

# Automobile Mechanics Technology/Technician, Classification of Instructional Program (CIP) 47.0604

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

## 100 Orientation

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> Explain and follow all lab rules.</p> <p><b>102</b> Participate in basic shop management.</p> <p><b>103</b> Participate in parts ordering.</p> <p><b>104</b> Demonstrate auto shop safety and hygiene.</p> <p><b>105</b> Demonstrate the use of service information.</p> <p><b>106</b> Demonstrate proper telephone courtesy.</p> <p><b>107</b> Identify vehicle by: sight, V.I.N. and/or ID tag.</p> <p><b>108</b> Identify career paths within the career and technical education program.</p>	<p><b>CAREER CLUSTER:</b> <b>Transportation, Distribution and Logistics</b> (Choose Standards) 1-2-3-4-5-6</p> <p><b>PATHWAYS INCLUDE</b> <b>Facility and Mobile Equipment Maintenance Career Pathway</b> (Choose Standards) 1-2</p> <p><b>NOTE:</b> Refer to the Common Career Technical Core Standards Booklet if you wish to add more Pathways, for your local Occupational Area.</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>		

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</b> <b>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-</p>		

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		12, read and comprehend technical texts independently and proficiently.		

## 200 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>201</b> Identify and follow all safety rules.</p> <p><b>202</b> Demonstrate the ability to secure vehicles on jack stands and hydraulic lifts.</p> <p><b>203</b> Demonstrate the ability to safely set-up/shut-down oxygen acetylene welding equipment.</p> <p><b>204</b> Identify chemical safety, "Right-To-Know Laws" and Safety Data Sheets (SDS).</p> <p><b>205</b> Identify and demonstrate the safe use of hand tools.</p> <p><b>206</b> Identify and demonstrate the safe use of power tools.</p> <p><b>207</b> Identify and demonstrate the safe use of protective clothing and equipment.</p> <p><b>208</b> Identify and demonstrate the safe use of fire protection equipment.</p> <p><b>209</b> Identify and demonstrate the safe use of shop equipment.</p> <p><b>210</b> Explain EPA and OSHA Regulations.</p>	<p><b>CAREER CLUSTER:</b>  <b>Transportation, Distribution and Logistics</b>            (Choose Standards)            1-2-3-4-5-6</p> <p><b>PATHWAYS INCLUDE</b>  <b>Facility and Mobile Equipment Maintenance Career Pathway</b>            (Choose Standards)            1-2</p> <p><b>NOTE:</b>  <b>Refer to the Common Career Technical Core Standards Booklet if you wish to add more Pathways, for your local Occupational 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>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).</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.</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</b> <b>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>		

## 300 Tools/Fasteners

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 and use fasteners and bolts.</p> <p><b>302</b> Demonstrate the ability to correctly drill and use re-threading tools.</p> <p><b>303</b> Demonstrate the ability to correctly read and interpret precision automotive measuring tools.</p> <p><b>304</b> Demonstrate the ability to correctly use automotive tools.</p> <p><b>305</b> Perform common fastener and thread repairs, to include: remove broken bolt, restore internal and external threads, and repair internal threads with a threaded insert.</p>	<p><b>CAREER CLUSTER:</b>  <b>Transportation, Distribution and Logistics</b>            (Choose Standards)            1-2-3-4-5-6</p> <p><b>PATHWAYS INCLUDE</b>  <b>Facility and Mobile Equipment Maintenance Career Pathway</b>            (Choose Standards)            1-2</p> <p><b>NOTE:</b>  <b>Refer to the Common Career Technical Core Standards Booklet if you wish to add more Pathways, for your local Occupational 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>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).</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.</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</b> <b>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>		

## 400 Certifications

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 Prepare to obtain PA Safety Inspection Certification.</p> <p>402 Prepare to obtain EPA 609 Refrigerant Recovery, Recycling Certification.</p> <p>403 Prepare to obtain Emission Inspection Certification.</p>	<p><b><u>CAREER CLUSTER:</u></b>  <b>Transportation, Distribution and Logistics</b>            (Choose Standards)            1-2-3-4-5-6</p> <p><b>PATHWAYS INCLUDE</b>  <b>Facility and Mobile Equipment Maintenance Career Pathway</b>            (Choose Standards)            1-2</p> <p><b>NOTE:</b>  <b>Refer to the Common Career Technical Core Standards Booklet if you wish to add more Pathways, for your local Occupational 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>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 objects.</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</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</b>  <b>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</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>	

## 500 Suspension and Steering

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>501</b> Complete work order to include customer information, vehicle identifying information, customer concern, related service history, cause, and correction.</p> <p><b>502</b> Identify and interpret suspension and steering system concerns; determine necessary action.</p> <p><b>503</b> Research applicable vehicle and service information, such as suspension and steering system operation, vehicle service history, service precautions, and technical service bulletins.</p> <p><b>504</b> Locate and interpret vehicle and major component identification numbers.</p> <p><b>505</b> Disable and enable supplemental restraint system (SRS).</p> <p><b>506</b> Remove and replace steering wheel; center/time supplemental restraint system (SRS) coil (clock spring).</p> <p><b>507</b> Remove and replace rack and pinion steering gear; inspect mounting bushings and brackets.</p> <p><b>508</b> Inspect and replace rack and pinion steering gear inner tie rod ends (sockets) and bellows boots.</p> <p><b>509</b> Determine proper power steering fluid type; inspect fluid level and condition.</p> <p><b>510</b> Flush, fill, and bleed power steering system.</p> <p><b>511</b> Diagnose power steering fluid leakage; determine necessary action.</p> <p><b>512</b> Remove, inspect, replace, and adjust power steering pump belt.</p> <p><b>513</b> Remove and reinstall power steering pump.</p> <p><b>514</b> Remove and reinstall press fit power steering pump pulley; check pulley and belt alignment.</p> <p><b>515</b> Inspect and replace power steering hoses and fittings.</p> <p><b>516</b> Inspect and replace pitman arm, relay (centerlink/intermediate) rod, idler arm and mountings, and steering linkage damper.</p> <p><b>517</b> Inspect, replace, and adjust tie rod</p>	<p><b>CAREER CLUSTER:</b>  <b>Transportation, Distribution and Logistics</b>            (Choose Standards)            1-2-3-4-5-6</p> <p><b>PATHWAYS INCLUDE</b>  <b>Facility and Mobile Equipment Maintenance Career Pathway</b>            (Choose Standards)            1-2</p> <p><b>NOTE:</b>  <b>Refer to the Common Career Technical Core Standards Booklet if you wish to add more Pathways, for your local Occupational Area.</b></p>	<p><b>KEY IDEAS/DETAILS</b>  <b>GRADES 9-10-11-12</b>  <b>Standard CC.3.5.9-10. 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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</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</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>GEOMETRY</b>  <b>Standard 2.3.HS.A.13</b>            Analyze relationships between two dimensional and three dimensional objects.</p>

