

**NORTH MONTCO TECHNICAL CAREER CENTER
1265 SUMNEYTOWN PIKE, LANSDALE, PA 19446**

Performance Evaluation/Assessment

Automotive Technology

NATEF Engine Repair

Standardized Integration Module (SIM)

Task 1: General Engine Diagnosis; Removal and Reinstallation (R & R)

Hours: 30

Date: 9/01/2008

Exit Outcome/Terminal Performance Objective:

- Perform general engine diagnosis, determine needed repairs, remove and install an engine assembly.

Enabling Objectives:

- Explains basic internal combustion engine mechanical theory.
- Explains basic internal combustion engine operation.
- Explains steps to diagnose engine problems.
- Identifies basic engine mechanical components.
- Performs basic engine mechanical diagnosis.
- Locate correct diagnostic, repair, service & maintenance information using ShopKey.

Mastery: All hands-on tasks must be completed to 100% accuracy and to industry standards.

To achieve Mastery of this task, the student must:

1. Participate in a lecture, view either the PowerPoint presentation or video of the material.
2. Participate in a demonstration of the task.
3. Participate in a guided application of the task.
4. Practice the task without the instructor.
5. Complete task to 100% accuracy.
6. Demonstrate or practice the task with another student.

PA Academic Standards/Assessment Anchors/Eligible Content

Science

PA Academic Standard:

3.7.10.B Apply process knowledge and organize scientific and technological phenomena in varied ways.

Assessment Anchor:

S11.A.2.2 Evaluate appropriate technologies for a specific purpose, or describe the information the instrument can provide.

Eligible Content:

S11.A.2.2.1 Evaluate appropriate methods, instruments, and scale for precise quantitative and qualitative observations (e.g., to compare properties of materials, water quality).

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Math

PA Academic Standard:

2.2.11. A Develop and use computation concepts, operations and procedures with real numbers in problem-solving situations.

2.3.11.A Select and use appropriate units and tools to measure to the degree of accuracy required in particular measurement situations.

Assessment Anchor:

M11.B.2.2 Use and/or develop procedures to determine or describe measures of perimeter, circumference, area, surface area and/or volume. (May require conversions within the same system).

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Eligible Content:

M11.B.2.2.1 Calculate the surface area of prisms, cylinders, cones, pyramids and/or spheres. Formulas are provided on the reference sheet.

M11.B.2.2.2 Calculate the volume of prisms, cylinders, cones, pyramids and/or spheres. Formulas are provided on the reference sheet.

M11.B.2.2.3 Estimate area, perimeter or circumference of an irregular figure.

M11.B.2.2.4 Find the measurement of a missing length given the perimeter, circumference, area or volume.

Language Arts

PA Academic Standard:

1.1.11.C Use knowledge of root words and words from literary works to recognize and understand the meaning of new words during reading.

1.2.11.A Read and understand essential content of informational texts and documents in all academic areas.

Assessment Anchor:

R11.A.1.2 Identify and apply word recognition skills.

R11.A.1.3 Make inferences, draw conclusions, and make generalizations based on text.

Eligible Content:

R11.A.1.2.1 Identify how the meaning of a word is changed when an affix is added; identify the meaning of a word from the text with an affix.

R11.A.1.2.2 Define and/or apply how the meaning of words or phrases changes when using context clues given in explanatory sentences.

Social Studies

PA Academic Standard:

8.1.12.D Synthesize historical research.

Career Education & Work

PA Academic Standard:

13.1.11.A Relate careers to individual interests, abilities & aptitudes.

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SAFETY NOTICE: In addition to following all North Montco Technical Career Center Automotive Technology Program Safety and MSDS Policies, refer to the specific vehicle's manufacturer's shop manual for complete safety details when performing these tasks.

NOTE: *Safety is not an option!* Although this information is very thorough, it is general and does not fully cover all safety rules, procedures and hazards.

Performance Evaluation

PERFORMANCE CRITERIA	Needs Practice	Satisfactory
Safety glasses must be worn at all times! Read all safety materials provided and observe all safety precautions demonstrated by your instructor.		
Complete work order to include customer information, vehicle identifying information, customer concern, related service history, cause, and correction.P-1		
Identify and interpret engine concern; determine necessary action. P-1		
Research applicable vehicle and service information, such as internal engine operation, vehicle service history, service precautions, and technical service bulletins. P-1		
Locate and interpret vehicle and major component identification numbers. P-1		
Inspect engine assembly for fuel, oil, coolant, and other leaks; determine necessary action. P-1		
Diagnose engine noises and vibrations; determine necessary action. P-2		
Diagnose the cause of excessive oil consumption, coolant consumption, unusual engine exhaust color and odor; determine necessary action. P-2		
Perform engine vacuum tests; determine necessary action. P-1		
Perform cylinder power balance tests; determine necessary action. P-2		
Perform cylinder cranking and running compression tests; determine necessary action. P-1		
Perform cylinder leakage tests; determine necessary action. P-1		
Remove and reinstall engine in an OBDII or newer vehicle; reconnect all attaching components and restore the vehicle to running condition. P-2		
Install engine covers using gaskets, seals and sealers as required. P-1		

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Perform common fastener and thread repair, to include: remove broken bolt, restore internal and external threads, and repair internal threads with thread insert. P-1		
Inspect, remove and replace engine mounts. P-2		
Complete an Outline, Reading Grid, Summary and “Last-Word” Worksheet Packet for Chapters 1-10 & 80, 11, 12, 13, 14, 15, 16, 39, 40, 41, 42, 48, 49, 50, 51 and 52 from <i>Modern Automotive Technology</i> .		
Score a 80% or better on <i>Modern Automotive Technology</i> chapter tests 1-10 & 80		
Score a 80% or better on <i>Modern Automotive Technology</i> chapter tests 11, 12, 13, 14, 15, 16, 39, 40, 41, 42, 48, 49, 50, 51 and 52		
Score 80% or better on Math Intro Lessons 1-5 & Math Lessons 1, 4, 7, 8, 9, 10, 11 and 12 and 13 Homework Sheets.		
Score 80% or better on ASE Practice Test 1		
Earn a passing grade on the AYES Engine Performance Exit Exam A-8		

NOTES: