

Maine Department of Education
 Career and Technical Education
 CTE Intersections with College and Career Readiness Standards-English Language Arts
 with
 Auto Body; CIP: 47.0603
 Painting and Refinishing (NATEF)

Painting and Refinishing Framework, Duties, and Tasks	English Language Arts Standards (at 11-12 level)	Criteria for Demonstration of Proficiency (possible but not required; must be determined at the District level)	Maine Learning Results – Guiding Principles And Career and Education Development (optional)
1. Safety Precautions			
<p>a. Identify and take necessary precautions with hazardous operations and materials according to federal, state, and local regulations.</p> <p>b. Identify safety and personal health hazards according to OSHA guidelines and the “Right to Know Law”.</p> <p>c. Inspect spray environment and equipment to ensure compliance with federal, state and local regulations, and for safety and cleanliness hazards.</p> <p>d. Select and use a NIOSH approved air purifying respirator. Inspect condition and ensure fit and operation. Perform proper maintenance in accordance with OSHA Regulation 1910.134 and applicable state and local regulation.</p> <p>e. Select and use a NIOSH approved supplied air (Fresh Air Make-up)</p>	<p>a. RST.7: Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.</p> <p>RST.10: By the end of grade 12, read and comprehend science/ technical texts in the grades 11-12 text complexity band independently and proficiently.</p> <p>*****</p> <p>b. RST.5: Analyze how the text structures information or ideas into categories or hierarchies, demonstrating understanding of the information or ideas.</p> <p>RST.10: By the end of grade 12, read and comprehend</p>	<p>a. Read safety procedures from multiple sources.</p> <p>b. Reading or listening to content of OSHA manuals.</p> <p>c. Reading text to follow a procedure and presenting findings.</p> <p>d. Reading text and analyzing charts to follow procedure.</p> <p>e. Third party assessment.</p> <p>f. Read text and analyze charts to select safety equipment.</p>	

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<p>respirator system. Perform proper maintenance in accordance with OSHA Regulation 1910.134 and applicable state and local regulation.</p> <p>f. Select and use the proper personal safety equipment for surface preparation, spray gun and related equipment operation, paint mixing, matching and application, paint defects, and detailing (gloves, suits, hoods, eye and ear protection, etc.).</p>	<p>science/ technical texts in the grades 11-12 text complexity band independently and proficiently.</p> <p>SL.2: Integrate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, orally) in order to make informed decisions and solve problems, evaluating the credibility and accuracy of each source and noting any discrepancies among the data.</p> <p>*****</p> <p>c. through f.</p> <p>RST.3: Follow precisely a complex multi-step procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.</p> <p>RST.10: By the end of grade 12, read and comprehend science/ technical texts in the grades 11-12 text complexity band independently and</p>		

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	<p>proficiently.</p> <p>SL.4: Present information, findings, and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization, development, substance, and style are appropriate to purpose, audience, and a range of formal and informal tasks.</p>		
2. Surface Preparation			
<p>a. Inspect, remove, store, and replace exterior trim and components necessary for proper surface preparation.</p> <p>b. Soap and water wash entire vehicle; use appropriate cleaner to remove contaminants.</p> <p>c. Inspect and identify substrate, type of finish, surface condition, and film thickness; develop and document a plan for refinishing using a total product system.</p> <p>d. Strip paint to bare substrate (paint removal).</p>	<p>a. through d.</p> <p>RST.3: Follow precisely a complex multi-step procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.</p> <p>RST.10: By the end of grade 12, read and comprehend science/ technical texts in the grades 11-12 text complexity band independently and</p>	<p>A through e: reading completed for hands on task that demonstrates proficiency.</p> <p>g. Reading and analysis of information completed to perform hands on task.</p> <p>v. Written test rubrics; Hands on observation; Performance evaluation checklist</p>	

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<p>e. Dry or wet sand areas to be refinished.</p> <p>f. Featheredge damaged areas to be refinished.</p> <p>g. Apply suitable metal treatment or primer in accordance with total product systems.</p> <p>h. Mask and protect other areas that will not be refinished.</p> <p>i. Mix primer, primer-surfacer or primer-sealer.</p> <p>j. Apply primer onto surface of repaired area.</p> <p>k. Apply two-component finishing filler to minor surface imperfections.</p> <p>l. Dry or wet sand area to which primer-surfacer has been applied.</p> <p>m. Dry sand area to which two-component finishing filler has been applied.</p> <p>n. Remove dust from area to be refinished, including cracks or moldings of adjacent areas.</p> <p>o. Clean area to be refinished using a final cleaning solution.</p> <p>p. Remove, with a tack rag, any dust or lint particles from the area to be refinished.</p> <p>q. Apply suitable sealer to the area</p>	<p>proficiently.</p> <p>SL.2: Integrate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, orally) in order to make informed decisions and solve problems, evaluating the credibility and accuracy of each source and noting any discrepancies among the data.</p> <p>*****</p> <p>e. RST.3: Follow precisely a complex multi-step procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.</p> <p>RST.10: By the end of grade 12, read and comprehend science/ technical texts in the grades 11-12 text complexity band independently and proficiently.</p> <p>*****</p> <p>f. RST.3: Follow precisely a complex multi-step procedure</p>		