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<p>ends (sockets), tie rod sleeves, and clamps.</p> <p><b>518</b> Inspect and test electric power assist steering.</p> <p><b>519</b> Remove, inspect, and install upper and lower control arms, bushings, shafts, and rebound bumpers.</p> <p><b>520</b> Remove, inspect and install strut rods and bushings.</p> <p><b>521</b> Remove, inspect, and install upper and/or lower ball joints.</p> <p><b>522</b> Remove, inspect, and install steering knuckle assemblies.</p> <p><b>523</b> Remove, inspect, and install short and long arm suspension system coil springs and spring insulators.</p> <p><b>524</b> Remove, inspect, install, and adjust suspension system torsion bars; inspect mounts.</p> <p><b>525</b> Remove, inspect, and install stabilizer bar bushings, brackets, and links.</p> <p><b>526</b> Remove, inspect, and install strut cartridge or assembly, strut coil spring, insulators (silencers), and upper strut bearing mount.</p> <p><b>527</b> Inspect, remove, and replace shock absorbers.</p> <p><b>528</b> Remove, inspect, and service or replace front and rear wheel bearings.</p> <p><b>529</b> Lubricate suspension and steering systems.</p> <p><b>530</b> Perform pre-alignment inspection and measure vehicle ride height; perform necessary action.</p> <p><b>531</b> Prepare vehicle for wheel alignment on the alignment machine; perform four wheel alignment by checking and adjusting front and rear wheel caster, camber; and toe as required; center steering wheel.</p> <p><b>532</b> Check SAI (steering axis inclination) and included angle; determine necessary action.</p> <p><b>533</b> Check rear wheel thrust angle; determine necessary action.</p> <p><b>534</b> Check for front wheel setback; determine necessary action.</p> <p><b>535</b> Check front and/or rear cradle (subframe) alignment; determine necessary action.</p>		<p>information expressed in a text into visual form (e.g. a table or chart). <b>Standard CC.3.5.9-10. H</b></p> <p>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></p> <p>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></p> <p>Integrate and evaluate multiple sources of information presented in diverse formats...to solve a problem. <b>Standard CC.3.5.11-12. H</b></p> <p>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></p> <p>Synthesize information from a range of sources into a coherent understanding.</p> <p><b>RANGE OF READING</b> <b>GRADES 9-10-11-12</b> <b>Standard CC.3.5.9-10.J Standard CC.3.5.11-12.J</b></p> <p>By the end of grades 9- 10, AND 11-12, read and comprehend technical texts independently and proficiently.</p>	<p>question or solve a problem. <b>Standard CC.3.6.9-10.G.</b> <b>Standard CC.3.6.11-12.G</b></p> <p>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></p> <p>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></p> <p>Write routinely over extended time frames and shorter time frames for a range of tasks, purposes and audiences...etc.</p>	

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<p><b>536</b> Inspect tire condition; identify tire wear patterns; check and adjust air pressure; determine necessary action.</p> <p><b>537</b> Diagnose wheel/tire vibration, shimmy, and noise; determine necessary action.</p> <p><b>538</b> Rotate tires according to manufacturer's recommendations.</p> <p><b>539</b> Measure wheel, tire, axle flange, and hub runout; determine necessary action.</p> <p><b>540</b> Diagnose tire pull problems; determine necessary action.</p> <p><b>541</b> Dismount, inspect, and remount tire on wheel; balance wheel and tire assembly (static and dynamic).</p> <p><b>542</b> Dismount, inspect, and remount tire on wheel equipped with tire pressure monitoring system sensor.</p> <p><b>543</b> RESERVED</p> <p><b>544</b> Inspect tire and wheel assembly for air loss; perform necessary action.</p> <p><b>545</b> Repair tire using internal patch.</p>				

# 600 Brakes

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> Complete work order to include customer information, vehicle identifying information, customer concern, related service history, cause, and correction.</p> <p><b>602</b> Identify and interpret brake system concern; determine necessary action.</p> <p><b>603</b> Research applicable vehicle and service information, such as brake system operation, vehicle service history, service precautions, and technical service bulletins.</p> <p><b>604</b> Locate and interpret vehicle and major component identification numbers.</p> <p><b>605</b> Measure brake pedal height, travel, and free play (as applicable); determine necessary action.</p> <p><b>606</b> Check master cylinder for internal/external leaks and proper operation; determine necessary action.</p> <p><b>607</b> Remove, bench bleed, and reinstall master cylinder.</p> <p><b>608</b> Inspect brake lines, flexible hoses, and fittings for leaks, dents, kinks, rust, cracks, bulging or wear; tighten loose fittings and supports; determine necessary action.</p> <p><b>609</b> Replace brake lines, hoses, fittings, and supports.</p> <p><b>610</b> Fabricate brake lines using proper material and flaring procedures (double flare and ISO types).</p> <p><b>611</b> Select, handle, store, and fill brake fluids to proper level.</p> <p><b>612</b> Inspect, test, and/or replace components of brake warning light system.</p> <p><b>613</b> Bleed and/or flush brake system.</p> <p><b>614</b> Diagnose poor stopping, noise, vibration, pulling, grabbing, dragging or pedal pulsation concerns; determine necessary action.</p> <p><b>615</b> Remove, clean, inspect, and measure brake drums; determine necessary action.</p> <p><b>616</b> Refinish brake drum; measure final</p>	<p><b>CAREER CLUSTER:</b>  <b>Transportation, Distribution and Logistics</b>            (Choose Standards)            1-2-3-4-5-6</p> <p><b>PATHWAYS INCLUDE</b>  <b>Facility and Mobile Equipment Maintenance Career Pathway</b>            (Choose Standards)            1-2</p> <p><b>NOTE:</b>  <b>Refer to the Common Career Technical Core Standards Booklet if you wish to add more Pathways, for your local Occupational Area.</b></p>	<p><b>KEY IDEAS/DETAILS 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.  <b>CRAFT &amp; STRUCTURE 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 visual form (e.g. a table or chart).</p>	<p><b>TEXT TYPES AND PURPOSE 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.  <b>PRODUCTION &amp; DISTRIBUTION OF WRITING 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.  <b>Standard CC.3.6.9-10.G.</b></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>GEOMETRY</b>  <b>Standard 2.3.HS.A.13</b>            Analyze relationships between two dimensional and three dimensional objects.</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>617 drum diameter. Remove, clean, and inspect brake shoes, springs, pins, clips, levers, adjusters/self-adjusters, other related brake hardware, and backing support plates; lubricate and reassemble.</p> <p>618 Inspect and install wheel cylinders.</p> <p>619 Pre-adjust brake shoes and parking brake; install brake drums or drum/hub assemblies and wheel bearings.</p> <p>620 Install wheel, torque lug nuts, and make final checks and adjustments.</p> <p>621 RESERVED</p> <p>622 Remove caliper assembly; inspect for leaks and damage to caliper housing; determine necessary action.</p> <p>623 Clean and inspect caliper mounting and slides/pins for operation, wear, and damage; determine necessary action.</p> <p>624 Reassemble, lubricate, and reinstall caliper, pads, and related hardware; seat pads, and inspect for leaks.</p> <p>625 Clean, inspect, and measure rotor thickness, lateral runout, and thickness variation; determine necessary action.</p> <p>626 Remove and reinstall rotor.</p> <p>627 Refinish rotor on vehicle; measure final rotor thickness.</p> <p>628 Refinish rotor off vehicle; measure final rotor thickness.</p> <p>629 Install wheel, torque lug nuts, and make final checks and adjustments.</p> <p>630 Check brake pad wear indicator system operation; determine necessary action.</p> <p>631 Test pedal free travel; check power assist operation.</p> <p>632 Check vacuum supply to vacuum-type power booster.</p> <p>633 Remove, clean, inspect, repack, and install wheel bearings and replace seals; install hub and adjust bearings.</p> <p>634 Check parking brake cables and components for wear, binding, and corrosion; clean, lubricate, adjust or replace as needed.</p> <p>635 Check parking brake and indicator</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></p> <p><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></p> <p><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.3.6.11-12.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. 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></p> <p><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>	

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<p>light system operation; determine necessary action.</p> <p><b>636</b> Check operation of brake stop light system; determine necessary action.</p> <p><b>637</b> Replace wheel bearing and race.</p> <p><b>638</b> Inspect and replace wheel studs.</p> <p><b>639</b> Remove and reinstall sealed wheel bearing assembly.</p> <p><b>640</b> Identify and inspect electronic brake control system components; determine necessary action.</p> <p><b>641</b> Diagnose electronic brake control system electronic control(s) and components by retrieving diagnostic trouble codes, and/or using recommended test equipment; determine necessary action.</p> <p><b>642</b> Depressurize high-pressure components of the electronic brake control system.</p> <p><b>643</b> Bleed the electronic brake control system hydraulic circuits.</p> <p><b>644</b> Identify traction control/vehicle stability control system components.</p>				

