

Name: \_\_\_\_\_

**Marine Maintenance and Ship Repairer**

**Directions:**

Evaluate the student by entering the appropriate number to indicate the degree of competency achieved.

**Rating Scale (0-6):**

- 0 No Exposure** – no experience/knowledge in this area; program/course did not provide instruction in this area
- 1 Unsuccessful Attempt** – unable to meet knowledge or performance criteria and/or required significant assistance
- 2 Partial Demonstration** – met some of the knowledge or performance criteria with or without minor assistance
- 3 Knowledge Demonstrated** – met knowledge criteria without assistance at least once
- 4 Performance Demonstrated** – met performance criteria without assistance at least once
- 5 Repeated Demonstration** – met performance and/or knowledge criteria without assistance on multiple occasions
- 6 Mastered** – successfully applied knowledge or skills in this area to solve related problems independently

0	1	2	3	4	5	6	<b>A. Understand the Marine Technology Environment</b>	<b>Notes:</b>
							1. Demonstrate knowledge of work related safety practices.	
							2. Identify various marine propulsion systems, and types of watercraft.	
							3. Demonstrate knowledge of watercraft safety practices.	
							4. Demonstrate proper boat handling procedures.	
							5. Demonstrate boat hull and engine identification procedure.	
							6. Demonstrate first aid procedures correctly.	
							7. Understand and follow EPA & OSHA regulations.	
							Other:	

0	1	2	3	4	5	6	<b>B. Understand Shop Procedures/ Business Operations</b>	<b>Notes:</b>
							1. Demonstrate proficiency in shop safety practices.	
							2. Demonstrate ability to use print and computer based service manuals, parts cat., price lists, and reference materials.	
							3. Demonstrate ability to perform parts management, inventory control & service order procedures.	
							4. Demonstrate ability to use Micro-card system.	
							5. Demonstrate ability to perform preliminary.	
							6. Demonstrate electrical safety.	
							7. Prepare a complete parts sale slip.	
							8. Correctly identify engine mode/type and serial number.	
							9. Estimate repair costs.	
							10. Receive and check out repair work.	
							11. Perform basic bookkeeping procedures.	

								12. Record customer and service information correctly on repair order forms.	
								13. Identify and describe 2-stroke and 4-stroke engine systems.	
								14. Compare correctly the management of the past with the management of the present.	
								15. Describe correctly the decision making tools and techniques.	
								16. Describe correctly organizing human resources for efficiency in the work place.	
								17. Describe correctly effective management leadership qualities.	
								18. Describe correctly effective management planning.	
								19. Describe correctly the responsibilities of the marine general manager.	
								20. Describe correctly the responsibilities of the marine sales manager.	
								21. List correctly the responsibilities of the marine parts manager.	
								22. List correctly the responsibilities of the marine sales person.	
								23. List correctly the responsibilities of the marine service manager.	
								24. List correctly the responsibilities of the marine service technician.	
								25. Explain correctly marine industry certifications.	
								Other:	

<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>C. Identify and Use Tools and Equipment</b>	<b>Notes:</b>
							1. Identify and demonstrate the proper care and use of tools necessary to the trade.	
							2. Identify and demonstrate proper use and care of cutting tools.	
							3. Select grinding wheels and correctly use grinders.	
							4. Operate an air compressor.	
							5. Prepare and use a power solvent tank.	
							6. Troubleshoot and repair correctly instrumentation and sender systems.	
							7. Select and use rosin core, acid core, and silver solder.	
							Other:	

<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>D. Identify and Use Fasteners</b>	<b>Notes:</b>
							1. Identify, select and use related fasteners.	
							2. Perform repair procedures to fasteners, using proper tools and equipment.	
							Other:	

0	1	2	3	4	5	6	<b>E. Maintain Marine Fuel and Lubrication Systems</b>	<b>Notes:</b>
							1. Demonstrate knowledge of Coast Guard fuel system regulations.	
							2. Demonstrate knowledge of marine fuels, engine oils and their related systems including service and repair, and mix ratios.	
							3. Service, repair, troubleshoot and/or replace fuel and lubrication systems.	
							4. Check fuel leak warning device.	
							5. Remove/repair oil pan gasket (4 cycle).	
							6. Remove/repair oil pump (4 cycle).	
							Other:	

0	1	2	3	4	5	6	<b>F. Maintain Marine Ignition Systems</b>	<b>Notes:</b>
							1. Troubleshoot, service and repair marine ignition systems.	
							2. Troubleshoot, service and repair correctly pwc electrical systems.	
							3. Perform timing and synchronizing using manual.	
							4. Repair/service and bench test distributor.	
							5. Check and adjust linkage.	
							6. Inspect primary and secondary circuits.	
							7. Remove/repair/test distributors.	
							8. Rebuild distributors.	
							9. Remove/replace and check control modules.	
							Other:	

0	1	2	3	4	5	6	<b>G. Maintain Marine Electrical Systems</b>	<b>Notes:</b>
							1. Read and interpret Coast Guard wiring codes and regulations.	
							2. Read and interpret electrical meters.	
							3. Read electrical schematics.	
							4. Perform tests on electrical components in electrical shift units.	
							5. Test, service, and/or repair battery.	
							6. Test, repair, and/or replace neutral safety switch.	
							7. Test, repair, and/or replace charging system components.	
							8. Install, troubleshoot, service and repair electrical systems, starting systems, and marine instrumentation.	
							Other:	

0	1	2	3	4	5	6	H. Maintain Cooling Systems	Notes:
							1. Demonstrate knowledge of cooling system operations.	
							2. Perform proper winterizing procedures on cooling systems.	
							3. Diagnose, service, and repair raw water systems.	
							4. Diagnose, service, and repair closed water systems.	
							5. Troubleshoot, service and repair correctly outboard, sterndrive and inboard cooling and exhaust systems.	
							Other:	

0	1	2	3	4	5	6	I. Maintain Drive Systems	Notes:
							1. Demonstrate knowledge of drive systems and theory of operation for marine applications.	
							2. Inspect and service drive train.	
							3. Inspect and troubleshoot all drive system component parts.	
							4. Service and prepare sterndrive and/or gearcase.	
							5. Inspect, troubleshoot and service gearcases on marine drive systems.	
							6. Check/align engine as required for acceptance of gearcases.	
							7. Troubleshoot, service and repair correctly stern drive, inboard and pwc engine systems.	
							8. Perform correctly stern drive, outboard and inboard engine system tune-up procedures.	
							9. Explain correctly engine detonation.	
							10. Explain correctly engine pre-ignition.	
							11. Troubleshoot and repair correctly transom plate systems.	
							12. Troubleshoot and repair correctly inboard, outboard and pwc jet pump systems.	
							13. Diagnose, service, repair, and adjust OMC outboard mechanical shift lower units and O/B shift and throttle systems.	
							14. Remove, install and service OMC Cobra sterndrive.	
							15. Service/repair shift and throttle systems.	
							16. Service/repair Mercury OB cam-shift lower units.	
							17. Service/repair Mercury OB E-Z shift lower units.	
							18. Service/repair Mercury OB shift and throttle system.	
							19. Service/repair MerCruiser gimble ring and bell ring.	
							20. Service/repair MerCruiser - 1 drive shaft housing.	
							21. Service/repair MerCruiser - 1 gear housing.	
							22. Service/repair MerCruiser 1-R & 1-MR gear housings.	

								23. Service/repair MerCruiser Alpha One gear housing	
								24. Service/repair MerCruiser shift and throttle systems.	
								25. Service/repair Volvo SP & DP sterndrive transom shield.	
								26. Service/repair Volvo SP sterndrive upper gear, intermediate and lower year housing.	
								27. Demonstrate the removal and installation procedures for the Volvo sterndrives.	
								28. Service, repair, and adjust Volvo shift & throttle systems.	
								29. Remove/inspect and replace seals.	
								30. Inspect/service transom mounts.	
								Other:	