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<p>being refinished.</p> <p>r. Scuff sand to remove nibs or imperfections from a sealer.</p> <p>s. Apply stone chip resistant coating.</p> <p>t. Restore corrosion-resistant coatings, caulking, and seam sealers to repaired areas.</p> <p>u. Prepare adjacent panels for blending.</p> <p>v. Identify the types of rigid, semi-rigid or flexible plastic parts to be refinished; determine the materials, preparation, and refinishing procedures.</p> <p>w. Identify aluminum parts to be refinished; determine the materials, preparation, and refinishing procedures.</p>	<p>when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.</p> <p>RST.9: Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.</p> <p>RST.10: By the end of grade 12, read and comprehend science/ technical texts in the grades 11-12 text complexity band independently and proficiently.</p> <p>SL.2: Integrate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, orally) in order to make informed decisions and solve problems, evaluating the credibility and accuracy of each source and noting any</p>		

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	<p>discrepancies among the data. *****</p> <p>q. RST.3: Follow precisely a complex multi-step procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.</p> <p>RST.10: By the end of grade 12, read and comprehend science/ technical texts in the grades 11-12 text complexity band independently and proficiently.</p> <p>SL.2: Integrate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, orally) in order to make informed decisions and solve problems, evaluating the credibility and accuracy of each source and noting any discrepancies among the data. *****</p> <p>v. and w. RST.3: Follow precisely a</p>		

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	<p>complex multi-step procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.</p> <p>RST.7: Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.</p> <p>RST.10: By the end of grade 12, read and comprehend science/ technical texts in the grades 11-12 text complexity band independently and proficiently.</p>		
3. Spray Gun and Related Equipment Operation			
<p>a. Inspect, clean, and determine condition of spray guns and related equipment (air hoses, regulators, air lines, air source, and spray environment).</p> <p>b. Check and adjust spray gun operation for HVLP (high volume,</p>	<p>a. and b. and c.</p> <p>RST.3: Follow precisely a complex multi-step procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results</p>	<p>a. Performance evaluation checklist</p> <p>b. Written lab assessment</p>	

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<p>low pressure) or compliant spray guns.</p> <p>c. Set-up (fluid needle, nozzle, and cap), test, and adjust spray gun using fluid, air, and pattern control valves.</p> <p>d. Demonstrate an understanding of the operation of pressure spray equipment.</p>	<p>based on explanations in the text.</p> <p>RST.4: Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to <i>grades 11-12 texts and topics</i>.</p> <p>RST.10: By the end of grade 12, read and comprehend science/ technical texts in the grades 11-12 text complexity band independently and proficiently.</p> <p>*****</p> <p>d. RST.9: Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.</p> <p>SL.4: Present information, findings, and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the</p>		

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	line of reasoning, alternative or opposing perspectives are addressed, and the organization, development, substance, and style are appropriate to purpose, audience, and a range of formal and informal tasks.		
4. Paint Mixing, Matching, and Applying			
<p>a. Identify type and color code by manufacturer’s vehicle information label.</p> <p>b. Shake, stir, reduce, catalyze/activate, and strain refinish materials.</p> <p>c. Apply finish using appropriate spray techniques (gun arc, gun angle, gun distance, gun speed, and spray pattern overlap) for the finish being applied.</p> <p>d. Apply selected product on test and let-down panel; check for color match.</p> <p>e. Apply single stage topcoat.</p> <p>f. Apply basecoat/clearcoat for panel blending or panel refinishing.</p> <p>g. Apply basecoat/clearcoat for overall refinishing.</p> <p>h. Remove nibs or imperfections</p>	<p>a. RST.4: Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to <i>grades 11-12 texts and topics</i>.</p> <p>SL.2: Integrate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, orally) in order to make informed decisions and solve problems, evaluating the credibility and accuracy of each source and noting any discrepancies among the data.</p> <p>*****</p> <p>b. RST.3: Follow precisely a complex multi-step procedure</p>	<p>b. Performance evaluation checklist</p> <p>d. Presentation of findings to instructor</p>	

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<p>from basecoat.</p> <ul style="list-style-type: none"> i. Refinish rigid or semi-rigid, and plastic parts. j. Refinish flexible plastic parts. k. Apply multi-stage coats for panel blending or overall refinishing. l. Identify and mix paint using a formula. m. Identify poor hiding colors; determine necessary action. n. Tint color using formula to achieve a blendable match. o. Identify alternative color formula to achieve a blendable match. 	<p>when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.</p> <p>RST.10: By the end of grade 12, read and comprehend science/ technical texts in the grades 11-12 text complexity band independently and proficiently.</p> <p>*****</p> <p>c. RST.3: Follow precisely a complex multi-step procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.</p> <p>RST.10: By the end of grade 12, read and comprehend science/ technical texts in the grades 11-12 text complexity band independently and proficiently.</p> <p>SL.4: Present information, findings, and supporting</p>		