## 700 Electrical/Electronic Systems

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>701</b> Complete work order to include customer information, vehicle identifying information, customer concern, related service history, cause, and correction.</p> <p><b>702</b> Identify and interpret electrical/electronic system concern; determine necessary action.</p> <p><b>703</b> Research applicable vehicle and service information, such as electrical/electronic system operation, vehicle service history, service precautions, and technical service bulletins.</p> <p><b>704</b> Locate and interpret vehicle and major component identification numbers.</p> <p><b>705</b> Use wiring diagrams during diagnosis of electrical circuit problems.</p> <p><b>706</b> Check electrical circuits with a test light; determine necessary action.</p> <p><b>707</b> Check electrical circuits using fused jumper wires; determine necessary action.</p> <p><b>708</b> Locate shorts, grounds, opens, and resistance problems in electrical/electronic circuits; determine necessary action.</p> <p><b>709</b> Measure and diagnose the cause(s) of excessive parasitic draw; determine necessary action.</p> <p><b>710</b> Inspect and test fusible links, circuit breakers, and fuses; determine necessary action.</p> <p><b>711</b> Inspect and test switches, connectors, relays, solenoid solid state devices, and wires of electrical/electronic circuits; perform necessary action.</p> <p><b>712</b> Remove and replace terminal end from connector; replace connectors and terminal ends.</p> <p><b>713</b> Repair wiring harness (including CAN/BUS systems).</p> <p><b>714</b> Perform solder repair of electrical wiring.</p> <p><b>715</b> Identify location of hybrid vehicle high voltage circuit disconnect (service plug) location and safety procedures.</p>	<p><b>CAREER CLUSTER:</b>  <b>Transportation, Distribution and Logistics</b>            (Choose Standards)            1-2-3-4-5-6</p> <p><b>PATHWAYS INCLUDE</b>  <b>Facility and Mobile Equipment Maintenance Career Pathway</b>            (Choose Standards)            1-2</p> <p><b>NOTE:</b>  <b>Refer to the Common Career Technical Core Standards Booklet if you wish to add more Pathways, for your local Occupational Area.</b></p>	<p><b>KEY IDEAS/DETAILS</b>  <b>GRADES 9-10-11-12</b>  <b>Standard CC.3.5.9-10. 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<p><b>716</b> Perform battery state-of-charge test; determine necessary action.</p> <p><b>717</b> Perform battery capacity test; confirm proper battery capacity for vehicle application; determine necessary action.</p> <p><b>718</b> Maintain or restore electronic memory functions.</p> <p><b>719</b> Inspect, clean, fill, and/or replace battery, battery cables, connectors, clamps, and hold-downs.</p> <p><b>720</b> Perform battery charge.</p> <p><b>721</b> Start a vehicle using jumper cables or an auxiliary power supply.</p> <p><b>722</b> Identify electronic modules, security systems, radios, and other accessories that require re-initialization or code entry following battery disconnect.</p> <p><b>723</b> Perform starter current draw tests; determine necessary action.</p> <p><b>724</b> Perform starter circuit voltage drop tests; determine necessary action.</p> <p><b>725</b> Inspect and test starter relays and solenoids; determine necessary action.</p> <p><b>726</b> Remove and install starter in a vehicle.</p> <p><b>727</b> Inspect and test switches, connectors, and wires of starter control circuits; perform necessary action.</p> <p><b>728</b> Differentiate between electrical and engine mechanical problems that cause a slow-crank or no-crank condition.</p> <p><b>729</b> Perform charging system output test; determine necessary action.</p> <p><b>730</b> Diagnose charging system for the cause of undercharge, no-charge, and overcharge conditions.</p> <p><b>731</b> Inspect, adjust, or replace generator (alternator) drive belts, pulleys, and tensioners; check pulley and belt alignment.</p> <p><b>732</b> Remove, inspect, and install generator (alternator).</p> <p><b>733</b> Perform charging circuit voltage drop tests; determine necessary action.</p> <p><b>734</b> Diagnose the cause of brighter than normal, intermittent, dim, or no light</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>question or solve a problem.</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>	

