
















Basic Skills Matrix

Section A — Introduction to Engine Principles and Procedures Unit 1-A: Engine Operating Principles

Academic and Workplace Skills					
Obj. #	Task	Icon	Skill	Sub Skill	Description
9	Identify companion cylinders (AS-1)		Reading	Functional reading	Follow written instructions
			Critical thinking	Cognitive activities	Draw conclusions
10	Locate and record engine specifications (AS-2)		Reading	Research/reference	Use standard references
			Writing	Functional reading Functional writing	Follow written instructions Complete forms and records
11	Identify valve and piston position during each stroke (AS-3)		Reading	Functional reading	Follow written instructions
			Critical thinking	Cognitive activities	Collect/record information Identify critical elements/issues Analyze/synthesize information Draw conclusions Predict results/outcomes
12	Locate TDC for #1 piston (JS-1)		Reading	Functional reading	Follow written instructions Use content area vocabulary
			Writing	Functional writing	Complete forms and records
			Critical thinking	Cognitive activities	Collect/record information Identify critical elements/issues Draw conclusions
			Employability	Job acquisition/development	Master specific job task/procedure Practice good work habits/attitudes Develop self confidence/esteem

Basic Skills Matrix

Unit 1-A: Engine Operating Principles (cont.)

Academic and Workplace Skills					
Obj. #	Task	Icon	Skill	Sub Skill	Description
13	Measure bore and stroke and compute engine displacement (JS-2)		Reading	Functional reading	Follow written instructions Use content area vocabulary
			Writing	Functional writing	Complete forms and records
			Math	Operation and calculation	Use exponential notations Calculate with decimals
			Critical thinking	Cognitive activities	Select/apply mathematical procedure Use English and metric measures
			Employability	Job acquisition/development	Master specific job task/procedure Practice good work habits/attitudes Develop self confidence/esteem













Basic Skills Matrix

Unit 2–A: Disassembly Procedures and Analysis

Academic and Workplace Skills					
Obj. #	Task	Icon	Skill	Sub Skill	Description
15	Determine required tools for various tasks (AS-1)	  	Reading Writing Critical thinking	Research/ reference Functional reading Functional writing Cognitive activities	Use standard references Follow written instructions Use content area vocabulary Complete forms and records Collect/record information Draw conclusions
16	Evaluate worn engine components (AS-2)	  	Reading Writing Critical thinking	Functional reading Functional writing Cognitive activities	Follow written instructions Use content area vocabulary Complete forms and records Collect/record information Identify critical elements/issues Identify underlying causes Analyze/synthesize information Draw conclusions
17	Determine possible causes of engine component failures (AS-3)	  	Reading Writing Critical thinking	Research/ reference Functional reading Functional writing Cognitive activities	Use standard references Follow written instructions Use content area vocabulary Complete forms and records Collect/record information Identify critical elements/issues Define a problem Identify underlying causes Apply a problem-solving model Analyze/synthesize information Identify/analyze underlying assumptions Draw conclusions













Basic Skills Matrix

Unit 2–A: Disassembly Procedures and Analysis (cont.)

Academic and Workplace Skills					
Obj. #	Task	Icon	Skill	Sub Skill	Description
18	Steam clean an engine (JS-1)	   	Reading Writing Critical thinking Employability	Functional reading Functional writing Cognitive activities Job acquisition/development	Follow written instructions Use content area vocabulary Complete forms and records Collect/record information Identify critical elements/issues Draw conclusions Master specific job task/procedure Practice good work habits/attitudes Develop self confidence/esteem
19	Remove engine accessories and external lines (JS-2)	   	Reading Writing Critical thinking Employability	Functional reading Functional writing Cognitive activities Job acquisition/development	Follow written instructions Use content area vocabulary Complete forms and records Collect/record information Identify critical elements/issues Draw conclusions Master specific job task/procedure Practice good work habits/attitudes Develop self confidence/esteem
20	Remove engine and mount on an engine stand (JS 3)	   	Reading Writing Critical thinking Employability	Functional reading Functional writing Cognitive activities Job acquisition/development	Follow written instructions Use content area vocabulary Complete forms and records Collect/record information Identify critical elements/issues Draw conclusions Master specific job task/procedure Practice good work habits/attitudes Develop self confidence/esteem









Basic Skills Matrix

Unit 2–A: Disassembly Procedures and Analysis (cont.)

Academic and Workplace Skills					
Obj. #	Task	Icon	Skill	Sub Skill	Description
21	Engine disassembly: remove cylinder head (JS-4)	   	Reading Writing Critical thinking Employability	Functional reading Functional writing Cognitive activities Job acquisition/development	Follow written instructions Use content area vocabulary Complete forms and records Collect/record information Identify critical elements/issues Draw conclusions Master specific job task/procedure Practice good work habits/attitudes Develop self confidence/esteem
22	Engine disassembly: remove gear train and camshaft (JS-5)	   	Reading Writing Critical thinking Employability	Functional reading Functional writing Cognitive activities Job acquisition/development	Follow written instructions Use content area vocabulary Complete forms and records Collect/record information Identify critical elements/issues Draw conclusions Master specific job task/procedure Practice good work habits/attitudes Develop self confidence/esteem
23	Engine disassembly: remove pistons and connecting rods (JS-6)	   	Reading Writing Critical thinking Employability	Functional reading Functional writing Cognitive activities Job acquisition/development	Follow written instructions Use content area vocabulary Complete forms and records Collect/record information Identify critical elements/issues Draw conclusions Master specific job task/procedure Practice good work habits/attitudes Develop self confidence/esteem

Basic Skills Matrix














Unit 2–A: Disassembly Procedures and Analysis (cont.)