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	<p>evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization, development, substance, and style are appropriate to purpose, audience, and a range of formal and informal tasks.</p> <p>*****</p> <p>d. through g.</p> <p>RST.3: Follow precisely a complex multi-step procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.</p> <p>RST.9: Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.</p>		

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	<p>band independently and proficiently. *****</p> <p>j., k., and l. RST.3: Follow precisely a complex multi-step procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text. RST.10: By the end of grade 12, read and comprehend science/ technical texts in the grades 11-12 text complexity band independently and proficiently. *****</p> <p>m., n., and o. RST.7: Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.RST.9: Synthesize information from a range of</p>		

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	<p>sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.</p> <p>RST.10: By the end of grade 12, read and comprehend science/ technical texts in the grades 11-12 text complexity band independently and proficiently.</p>		
5. Paint Defects – Causes and Cures			
<p>a. Identify blistering (raising of the paint surface, air entrapment); determine the cause(s) and correct the condition.</p> <p>b. Identify blushing (milky or hazy formation); determine the cause(s) and correct the condition.</p> <p>c. Identify a dry spray appearance in the paint surface; determine the cause(s) and correct the condition.</p> <p>d. Identify the presence of fish-eyes (crater-like openings) in the finish; determine the cause(s) and correct the condition.</p> <p>e. Identify lifting; determine the cause(s) and correct the condition.</p>	<p>All of 5:</p> <p>RST.8: Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.</p> <p>RST.10: By the end of grade 12, read and comprehend science/ technical texts in the grades 11-12 text complexity band independently and proficiently.</p>	<ul style="list-style-type: none"> • Written assessment • Oral presentation • Report findings • Module test • Third party assessment 	

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<p>f. Identify clouding (mottling and streaking in metallic finishes); determine the cause(s) and correct the condition.</p> <p>g. Identify orange peel; determine the cause(s) and correct the condition.</p> <p>h. Identify overspray; determine the cause(s) and correct the condition.</p> <p>i. Identify solvent popping in freshly painted surface; determine the cause(s) and correct the condition.</p> <p>j. Identify sags and runs in paint surface; determine the cause(s) and correct the condition.</p> <p>k. Identify sanding marks or sandscratch swelling; determine the cause(s) and correct the condition.</p> <p>l. Identify contour mapping/edge mapping while finish is drying; determine the cause(s) and correct the condition.</p> <p>m. Identify color difference (off-shade); determine the cause(s) and correct the condition.</p> <p>n. Identify tape tracking; determine the cause(s) and correct the condition.</p> <p>o. Identify low gloss condition;</p>			

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<p>determine the cause(s) and correct the condition.</p> <p>p. Identify poor adhesion; determine the cause(s) and correct the condition.</p> <p>q. Identify paint cracking (shrinking, splitting, crowsfeet or line-checking, micro-checking, etc.); determine the cause(s) and correct the condition.</p> <p>r. Identify corrosion; determine the cause(s) and correct the condition.</p> <p>s. Identify dirt or dust in the paint surface; determine the cause(s) and correct the condition.</p> <p>t. Identify water spotting; determine the cause(s) and correct the condition.</p> <p>u. Identify finish damage caused by bird droppings, tree sap, and other natural causes; correct the condition.</p> <p>v. Identify finish damage caused by airborne contaminants (acids, soot, rail dust, and other industrial-related causes); correct the condition.</p> <p>w. Identify die-back conditions (dulling of the paint film showing haziness); determine the cause(s) and correct the condition.</p>			

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<p>x. Identify chalking (oxidation); determine the cause(s) and correct the condition.</p> <p>y. Identify bleed-through (staining); determine the cause(s) and correct the condition.</p> <p>z. Identify pin-holing; determine the cause(s) and correct the condition.</p> <p>aa. Identify buffing-related imperfections (swirl marks, wheel burns); correct the condition.</p> <p>bb. Identify pigment flotation (color change through film build); determine the cause(s) and correct the condition.</p>			
6. Final Detail			
<p>a. Apply decals, transfers, tapes, woodgrains, pinstripes (painted and taped), etc.</p> <p>b. Buff and polish finish to remove defects as required.</p> <p>c. Clean interior, exterior, and glass.</p> <p>d. Clean body openings (door jambs and edges, etc.).</p> <p>e. Remove overspray.</p> <p>f. Perform pre-delivery detail and inspection.</p>	<p>f. RST.3: Follow precisely a complex multi-step procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.</p> <p>RST.10: By the end of grade 12, read and comprehend science/ technical texts in the grades 11-12 text complexity band independently and</p>	<ul style="list-style-type: none"> • Oral presentation • Customer interaction • Check off sheet • Third party assessment 	

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