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>operation; determine necessary action.</p> <p><b>735</b> Inspect, replace, and aim headlights and bulbs.</p> <p><b>736</b> Inspect and diagnose incorrect turn signal or hazard light operation; perform necessary action.</p> <p><b>737</b> Inspect and test gauges and gauge sending units for cause of abnormal gauge readings; determine necessary action.</p> <p><b>738</b> Inspect and test connectors, wires, and printed circuit boards of gauge circuits; determine necessary action.</p> <p><b>739</b> Diagnose the cause of incorrect operation of warning devices and other driver information systems; determine necessary action.</p> <p><b>740</b> Diagnose incorrect horn operation; perform necessary action.</p> <p><b>741</b> Diagnose incorrect wiper operation; diagnose wiper speed control and park problems; perform necessary action.</p> <p><b>742</b> Diagnose incorrect washer operation; perform necessary action.</p> <p><b>743</b> Diagnose incorrect operation of motor-driven accessory circuits; determine necessary action.</p> <p><b>745</b> RESERVED</p> <p><b>746</b> Remove and reinstall door panel.</p>				

# 800 Engine Performance

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> Complete work order to include customer information, vehicle identifying information, customer concern, related service history, cause, and correction.</p> <p><b>802</b> Identify and interpret engine performance concern; determine necessary action.</p> <p><b>803</b> Research applicable vehicle and service information, such as engine management system operation, vehicle service history, service precautions, and technical service bulletins.</p> <p><b>804</b> Locate and interpret vehicle and major component identification numbers.</p> <p><b>805</b> Inspect engine assembly for fuel, oil, coolant, and other leaks; determine necessary action.</p> <p><b>806</b> Diagnose abnormal engine noise or vibration concerns; determine necessary action.</p> <p><b>807</b> Diagnose abnormal exhaust color, odor, and sound; determine necessary action.</p> <p><b>808</b> Perform engine absolute (vacuum/boost) manifold pressure tests; determine necessary action.</p> <p><b>809</b> Perform cylinder power balance test; determine necessary action.</p> <p><b>810</b> Perform cylinder cranking and running compression tests; determine necessary action.</p> <p><b>811</b> Perform cylinder leakage test; determine necessary action.</p> <p><b>812</b> Diagnose engine mechanical, electrical, electronic, fuel, and ignition concerns; determine necessary action.</p> <p><b>813</b> Verify engine operating temperature; determine necessary action.</p> <p><b>814</b> Perform cooling system pressure tests; check coolant condition; inspect and test radiator, pressure cap, coolant recovery tank, and hoses; perform necessary action.</p> <p><b>815</b> Verify correct camshaft timing.</p>	<p><b>CAREER CLUSTER:</b>  <b>Transportation, Distribution and Logistics</b>            (Choose Standards)            1-2-3-4-5-6</p> <p><b>PATHWAYS INCLUDE</b>  <b>Facility and Mobile Equipment Maintenance Career Pathway</b>            (Choose Standards)            1-2</p> <p><b>NOTE:</b>  <b>Refer to the Common Career Technical Core Standards Booklet if you wish to add more Pathways, for your local Occupational 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</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</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>GEOMETRY</b>  <b>Standard 2.3.HS.A.13</b>            Analyze relationships between two dimensional and three dimensional objects.</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><b>816</b> Retrieve and record diagnostic trouble codes, OBD monitor status, and freeze frame data; clear codes when applicable.</p> <p><b>817</b> Diagnose the causes of emissions or drivability concerns with stored or active diagnostic trouble codes; obtain, graph, and interpret scan tool data.</p> <p><b>818</b> Access and use service information to perform step-by-step diagnosis.</p> <p><b>819</b> Perform active tests of actuators using a scan tool; determine necessary action.</p> <p><b>820</b> Describe the importance of running all OBDII monitors for repair verification.</p> <p><b>821</b> Diagnose ignition system related problems such as no-starting, hard starting, engine misfire, poor drivability, spark knock, power loss, poor mileage, and emissions concerns; determine necessary action.</p> <p><b>822</b> Inspect and test ignition primary and secondary circuit wiring and solid state components; test ignition coil(s); perform necessary action.</p> <p><b>823</b> Inspect and test crankshaft and camshaft position sensor(s); perform necessary action.</p> <p><b>824</b> Inspect, test, and/or replace ignition control module, powertrain/engine control module; reprogram as necessary.</p> <p><b>825</b> Diagnose hot or cold no-starting, hard starting, poor drivability, incorrect idle speed, poor idle, flooding, hesitation, surging, engine misfire, power loss, stalling, poor mileage, dieseling, and emissions problems; determine necessary action.</p> <p><b>826</b> Inspect and test fuel pumps and pump control systems for pressure, regulation, and volume; perform necessary action.</p> <p><b>827</b> Replace fuel filters.</p> <p><b>828</b> Inspect throttle body, air induction system, intake manifold and gaskets for vacuum leaks and/or unmetered air.</p>		<p>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</b>  <b>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>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
<p><b>829</b> Inspect and test fuel injectors.</p> <p><b>830</b> Verify idle control operation.</p> <p><b>831</b> Inspect the integrity of the exhaust manifold, exhaust pipes, muffler(s), catalytic converter(s), resonator(s), tail pipe(s), and heat shield(s); perform necessary action.</p> <p><b>832</b> Diagnose oil leaks, emissions, and drivability concerns caused by the positive crankcase ventilation (PCV) system; determine necessary action.</p> <p><b>833</b> Inspect, test and service positive crankcase ventilation (PCV) filter/breather cap, valve, tubes, orifices, and hoses; perform necessary action.</p> <p><b>834</b> Diagnose emissions and drivability concerns caused by the exhaust gas recirculation (EGR) system; determine necessary action.</p> <p><b>835</b> Inspect, test, service and replace components of the EGR system, including EGR tubing, exhaust passages, vacuum/pressure controls, filters and hoses; perform necessary action.</p> <p><b>836</b> Inspect and test electrical/electronic sensors, controls, and wiring of exhaust gas recirculation (EGR) systems; perform necessary action.</p> <p><b>837</b> Inspect and test mechanical components of secondary air injection systems; perform necessary action.</p> <p><b>838</b> Inspect and test electrical/electronically-operated components and circuits of air injection systems; perform necessary action.</p> <p><b>839</b> Inspect and test catalytic converter efficiency.</p> <p><b>840</b> Diagnose emissions and drivability concerns caused by the evaporative emissions control system; determine necessary action.</p> <p><b>841</b> Inspect and test components and hoses of the evaporative emissions control system; perform necessary action.</p> <p><b>842</b> Interpret diagnostic trouble codes (DTCs) and scan tool data related to</p>				