Academic and Workplace Skills					
Obj. #	Task	Icon	Skill	Sub Skill	Description
24	Engine disassembly: remove cylinder liners (JS-7)		Reading	Functional reading	Follow written instructions Use content area vocabulary
			Writing	Functional writing	Complete forms and records
			Critical thinking	Cognitive activities	Collect/record information Identify critical elements/issues Draw conclusions
			Employability	Job acquisition/ development	Master specific job task/procedure Practice good work habits/attitudes Develop self confidence/esteem
25	Engine disassembly: remove crankshaft (JS-8)		Reading	Functional reading	Follow written instructions Use content area vocabulary
			Writing	Functional writing	Complete forms and records
			Critical thinking	Cognitive activities	Collect/record information Identify critical elements/issues Draw conclusions
			Employability	Job acquisition/ development	Master specific job task/procedure Practice good work habits/attitudes Develop self confidence/esteem

Basic Skills Matrix





Section B — Engine Systems and Components

Unit 1-B: Lubrication Systems

Academic and Workplace Skills					
Obj. #	Task	Icon	Skill	Sub Skill	Description
12	Service and install oil pump and oil pump drive components (JS-1)	    	Reading Writing Math Critical thinking Employability	Functional reading Functional writing Functional math Cognitive activities Job acquisition/development	Follow written instructions Use content area vocabulary Complete forms and records Make measurements Collect/record information Identify critical elements/issues Draw conclusions Master specific job task/procedure Practice good work habits/attitudes Develop self confidence/esteem
13	Service and inspect lubrication system screens and pipes (JS-2)	   	Reading Writing Critical thinking Employability	Functional reading Functional writing Cognitive activities Job acquisition/development	Follow written instructions Use content area vocabulary Complete forms and records Collect/record information Identify critical elements/issues Draw conclusions Master specific job task/procedure Practice good work habits/attitudes Develop self confidence/esteem
14	Service and inspect oil pressure regulator valve and bypass valve (JS-3)	   	Reading Writing Critical thinking Employability	Functional reading Functional writing Cognitive activities Job acquisition/development	Follow written instructions Use content area vocabulary Complete forms and records Collect/record information Identify critical elements/issues Draw conclusions Master specific job task/procedure Practice good work habits/attitudes Develop self confidence/esteem













Basic Skills Matrix

Unit 1-B: Lubrication Systems (cont.)

Academic and Workplace Skills					
Obj. #	Task	Icon	Skill	Sub Skill	Description
15	Service and inspect oil cooler and lines (JS-4)		Reading	Functional reading	Follow written instructions Use content area vocabulary
			Writing	Functional writing	Complete forms and records
			Critical thinking	Cognitive activities	Collect/record information Identify critical elements/issues Draw conclusions
			Employability	Job acquisition/development	Master specific job task/procedure Practice good work habits/attitudes Develop self confidence/esteem













Basic Skills Matrix

Unit 2-B: Cooling Systems

Academic and Workplace Skills					
Obj. #	Objective	Icon	Skill	Sub Skill	Description
16	Flush, refill, and bleed coolant system (JS-1)		Reading	Functional reading	Follow written instructions Use content area vocabulary
			Writing	Functional writing	Complete forms and records
			Critical thinking	Cognitive activities	Collect/record information Identify critical elements/issues Draw conclusions
			Employability	Job acquisition/development	Master specific job task/procedure Practice good work habits/attitudes Develop self confidence/esteem
17	Inspect water pump, belts, and hoses (JS-2)		Reading	Functional reading	Follow written instructions Use content area vocabulary
			Writing	Functional writing	Complete forms and records
			Critical thinking	Cognitive activities	Collect/record information Identify critical elements/issues Draw conclusions
			Employability	Job acquisition/development	Master specific job task/procedure Practice good work habits/attitudes Develop self confidence/esteem
18	Check operation of fan assembly and controls (JS-3)		Reading	Functional reading	Follow written instructions Use content area vocabulary
			Writing	Functional writing	Complete forms and records
			Critical thinking	Cognitive activities	Collect/record information Identify critical elements/issues Draw conclusions
			Employability	Job acquisition/development	Master specific job task/procedure Practice good work habits/attitudes Develop self confidence/esteem













Basic Skills Matrix

Unit 2–B: Cooling Systems (cont.)

Academic and Workplace Skills					
Obj. #	Task	Icon	Skill	Sub Skill	Description
19	Test operation of thermostat installed in engine (JS-4)	   	Reading Writing Critical thinking Employability	Functional reading Functional writing Cognitive activities Job acquisition/development	Follow written instructions Use content area vocabulary Complete forms and records Collect/record information Identify critical elements/issues Draw conclusions Master specific job task/procedure Practice good work habits/attitudes Develop self confidence/esteem
20	Test operation of thermostat on the bench (JS-5)	   	Reading Writing Critical thinking Employability	Functional reading Functional writing Cognitive activities Job acquisition/development	Follow written instructions Use content area vocabulary Complete forms and records Collect/record information Identify critical elements/issues Draw conclusions Master specific job task/procedure Practice good work habits/attitudes Develop self confidence/esteem
21	Check operation and accuracy of temperature indicating system (JS-6)	   	Reading Writing Critical thinking Employability	Functional reading Functional writing Cognitive activities Job acquisition/development	Follow written instructions Use content area vocabulary Complete forms and records Collect/record information Identify critical elements/issues Draw conclusions Master specific job task/procedure Practice good work habits/attitudes Develop self confidence/esteem















Basic Skills Matrix

Unit 3–B: Cylinder Blocks and Liners

Academic and Workplace Skills					
Obj. #	Task	Icon	Skill	Sub Skill	Description
6	Pressure test a cylinder block (JS-1)		Reading	Functional reading	Follow written instructions Use content area vocabulary
			Writing	Functional writing	Complete forms and records
			Critical thinking	Cognitive activities	Collect/record information Identify critical elements/issues Draw conclusions
			Employability	Job acquisition/development	Master specific job task/procedure Practice good work habits/attitudes Develop self confidence/esteem
7	Disassemble and clean a cylinder block (JS-2)		Reading	Functional reading	Follow written instructions Use content area vocabulary
			Writing	Functional writing	Complete forms and records
			Critical thinking	Cognitive activities	Collect/record information Identify critical elements/issues Draw conclusions
			Employability	Job acquisition/development	Master specific job task/procedure Practice good work habits/attitudes Develop self confidence/esteem
8	Inspect a cylinder block (JS-3)		Reading	Functional reading	Follow written instructions Use content area vocabulary
			Writing	Functional writing	Complete forms and records
			Critical thinking	Cognitive activities	Collect/record information Identify critical elements/issues Draw conclusions
			Employability	Job acquisition/development	Master specific job task/procedure Practice good work habits/attitudes Develop self confidence/esteem













Basic Skills Matrix

Unit 3-B: Cylinder Blocks and Liners (cont.)

Academic and Workplace Skills					
Obj. #	Task	Icon	Skill	Sub Skill	Description
9	Install new camshaft bushings (JS-4)		Reading	functional reading	Follow written instructions Use content area vocabulary
			Writing	Functional writing	Complete forms and records
			Critical thinking	Cognitive activities	Collect/record information Identify critical elements/issues Draw conclusions
			Employability	Job acquisition/development	Master specific job task/procedure Practice good work habits/attitudes Develop self confidence/esteem
10	Clean and inspect cylinder bores (JS-5)		Reading	Functional reading	Follow written instructions Use content area vocabulary
			Writing	Functional writing	Complete forms and records
			Math	Functional math	Make measurements
			Critical thinking	Cognitive activities	Collect/record information Identify critical elements/issues Draw conclusions
			Employability	Job acquisition/development	Master specific job task/procedure Practice good work habits/attitudes Develop self confidence/esteem
11	Install cylinder liners and set liner protrusion (JS-6)		Reading	Functional reading	Follow written instructions Use content area vocabulary
			Writing	Functional writing	Complete forms and records
			Math	Functional math	Make measurements
			Critical thinking	Cognitive activities	Collect/record information Identify critical elements/issues Draw conclusions
			Employability	Job acquisition/development	Master specific job task/procedure Practice good work habits/attitudes Develop self confidence/esteem













Basic Skills Matrix

Unit 4-B: Crankshafts and Bearings

Academic and Workplace Skills					
Obj. #	Objective	Icon	Skill	Sub Skill	Description
15	Remove, clean, and inspect a crankshaft (JS-1)		Reading	Functional reading	Follow written instructions Use content area vocabulary
			Writing	Functional writing	Complete forms and records
			Math	Data analysis and display	Collect/record data
		Functional math		Calculate measurements taken from measuring devices	
			Science	General science	Use scientific instruments
			Critical thinking	Cognitive activities	Collect/record information Identify critical elements/issues
	Employability	Job acquisition/development	Master specific job task/procedure Practice good work habits/attitudes Develop self confidence/esteem		
16	Install main bearings and crankshaft (JS-2)		Reading	Functional reading	Follow written instructions Use content area vocabulary
			Writing	Functional writing	Complete forms and records
			Math	Data analysis and display	Collect/record data
		Functional math		Calculate measurements taken from measuring devices	
			Science	General science	Use scientific instruments
			Critical thinking	Cognitive activities	Collect/record information Identify critical elements/issues
	Employability	Job acquisition/development	Master specific job task/procedure Practice good work habits/attitudes Develop self confidence/esteem		













Basic Skills Matrix

Unit 4-B: Crankshafts and Bearings (cont.)

Academic and Workplace Skills					
Obj. #	Task	Icon	Skill	Sub Skill	Description
17	Perform an in-frame bearing roll-in (JS-3)		Reading	Functional reading	Follow written instructions Use content area vocabulary
			Writing	Functional writing	Complete forms and records
			Math	Data analysis and display	Collect/record data
		Functional math		Calculate measurements taken from measuring devices	
			Science	General science	Use scientific instruments
			Critical thinking	Cognitive activities	Collect/record information Identify critical elements/issues
			Employability	Job acquisition/development	Master specific job task/procedure Practice good work habits/attitudes Develop self confidence/esteem
18	Inspect viscous vibration damper/harmonic balancer (JS-4)		Reading	Functional reading	Follow written instructions Use content area vocabulary
			Writing	Functional writing	Complete forms and records
			Math	Data analysis and display	Collect/record data
		Functional math		Calculate measurements taken from measuring devices	
			Science	General science	Use scientific instruments
			Critical thinking	Cognitive activities	Collect/record information Identify critical elements/issues
			Employability	Job acquisition/development	Master specific job task/procedure Practice good work habits/attitudes Develop self confidence/esteem
















Basic Skills Matrix

Unit 4-B: Crankshafts and Bearings (cont.)

Academic and Workplace Skills					
Obj. #	Task	Icon	Skill	Sub Skill	Description
19	Inspect bonded vibration damper/harmonic balancer (JS-5)		Reading	Functional reading	Follow written instructions Use content area vocabulary
			Writing	Functional writing	Complete forms and records
			Math	Data analysis and display	Collect/record data
		Functional math		Calculate measurements taken from measuring devices	
			Science	General science	Use scientific instruments
			Critical thinking	Cognitive activities	Collect/record information Identify critical elements/issues
			Employability	Job acquisition/development	Master specific job task/procedure Practice good work habits/attitudes Develop self confidence/esteem
20	Inspect flywheel (JS-6)		Reading	Functional reading	Follow written instructions Use content area vocabulary
			Writing	Functional writing	Complete forms and records
			Math	Data analysis and display	Collect/record data
		Functional math		Calculate measurements taken from measuring devices	
			Science	General science	Use scientific instruments
			Critical thinking	Cognitive activities	Collect/record information Identify critical elements/issues
			Employability	Job acquisition/development	Master specific job task/procedure Practice good work habits/attitudes Develop self confidence/esteem













Basic Skills Matrix

Unit 5–B: Pistons and Connecting Rods

Academic and Workplace Skills					
Obj. #	Objective	Icon	Skill	Sub Skill	Description
16	Remove, disassemble, and inspect a piston and connecting rod assembly (JS-1)	     	Reading Writing Math Science Critical thinking Employability	Functional reading Functional writing Data analysis and display General science Cognitive activities Job acquisition/development	Follow written instructions Use content area vocabulary Complete forms and records Collect/record data Use scientific instruments Collect/record information Identify critical elements/issues Master specific job task/procedure Practice good work habits/attitudes Develop self confidence/esteem
17	Measure piston-to-cylinder wall clearance and ring end gap (JS-2)	    	Reading Writing Math Critical thinking Employability	Functional reading Functional writing Data analysis and display Cognitive activities Job acquisition/development	Follow written instructions Use content area vocabulary Complete forms and records Collect/record data Collect/record information Identify critical elements/issues Master specific job task/procedure Practice good work habits/attitudes Develop self confidence/esteem
18	Assemble and install piston and connecting rod assembly (JS-3)	   	Reading Writing Critical thinking Employability	Functional reading Functional writing Cognitive activities Job acquisition/development	Follow written instructions Use content area vocabulary Complete forms and records Identify critical elements/issues Master specific job task/procedure Practice good work habits/attitudes Develop self confidence/esteem






Basic Skills Matrix

Unit 6–B: Camshafts, Trains, and Timing

Academic and Workplace Skills					
Obj. #	Task	Icon	Skill	Sub Skill	Description
14	Remove, clean, and inspect a camshaft (JS-1)		Reading	Functional reading	Follow written instructions Use content area vocabulary
			Writing	Functional writing	Complete forms and records
			Math	Data analysis and display	Collect/record data
		Functional math		Calculate measurements taken from measuring devices	
			Science	General science	Use scientific instruments
			Critical thinking	Cognitive activities	Collect/record information Identify critical elements/issues
			Employability	Job acquisition/development	Master specific job task/procedure Practice good work habits/attitudes Develop self confidence/esteem
15	Remove, inspect, and install cam bushings (JS-2)		Reading	Functional reading	Follow written instructions Use content area vocabulary
			Writing	Functional writing	Complete forms and records
			Math	Data analysis and display	Collect/record data
		Functional math		Calculate measurements taken from measuring devices	
			Science	General science	Use scientific instruments
			Critical thinking	Cognitive activities	Collect/record information Identify critical elements/issues
			Employability	Job acquisition/development	Master specific job task/procedure Practice good work habits/attitudes Develop self confidence/esteem















Basic Skills Matrix

Unit 6–B: Camshafts, Trains, and Timing (cont.)

Academic and Workplace Skills					
Obj. #	Task	Icon	Skill	Sub Skill	Description
16	Install a camshaft and set cam timing (JS-3)		Reading	Functional reading	Follow written instructions Use content area vocabulary
			Writing	Functional writing	Complete forms and records
			Math	Data analysis and display	Collect/record data
			Critical thinking	Cognitive activities	Collect/record information Identify critical elements/issues
			Employability	Job acquisition/development	Master specific job task/procedure Practice good work habits/attitudes Develop self confidence/esteem






Basic Skills Matrix

Unit 7-B: Cylinder Head Assemblies

Academic and Workplace Skills					
Obj. #	Task	Icon	Skill	Sub Skill	Description
11	Locate and label intake and exhaust valves (AS-1)	 	Reading Writing	Functional reading Composition	Follow written instructions Interpret graphics and symbols Use content area vocabulary Construct graphics and symbols
12	Clean and inspect a cylinder head (JS-1)	     	Reading Writing Math Science Critical thinking Employability	Functional reading Functional writing Functional math General science Cognitive activities Job acquisition/development	Follow written instructions Use content area vocabulary Complete forms and records Calculate measurements taken from measuring devices Use scientific instruments Collect/record information Identify critical elements/issues Master specific job task/procedure Practice good work habits/attitudes Develop self confidence/esteem
13	Recondition a cylinder head (JS-2)	     	Reading Writing Math Science Critical thinking Employability	Functional reading Functional writing Functional math General science Cognitive activities Job acquisition/development	Follow written instructions Use content area vocabulary Complete forms and records Calculate measurements taken from measuring devices Use scientific instruments Collect/record information Identify critical elements/issues Master specific job task/procedure Practice good work habits/attitudes Develop self confidence/esteem











Basic Skills Matrix

Unit 7-B: Cylinder Head Assemblies (cont.)

Academic and Workplace Skills					
Obj. #	Task	Icon	Skill	Sub Skill	Description
14	Install a cylinder head assembly and adjust valves (JS-3)	    	Reading Writing Math Critical thinking Employability	Functional reading Functional writing Functional math Cognitive activities Job acquisition/development	Follow written instructions Use content area vocabulary Complete forms and records Calculate measurements taken from measuring devices Identify critical elements/issues Master specific job task/procedure Practice good work habits/attitudes Develop self confidence/esteem













Basic Skills Matrix

Unit 8-B: Air Induction and Exhaust Systems

Academic and Workplace Skills					
Obj. #	Task	Icon	Skill	Sub Skill	Description
14	Inspect and test air induction system (JS-1)		Reading	Functional reading	Follow written instructions Use content area vocabulary
			Writing	Functional writing	Complete forms and records
			Math	Functional math	Calculate measurements taken from measuring devices
			Science	General science	Use scientific instruments
			Critical thinking	Cognitive activities	Collect/record information Identify critical elements/issues
			Employability	Job acquisition/development	Master specific job task/procedure Practice good work habits/attitudes Develop self confidence/esteem
15	Inspect and service turbo/supercharger and related components (JS-2)		Reading	Functional reading	Follow written instructions Use content area vocabulary
			Writing	Functional writing	Complete forms and records
			Math	Functional math	Calculate measurements taken from measuring devices
			Critical thinking	Cognitive activities	Collect/record information Identify critical elements/issues
			Employability	Job acquisition/development	Master specific job task/procedure Practice good work habits/attitudes Develop self confidence/esteem

Basic Skills Matrix

Unit 8-B: Air Induction and Exhaust Systems (cont.)

Academic and Workplace Skills					
Obj. #	Task	Icon	Skill	Sub Skill	Description
16	Clean and test jacket water intercooler (JS-3)	     	Reading Writing Math Science Critical thinking Employability	Functional reading Functional writing Functional math General science Cognitive activities Job acquisition/development	Follow written instructions Use content area vocabulary Complete forms and records Calculate measurements taken from measuring devices Use scientific instruments Collect/record information Identify critical elements/issues Master specific job task/procedure Practice good work habits/attitudes Develop self confidence/esteem
17	Clean and test air-to-air intercooler (JS-4)	     	Reading Writing Math Science Critical thinking Employability	Functional reading Functional writing Functional math General science Cognitive activities Job acquisition/development	Follow written instructions Use content area vocabulary Complete forms and records Calculate measurements taken from measuring devices Use scientific instruments Collect/record information Identify critical elements/issues Master specific job task/procedure Practice good work habits/attitudes Develop self confidence/esteem

















Basic Skills Matrix

Unit 8–B: Air Induction and Exhaust Systems (cont.)

Academic and Workplace Skills					
Obj. #	Task	Icon	Skill	Sub Skill	Description
18	Inspect and test exhaust system (JS-5)		Reading	Functional reading	Follow written instructions Use content area vocabulary
			Writing	Functional writing	Complete forms and records
			Math	Functional math	Calculate measurements taken from measuring devices
			Science	General science	Use scientific instruments
			Critical thinking	Cognitive activities	Collect/record information Identify critical elements/issues
			Employability	Job acquisition/development	Master specific job task/procedure Practice good work habits/attitudes Develop self confidence/esteem
19	Inspect starting preheater controls (JS-6)		Reading	Functional reading	Follow written instructions Use content area vocabulary
			Writing	Functional writing	Complete forms and records
			Critical thinking	Cognitive activities	Collect/record information Identify critical elements/issues
			Employability	Job acquisition/development	Master specific job task/procedure Practice good work habits/attitudes Develop self confidence/esteem
20	Test starting fluid system and controls (JS-7)		Reading	Functional reading	Follow written instructions Use content area vocabulary
			Writing	Functional writing	Complete forms and records
			Critical thinking	Cognitive activities	Collect/record information Identify critical elements/issues
			Employability	Job acquisition/development	Master specific job task/procedure Practice good work habits/attitudes Develop self confidence/esteem





Basic Skills Matrix

Unit 9–B: Engine Brakes and Retarders

Academic and Workplace Skills					
Obj. #	Task	Icon	Skill	Sub Skill	Description
16	Remove, inspect, install, and adjust a Jacobs engine brake (JS-1)	   	Reading Writing Critical thinking Employability	Functional reading Functional writing Cognitive activities Job acquisition/development	Follow written instructions Use content area vocabulary Complete forms and records Collect/record information Identify critical elements/issues Master specific job task/procedure Practice good work habits/attitudes Develop self confidence/esteem
17	Check operation of a BrakeSaver® (JS-2)	   	Reading Writing Critical thinking Employability	Functional reading Functional writing Cognitive activities Job acquisition/development	Follow written instructions Use content area vocabulary Complete forms and records Collect/record information Identify critical elements/issues Master specific job task/procedure Practice good work habits/attitudes Develop self confidence/esteem
18	Check operation of an exhaust brake (JS-3)	   	Reading Writing Critical thinking Employability	Functional reading Functional writing Cognitive activities Job acquisition/development	Follow written instructions Use content area vocabulary Complete forms and records Identify critical elements/issues Master specific job task/procedure Practice good work habits/attitudes Develop self confidence/esteem
19	Remove, clean, and reinstall an exhaust brake (JS-4)	   	Reading Writing Critical thinking Employability	Functional reading Functional writing Cognitive activities Job acquisition/development	Follow written instructions Use content area vocabulary Complete forms and records Identify critical elements/issues Master specific job task/procedure Practice good work habits/attitudes Develop self confidence/esteem

Basic Skills Matrix










Unit 9-B: Engine Brakes and Retarders (cont.)

Academic and Workplace Skills					
Obj. #	Task	Icon	Skill	Sub Skill	Description
20	Check operation of a driveline retarder (JS-5)		Reading	Functional reading	Follow written instructions Use content area vocabulary
			Writing	Functional writing	Complete forms and records
			Critical thinking	Cognitive activities	Identify critical elements/issues
			Employability	Job acquisition/development	Master specific job task/procedure Practice good work habits/attitudes Develop self confidence/esteem

Basic Skills Matrix





Section C — Fuel Systems

Unit 1-C: Basic Fuel Systems and Components

Academic and Workplace Skills					
Obj. #	Task	Icon	Skill	Sub Skill	Description
18	Trace fuel flow through basic fuel systems (AS-1)	  	Reading Math Critical thinking	Functional reading Data analysis/ and display Cognitive activities	Follow written instructions Interpret graphics and symbols Use content area vocabulary Interpret plans/blueprints Analyze/synthesize information Identify/analyze underlying assumptions Draw conclusions Predict results/outcomes
19	Check fuel level, quality and consumption (JS-1)	     	Reading Writing Math Science Critical thinking Employability	Functional reading Functional writing Operation and calculation Math application Data analysis and display Functional math Physical science Cognitive activities	Follow written instructions Use content area vocabulary Complete forms and records Calculate with whole numbers Calculate with fractions Calculate with decimals Solve formulae and equations Solve time/rate/distance problems Collect/record data Make measurements Investigate forms/changes of matter Collect/record information Identify critical elements/issues Master specific job task/procedure Practice good work habits/attitudes Develop self confidence/esteem















Basic Skills Matrix

Unit 1-C: Basic Fuel Systems and Components (cont.)

Academic and Workplace Skills					
Obj. #	Task	Icon	Skill	Sub Skill	Description
20	Inspect and service basic fuel supply components (JS-2)		Reading	Functional reading	Follow written instructions Use content area vocabulary
			Writing	Functional writing	Complete forms and records
			Critical thinking	Cognitive activities	Collect/record information Identify critical elements/issues
			Employability	Job acquisition/development	Master specific job task/procedure Practice good work habits/attitudes Develop self confidence/esteem









Basic Skills Matrix

Unit 2-C: Mechanical Fuel Injection Diagnosis and Repair

Academic and Workplace Skills					
Obj. #	Task	Icon	Skill	Sub Skill	Description
24	Isolate, remove, test, rebuild or replace, and reinstall injection nozzles (JS-1)	    	Reading Writing Science Critical thinking Employability	Functional reading Functional writing General science Cognitive activities Job acquisition/development	Follow written instructions Use content area vocabulary Complete forms and records Use scientific instruments Collect/record information Identify critical elements/issues Draw conclusions Master specific job task/procedure Practice good work habits/attitudes Develop self confidence/esteem
25	Isolate, remove, test, and reinstall or replace mechanical unit injectors (JS-2)	    	Reading Writing Science Critical thinking Employability	Functional reading Functional writing General science Cognitive activities Job acquisition/development	Follow written instructions Use content area vocabulary Complete forms and records Use scientific instruments Collect/record information Identify critical elements/issues Draw conclusions Master specific job task/procedure Practice good work habits/attitudes Develop self confidence/esteem
26	Inspect, test, adjust, and time a distributor-type (rotary) injection pump; determine needed repairs (JS-3)	   	Reading Writing Critical thinking Employability	Functional reading Functional writing Cognitive activities Job acquisition/development	Follow written instructions Use content area vocabulary Complete forms and records Collect/record information Identify critical elements/issues Draw conclusions Master specific job task/procedure Practice good work habits/attitudes Develop self confidence/esteem











Basic Skills Matrix

Unit 2–C: Mechanical Fuel Injection Diagnosis and Repair (cont.)

Academic and Workplace Skills					
Obj. #	Task	Icon	Skill	Sub Skill	Description
27	Inspect, test, adjust, and time an in-line injection pump; determine needed repairs (JS-4)	   	Reading Writing Critical thinking Employability	Functional reading Functional writing Cognitive activities Job acquisition/development	Follow written instructions Use content area vocabulary Complete forms and records Collect/record information Identify critical elements/issues Draw conclusions Master specific job task/procedure Practice good work habits/attitudes Develop self confidence/esteem
28	Inspect, test, and adjust a PT injection pump and time the injectors; determine needed repairs (JS-5)	   	Reading Writing Critical thinking Employability	Functional reading Functional writing Cognitive activities Job acquisition/development	Follow written instructions Use content area vocabulary Complete forms and records Collect/record information Identify critical elements/issues Draw conclusions Master specific job task/procedure Practice good work habits/attitudes Develop self confidence/esteem











Basic Skills Matrix

Unit 3–C: Electronic Fuel Injection Diagnosis and Repair

Academic and Workplace Skills					
Obj. #	Task	Icon	Skill	Sub Skill	Description
13	Inspect and test power and ground circuits and connections; determine needed repairs (JS-1)		Reading	Functional reading	Follow written instructions Use content area vocabulary
			Writing	Functional writing	Complete forms and records
			Science	General science	Use scientific instruments
			Critical thinking	Cognitive activities	Collect/record information Identify critical elements/issues Identify underlying causes Draw conclusions
			Employability	Job acquisition/development	Master specific job task/procedure Practice good work habits/attitudes Develop self confidence/esteem
14	Check diagnostic trouble codes using scan tools and technical information; determine needed repairs (JS-2)		Reading	Functional reading	Follow written instructions Use content area vocabulary
			Writing	Functional writing	Complete forms and records
			Science	General science	Use scientific instruments
			Critical thinking	Cognitive activities	Collect/record information Identify critical elements/issues Identify underlying causes Draw conclusions
			Employability	Job acquisition/development	Master specific job task/procedure Practice good work habits/attitudes Develop self confidence/esteem









Basic Skills Matrix

Unit 3–C: Electronic Fuel Injection Diagnosis and Repair (cont.)

Academic and Workplace Skills					
Obj. #	Task	Icon	Skill	Sub Skill	Description
15	inspect and replace electrical connectors, terminals, seals, and locks (JS-3)	    	Reading Writing Science Critical thinking Employability	Functional reading Functional writing General science Cognitive activities Job acquisition/development	Follow written instructions Use content area vocabulary Complete forms and records Use scientific instruments Collect/record information Identify critical elements/issues Identify underlying causes Draw conclusions Master specific job task/procedure Practice good work habits/attitudes Develop self confidence/esteem
16	Access engine parameters; monitor or change as requested by customer (JS-4)	    	Reading Writing Science Critical thinking Employability	Functional reading Functional writing General science Cognitive activities Job acquisition/development	Follow written instructions Use content area vocabulary Complete forms and records Apply computing skills Use scientific instruments Collect/record information Identify critical elements/issues Identify underlying causes Draw conclusions Master specific job task/procedure Practice good work habits/attitudes Develop self confidence/esteem

Basic Skills Matrix

Unit 3-C: Electronic Fuel Injection Diagnosis and Repair (cont.)

Academic and Workplace Skills					
Obj. #	Task	Icon	Skill	Sub Skill	Description
17	Remove, inspect, and rebuild or replace a fuel transfer pump (JS-5)		Reading	Functional reading	Follow written instructions Use content area vocabulary
			Writing	Functional writing	Complete forms and records
			Critical thinking	Cognitive activities	Collect/record information Identify critical elements/issues Draw conclusions
			Employability	Job acquisition/development	Master specific job task/procedure Practice good work habits/attitudes Develop self confidence/esteem
18	Remove, inspect, reinstall, and adjust electronic unit injectors; determine needed repairs (JS-6)		Reading	Functional reading	Follow written instructions Use content area vocabulary
			Writing	Functional writing	Complete forms and records
			Critical thinking	Cognitive activities	Collect/record information Identify critical elements/issues Draw conclusions
			Employability	Job acquisition/development	Master specific job task/procedure Practice good work habits/attitudes Develop self confidence/esteem





Basic Skills Matrix

Unit 4-C: Emissions

Academic and Workplace Skills					
Obj. #	Task	Icon	Skill	Sub Skill	Description
11	Check vehicle for presence and operation of emission control devices (JS-1)		Reading	Functional reading	Follow written instructions Use content area vocabulary
			Writing	Functional writing	Complete forms and records
			Science	General science	Apply computing skills Use scientific instruments
			Critical thinking	Cognitive activities	Collect/record information Identify critical elements/issues Draw conclusions
			Employability	Job acquisition/ development	Master specific job task/procedure Practice good work habits/attitudes Develop self confidence/esteem
12	Check vehicle for fuel type and appropriate application (JS-2)		Reading	Functional reading	Follow written instructions Use content area vocabulary
			Writing	Functional writing	Complete forms and records
			Critical thinking	Cognitive activities	Collect/record information Identify critical elements/issues Draw conclusions
			Employability	Job acquisition/ development	Master specific job task/procedure Practice good work habits/attitudes Develop self confidence/esteem
13	Test vehicle for excessive exhaust smoke (JS-3)		Reading	Functional reading	Follow written instructions Use content area vocabulary
			Writing	Functional writing	Complete forms and records
			Science	General science	Use scientific instruments Investigate/apply technology
				Physical science	Investigate forms/changes of energy
			Critical thinking	Cognitive activities	Collect/record information Identify critical elements/issues Draw conclusions
			Employability	Job acquisition/ development	Master specific job task/procedure Practice good work habits/attitudes Develop self confidence/esteem

Basic Skills Matrix









Unit 4-C: Emissions (cont.)

Academic and Workplace Skills					
Obj. #	Task	Icon	Skill	Sub Skill	Description
14	Check vehicle for noise abatement devices (JS-4)		Reading	Functional reading	Follow written instructions Use content area vocabulary
			Writing	Functional writing	Complete forms and records
			Critical thinking	Cognitive activities	Collect/record information Identify critical elements/issues Draw conclusions
			Employability	Job acquisition/development	Master specific job task/procedure Practice good work habits/attitudes Develop self confidence/esteem

Basic Skills Matrix
















Section D — Engine Diagnosis and Maintenance

Unit 1-D: General Engine Diagnosis

Academic and Workplace Skills					
Obj. #	Task	Icon	Skill	Sub Skill	Description
11	Conduct an operator survey for engine diagnosis (AS-1)		Reading	Reading comprehension	Gain factual information Analyze causes and effect Draw conclusions
				Research/reference	Use in-book reference tools
				Functional reading	Follow written instructions Use content area vocabulary
			Writing	Research	Take notes
				Functional writing	Complete forms and records
			Oral communication	Listening	Apply active listening skills Distinguish fact, opinion, and inference Draw conclusions/make generalizations
Interactive communication	Apply questioning techniques Conduct/receive interviews Communicate with clients/customers/patients				
12	Interpret SAE code identifiers (AS-2)		Critical thinking	Cognitive activities	Collect/record information Identify critical elements/issues Define a problem Identify underlying causes Analyze/synthesize information Draw conclusions
					Employability
12	Interpret SAE code identifiers (AS-2)		Reading		
				Research/reference	Use in-book reference tools
				Functional reading	Follow written instructions Use content area vocabulary
12	Interpret SAE code identifiers (AS-2)		Critical thinking	Cognitive activities	Collect/record information
					Employability















Basic Skills Matrix

Unit 1-D: General Engine Diagnosis (cont.)

Academic and Workplace Skills					
Obj. #	Task	Icon	Skill	Sub Skill	Description
13	Check air intake system for restrictions (JS-1)		Reading	Functional reading	Follow written instructions Use content area vocabulary
			Writing	Functional writing	Complete forms and records
			Science	General science	Use scientific instruments
			Critical thinking	Cognitive activities	Collect/record information Identify critical elements/issues Identify underlying causes Draw conclusions
			Employability	Job acquisition/development	Master specific job task/procedure Practice good work habits/attitudes Develop self confidence/esteem
14	Check exhaust back pressure (JS-2)		Reading	Functional reading	Follow written instructions Use content area vocabulary
			Writing	Functional writing	Complete forms and records
			Science	General science	Use scientific instruments
			Critical thinking	Cognitive activities	Collect/record information Identify critical elements/issues Draw conclusions
			Employability	Job acquisition/development	Master specific job task/procedure Practice good work habits/attitudes Develop self confidence/esteem
15	Check crankcase pressure (JS-3)		Reading	Functional reading	Follow written instructions Use content area vocabulary
			Writing	Functional writing	Complete forms and records
			Science	General science	Use scientific instruments
			Critical thinking	Cognitive activities	Collect/record information Identify critical elements/issues Draw conclusions
			Employability	Job acquisition/development	Master specific job task/procedure Practice good work habits/attitudes Develop self confidence/esteem






Basic Skills Matrix

Unit 1-D: General Engine Diagnosis (cont.)

Academic and Workplace Skills					
Obj. #	Task	Icon	Skill	Sub Skill	Description
16	Check oil pressure (JS-4)		Reading	Functional reading	Follow written instructions Use content area vocabulary
			Writing	Functional writing	Complete forms and records
			Critical thinking	Cognitive activities	Collect/record information Identify critical elements/issues Draw conclusions
			Employability	Job acquisition/development	Master specific job task/procedure Practice good work habits/attitudes Develop self confidence/esteem
17	Load test an engine with a dynamometer (JS-5)		Reading	Functional reading	Follow written instructions Use content area vocabulary
			Writing	Functional writing	Complete forms and records
			Science	General science	Use scientific instruments
			Critical thinking	Cognitive activities	Collect/record information Identify critical elements/issues Draw conclusions
			Employability	Job acquisition/development	Master specific job task/procedure Practice good work habits/attitudes Develop self confidence/esteem
18	Locate a misfiring cylinder (JS-6)		Reading	Functional reading	Follow written instructions Use content area vocabulary
			Writing	Functional writing	Complete forms and records
			Science	General science	Use scientific instruments
			Critical thinking	Cognitive activities	Collect/record information Identify critical elements/issues Draw conclusions
			Employability	Job acquisition/development	Master specific job task/procedure Practice good work habits/attitudes Develop self confidence/esteem












Basic Skills Matrix

Unit 1-D: General Engine Diagnosis (cont.)

Academic and Workplace Skills					
Obj. #	Task	Icon	Skill	Sub Skill	Description
19	Locate an active fault code (JS-7)		Reading	Functional reading	Follow written instructions Use content area vocabulary
			Writing	Functional writing	Complete forms and records
			Science	General science	Apply computing skills Use scientific instruments
			Critical thinking	Cognitive activities	Collect/record information Identify critical elements/issues Draw conclusions
			Employability	Job acquisition/development	Master specific job task/procedure Practice good work habits/attitudes Develop self confidence/esteem














Basic Skills Matrix

Unit 2–D: Preventive Maintenance and Tune-Up

Academic and Workplace Skills					
Obj. #	Task	Icon	Skill	Sub Skill	Description
9	Determine maintenance needed for given situations (AS-1)		Reading	Reading comprehension	Gain factual information Distinguish fact, opinion and inference Draw conclusions
				Research/reference	Use in-book reference tools
			Writing	Language	Use standard grammar, spelling, and capitalization State ideas clearly
				Composition	Compose reports
	Critical thinking	Cognitive activities	Collect/record information Identify critical elements/issues Define a problem Identify underlying causes Analyze/synthesize information Draw conclusions		
			Employability	Job acquisition/development	Practice good work habits/attitudes Develop self confidence/esteem
10	Interpret maintenance troubleshooting charts (AS-2)				Reading
		Research/reference	Use in-book reference tools		
			Writing	Language	Use standard grammar, spelling, and capitalization
					Critical thinking
11	Inspect engine coolant level and condition (JS-1)		Reading		
					Writing
			Critical thinking		
					Employability













Basic Skills Matrix

Unit 2-D: Preventive Maintenance and Tune-Up (cont.)

Academic and Workplace Skills					
Obj. #	Task	Icon	Skill	Sub Skill	Description
12	Pressure test coolant system and radiator cap (JS-2)	   	Reading Writing Critical thinking Employability	Functional reading Functional writing Cognitive activities Job acquisition/development	Follow written instructions Use content area vocabulary Complete forms and records Collect/record information Identify critical elements/issues Draw conclusions Master specific job task/procedure Practice good work habits/attitudes Develop self confidence/esteem
13	Take oil sample, and change oil and filter(s) (JS-3)	   	Reading Writing Critical thinking Employability	Functional reading Functional writing Cognitive activities Job acquisition/development	Follow written instructions Use content area vocabulary Complete forms and records Collect/record information Identify critical elements/issues Draw conclusions Master specific job task/procedure Practice good work habits/attitudes Develop self confidence/esteem
14	Inspect and test indicator system components (JS-4)	    	Reading Writing Math Critical thinking Employability	Functional reading Functional writing Data analysis and display Cognitive activities Job acquisition/development	Follow written instructions Use content area vocabulary Complete forms and records Collect/record data Collect/record information Identify critical elements/issues Define a problem Identify underlying causes Analyze/synthesize information Identify/analyze underlying assumptions Draw conclusions Master specific job task/procedure Practice good work habits/attitudes Develop self confidence/esteem

Basic Skills Matrix

Unit 2-D: Preventive Maintenance and Tune-Up (cont.)

Academic and Workplace Skills					
Obj. #	Task	Icon	Skill	Sub Skill	Description
15	Perform a daily preventive maintenance check (JS-5)	   	Reading Writing Critical thinking Employability	Functional reading Functional writing Cognitive activities Job acquisition/development	Follow written instructions Use content area vocabulary Complete forms and records Collect/record information Identify critical elements/issues Draw conclusions Master specific job task/procedure Practice good work habits/attitudes Develop self confidence/esteem
16	Perform a mileage preventive maintenance check (JS-6)	   	Reading Writing Critical thinking Employability	Functional reading Functional writing Cognitive activities Job acquisition/development	Follow written instructions Use content area vocabulary Complete forms and records Collect/record information Identify critical elements/issues Draw conclusions Master specific job task/procedure Practice good work habits/attitudes Develop self confidence/esteem
17	Perform an engine tune-up (JS-7)	   	Reading Writing Critical thinking Employment	Functional reading Functional writing Cognitive activities Job acquisition/development	Follow written instructions Use content area vocabulary Complete forms and records Collect/record information Identify critical elements/issues Define a problem Identify underlying causes Analyze/synthesize information Identify/analyze underlying assumptions Draw conclusions Master specific job task/procedure Practice good work habits/attitudes Develop self confidence/esteem