<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>J. Maintain Tilt and Trim Systems</b>	<b>Notes:</b>
							1. Inspect, test, service and repair/replace power trim tilt systems, including missections and lines.	
							2. Describe correctly how trim systems affect different hull configurations.	
							Other:	

<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>K. Maintain Steering Systems</b>	<b>Notes:</b>
							1. Service/repair marine steering systems.	
							2. Service/repair marine steering system accessories.	
							Other:	

<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>L. Overhaul Four Stroke-Cycle Engines</b>	<b>Notes:</b>
							1. Identify characteristics and cycles of the four stroke/cycle engine.	
							2. Disassemble a four stroke/cycle engine.	
							3. Demonstrate overhaul diagnostic and service procedures for four stroke/cycle engines.	
							4. Service and rebuild cylinder heads, including spacing valve guides (4 cycle).	
							Other:	

<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>M. Overhaul Two Stroke-Cycle Engines</b>	<b>Notes:</b>
							1. Identify characteristics and cycles of the two stroke/cycle engine.	
							2. Disassemble a two stroke/cycle engine.	
							3. Demonstrate overhaul diagnostic and service procedures for two stroke/cycle engines.	
							4. Remove/repair cylinder head.	
							Other:	

0	1	2	3	4	5	6	N. Rigging	Notes:
							1. Avoid accidents by following safety procedures and maintaining a safe working environment.	
							2. Demonstrate first aid procedures.	
							3. Describe and locate MSDS information.	
							4. Describe OSHA regulations relevant to the marine shop environment.	
							5. Identify, use and maintain necessary tools used in marine systems repair.	
							6. Select and use common mechanical fasteners used in marine systems repair.	
							7. Remove seized fasteners and repair damaged threads as necessary.	
							8. Name boat hull systems components and explain the difference between types of systems.	
							9. Load, tow, and launch a boat on a trailer system safely and courteously without damage at test site.	
							10. Operate boats safely and courteously without damage at a test site.	
							11. Service and repair correctly marine trailer systems.	
							Other:	

0	1	2	3	4	5	6	O. Conduct Preventative Maintenance	Notes:
							1. Perform basic outboard inspections correctly.	
							2. Perform stern drive systems basic inspections correctly.	
							3. Identify and service correctly dock power systems.	
							4. Identify and service correctly hull power distribution panels.	
							5. Identify and service correctly hull AC applications.	
							6. Identify and service correctly hull AC generator systems.	
							7. Identify and service correctly hull air conditioning systems.	
							8. Identify and service correctly hull waste systems.	
							9. Charge, test, and evaluate correctly engine lead-acid batteries.	
							10. Describe correctly winterizing procedures for outboard systems.	
							11. Describe correctly winterizing procedures for inboard/outboard systems.	
							12. Describe correctly winterizing procedures for inboard systems.	
							13. Describe correctly winterizing procedures.	
							14. Inspect engine mounts/shocks.	
							15. Inspect cranking motor mounting bolts.	
							16. Service and/or replace sparkplugs.	

								17. Check and adjust linkage.	
								18. Service flame arrestor.	
								19. Inspect and replace hoses and connectors.	
								20. Inspect, service, and adjust belts.	
								21. Remove/clean and replace spark arrestor.	
								22. Remove/inspect and replace filters.	
								23. Remove/inspect and replace hoses and clamps.	
								Service correctly outboard powerhead systems.	
								Service correctly inboard powerhead systems.	
								Other:	

0	1	2	3	4	5	6	<b>P. Demonstrating Leadership</b>	<b>Notes:</b>
							1. Demonstrate an understanding of SkillsUSA/VICA, its structure, and activities.	
							2. Demonstrate an understanding of one's personal values.	
							3. Perform tasks related to effective personal management skills.	
							4. Demonstrate interpersonal skills.	
							5. Demonstrate etiquette and courtesy.	
							6. Demonstrate effectiveness in oral and written communications.	
							7. Develop and maintain a code of professional ethics.	
							8. Maintain good professional appearance.	
							9. Perform basic tasks related to securing and terminating employment.	
							10. Perform basic parliamentary procedures in group meeting.	
							Other:	