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<p>the emissions control systems; determine necessary action.</p> <p><b>843</b> Remove and replace timing belt; verify correct camshaft timing.</p> <p><b>844</b> Remove and replace thermostat and gasket/seal.</p> <p><b>845</b> Inspect and test mechanical/electrical fans, fan clutch, fan shroud/ducting, air dams, and fan control devices; perform necessary action.</p> <p><b>846</b> Perform engine oil and filter change.</p>				

# 900 Engine Repair

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>901</b> Research applicable vehicle and service information, vehicle service history, service precautions, and technical service bulletins.</p> <p><b>902</b> Verify operation of the instrument panel engine warning indicators.</p> <p><b>903</b> Install engine covers using gaskets, seals, and sealers as required.</p> <p><b>904</b> RESERVED</p> <p><b>905</b> Adjust valves (mechanical or hydraulic lifters).</p> <p><b>906</b> Inspect, replace, and adjust drive belts, tensioners, and pulleys; check pulley and belt alignment.</p> <p><b>907</b> Inspect and test coolant; drain and recover coolant; flush and refill cooling system with recommended coolant; bleed air as required.</p>	<p><b>CAREER CLUSTER:</b>  <b>Transportation, Distribution and Logistics</b>            (Choose Standards)            1-2-3-4-5-6</p> <p><b>PATHWAYS INCLUDE</b>  <b>Facility and Mobile Equipment Maintenance Career Pathway</b>            (Choose Standards)            1-2</p> <p><b>NOTE:</b>  <b>Refer to the Common Career Technical Core Standards Booklet if you wish to add more Pathways, for your local Occupational 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>GEOMETRY</b>  <b>Standard 2.3.HS.A.13</b>            Analyze relationships between two dimensional and three dimensional objects.</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.  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.  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>	



