA Name	CIP Location Code	CIP Location	CIP Code	CIP	Special Population	Total	Male	Female	Grade 9	Grade 10	Grade 11	Grade 12	SUG	ASP
104101307	Butler County AVTS	6999	Butler County AVTS	480501	Machine Tool Tech	1 Disabled (with IEP)	8	8	0	0	1	4	3	0	0
104101307	Butler County AVTS	6999	Butler County AVTS	480501	Machine Tool Tech	2 Section 504 Students	1	1	0	0	0	0	1	0	0
104101307	Butler County AVTS	6999	Butler County AVTS	480501	Machine Tool Tech	3 Economically Disadvantaged	13	13	0	0	6	3	4	0	0
104101307	Butler County AVTS	6999	Butler County AVTS	480501	Machine Tool Tech	4 Single Parents	0	0	0	0	0	0	0	0	0
104101307	Butler County AVTS	6999	Butler County AVTS	480501	Machine Tool Tech	5 Displaced Homemakers	0	0	0	0	0	0	0	0	0
104101307	Butler County AVTS	6999	Butler County AVTS	480501	Machine Tool Tech	6 Limited English Proficient	0	0	0	0	0	0	0	0	0
104101307	Butler County AVTS	6999	Butler County AVTS	480501	Machine Tool Tech	7 Migrant Students *	0	0	0	0	0	0	0	0	0
104101307	Butler County AVTS	6999	Butler County AVTS	480501	Machine Tool Tech	8 Nontraditional Enrollees	1	0	1	0	0	1	0	0	0
104101307	Butler County AVTS	6999	Butler County AVTS	480501	Machine Tool Tech	9 Gifted (with IEP)	0	0	0	0	0	0	0	0	0
104101307	Butler County AVTS	6999	Butler County AVTS	480501	Machine Tool Tech	10 Special Population Unduplicated Total	21	20	1	0	6	7	8	0	0
104101307	Butler County AVTS	6999	Butler County AVTS	480501	Machine Tool Tech	11 Non-Special Population	31	31	0	0	5	7	19	0	0
104101307	Butler County AVTS	6999	Butler County AVTS	480501	Machine Tool Tech	12 Total	52	51	1	0	11	14	27	0	0



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