# 1000 Automatic Transmission and Transaxle

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>1001</b> Research applicable vehicle and service information, fluid type, vehicle service history, service precautions, and technical service bulletins.</p> <p><b>1002</b> Check fluid level in a transmission or a transaxle equipped with a dip-stick.</p> <p><b>1003</b> Check fluid level in a transmission or a transaxle not equipped with a dip-stick.</p> <p><b>1004</b> Drain and replace fluid and filter(s).</p>	<p><b>CAREER CLUSTER:</b>  <b>Transportation, Distribution and Logistics</b>            (Choose Standards)            1-2-3-4-5-6</p> <p><b>PATHWAYS INCLUDE</b>  <b>Facility and Mobile Equipment Maintenance Career Pathway</b>            (Choose Standards)            1-2</p> <p><b>NOTE:</b>  <b>Refer to the Common Career Technical Core Standards Booklet if you wish to add more Pathways, for your local Occupational 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>GEOMETRY</b>  <b>Standard 2.3.HS.A.13</b>            Analyze relationships between two dimensional and three dimensional objects.</p>

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		<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></p> <p><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></p> <p><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></p> <p><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>	

# 1100 Manual Drive Train and Axles

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>1101</b> Research applicable vehicle and service information, fluid type, vehicle service history, service precautions, and technical service bulletins.</p> <p><b>1102</b> Drain and refill manual transmission/transaxle and final drive unit.</p> <p><b>1103</b> Check and adjust clutch master cylinder fluid level.</p> <p><b>1104</b> Check for system leaks.</p> <p><b>1105</b> Check and adjust differential housing fluid level.</p> <p><b>1106</b> Drain and refill differential housing.</p>	<p><b>CAREER CLUSTER:</b>  <b>Transportation, Distribution and Logistics</b>            (Choose Standards)            1-2-3-4-5-6</p> <p><b>PATHWAYS INCLUDE</b>  <b>Facility and Mobile Equipment Maintenance Career Pathway</b>            (Choose Standards)            1-2</p> <p><b>NOTE:</b>  <b>Refer to the Common Career Technical Core Standards Booklet if you wish to add more Pathways, for your local Occupational 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>GEOMETRY</b>  <b>Standard 2.3.HS.A.13</b>            Analyze relationships between two dimensional and three dimensional objects.</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</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</b>  <b>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</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>	

# 1200 Heating and Air Conditioning

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<p><b>1201</b> Research applicable vehicle and service information, vehicle service history, service precautions, and technical service bulletins.</p> <p><b>1202</b> Inspect and replace A/C compressor drive belts, pulleys, and tensioners; determine necessary action.</p> <p><b>1203</b> Inspect A/C condenser for airflow restrictions; determine necessary action.</p> <p><b>1204</b> Inspect engine cooling and heater systems hoses; perform necessary action.</p> <p><b>1205</b> Inspect A/C-heater ducts, doors, hoses, cabin filters, and outlets; perform necessary action.</p>	<p><b>CAREER CLUSTER:</b>  <b>Transportation, Distribution and Logistics</b>            (Choose Standards)            1-2-3-4-5-6</p> <p><b>PATHWAYS INCLUDE</b>  <b>Facility and Mobile Equipment Maintenance Career Pathway</b>            (Choose Standards)            1-2</p> <p><b>NOTE:</b>  <b>Refer to the Common Career Technical Core Standards Booklet if you wish to add more Pathways, for your local Occupational 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>GEOMETRY</b>  <b>Standard 2.3.HS.A.13</b>            Analyze relationships between two dimensional and three dimensional objects.</p>

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