Individual Test Item Specifications

9504140-Automotive Maintenance & Light Repair 4

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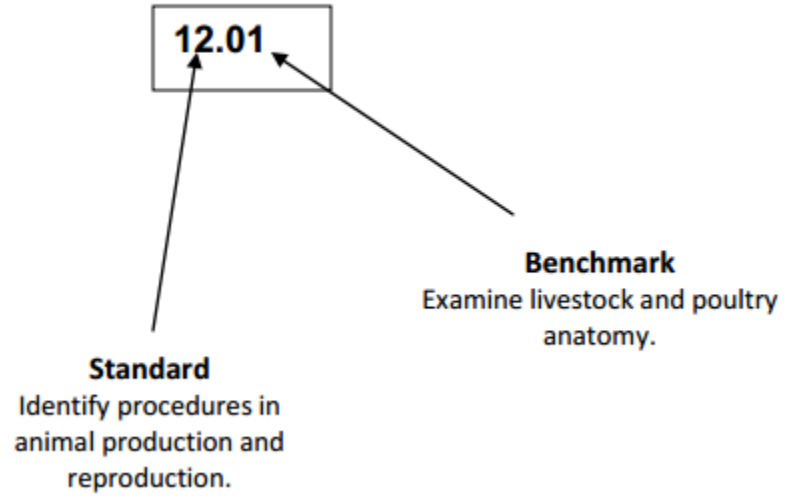
I. Guide to the Individual Benchmark Specifications

Content specific guidelines are given in the *Individual Benchmark Specifications* for each course. The *Specifications* contains specific information about the alignment of items with the Florida Standards. It identifies the manner in which each benchmark is assessed, provides content limits and stimulus attributes for each benchmark, and gives specific information about content, item types, and response attributes.

Benchmark Classification System

- Each Career and Technical Education course has its own set of course standards. The benchmarks are organized numerically, with two numbers separated by a decimal point. The first number is the standard number, and the second number is the benchmark number. You will see these numbers on the Item Specifications for each course.

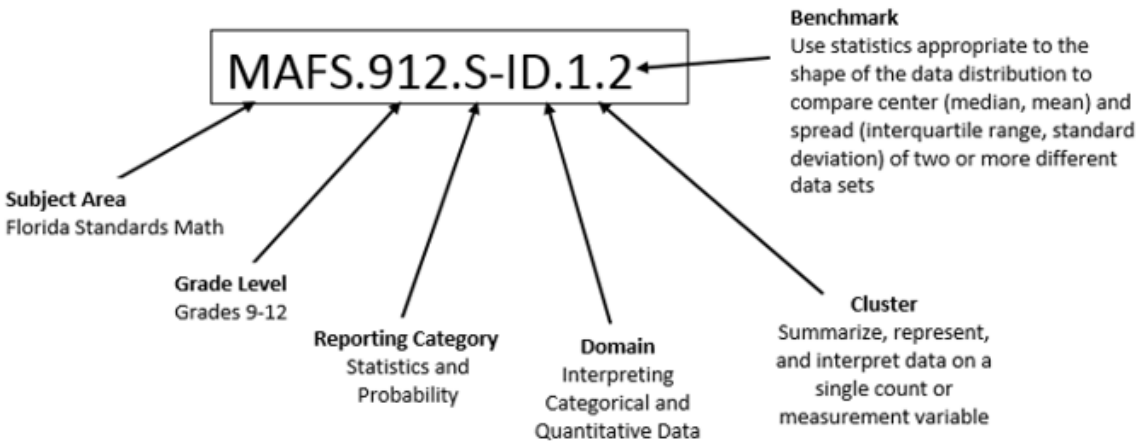
An example, from Agritechnology 1:



The image above describes the components of a Career and Technical Education Standard and Benchmark classification system.

Each MAFS benchmark is labeled with a system of letters and numbers.

- The four letters in the *first position* of the label identify the **Subject**.
- The number(s) in the *second position* represents the **Grade Level**.
- The letter(s) in the *third position* represents the **Category**.
- The number in the fourth position shows the **Domain**.
- The number in the *fifth position* identifies the **Cluster**.
- The number in the last position identifies the specific **Benchmark**.



The image above describes the components of a Florida Standard and Benchmark classification system.

Definitions of Benchmark Specifications

The *Individual Benchmark Specifications* provides standard-specific guidance for assessment item development for the Florida Department of Education Career and Technical Education item banks. For each benchmark assessed, the following information is provided.

Reporting Category	is a grouping of related benchmarks that can be used to summarize and report achievement.
Standard	refers to the standard statement presented in the Florida Standards.
Benchmark	refers to the benchmark statement presented in the Florida Standards. In some cases, two or more related benchmarks are grouped together because the assessment of one benchmark addresses another benchmark.
Item Types	are used to assess the benchmark or group of benchmark.
Cognitive Complexity	ideal level at which item should be assessed.
Benchmark Clarifications	explain how achievement of the benchmark will be demonstrated by students. In other words, the clarification statements explain what the student will do when responding to questions.
Content Limits	define the range of content knowledge and that should be assessed in the items for the benchmark.
Stimulus Attributes	define the types of stimulus materials that should be used in the items, including the appropriate use of graphic materials and item context or content.
Response Attributes	define the characteristics of the answers that a student must choose or provide.
Content Focus	addresses the broad key terms and concepts associated with the examples found in the standards, benchmarks, or benchmark clarifications.
Sample Items	are provided for each type of question assessed. The correct answer for all sample items is provided.

II. Individual Benchmark Specifications

Standard	14.0 Explain and apply proficiently the diagnosis, service and repair of heating and air conditioning, refrigeration, heating, ventilation, and engine cooling, operating and related control systems--The student will be able to:
Benchmark	14.05 Inspect A/C condenser for airflow restrictions; perform necessary action.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)=X (ER)=
Cognitive Complexity Level	L
Benchmark Clarification	The student will inspect the A/C condenser for airflow restrictions and make necessary correction.
Content Focus	Condenser
Content Limits	Items may include air conditioning systems related to passenger vehicles and light duty trucks.
Stimulus Attributes	Vehicle A/C blows warm.
Response Attributes	None Specified
Sample Item	On the vehicle provided in the service stall, inspect the condenser for restrictions. Notate your findings and make a recommendation for repair.

Standard	14.0 Explain and apply proficiently the diagnosis, service and repair of heating and air conditioning, refrigeration, heating, ventilation, and engine cooling, operating and related control systems--The student will be able to:
Benchmark	14.06 Inspect engine cooling and heater system hoses; perform necessary action.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)=X (P)=X (ER)=
Cognitive Complexity Level	L, M, H
Benchmark Clarification	The student will inspect engine cooling and heating system hoses and perform necessary action.
Content Focus	Pressure test, coolant, weak, leaky, and loose hoses, heater hose, radiator hose
Content Limits	Items may include cooling systems related to passenger vehicles and light duty trucks.
Stimulus Attributes	None Specified
Response Attributes	None Specified
Sample Item	On the vehicle provided in the service stall, inspect the cooling system hoses. Notate your findings and make a recommendation for repair.

Standard	14.0 Explain and apply proficiently the diagnosis, service and repair of heating and air conditioning, refrigeration, heating, ventilation, and engine cooling, operating and related control systems--The student will be able to:
Benchmark	14.07 Inspect A/C-heater ducts, doors, hoses, cabin filters and outlets; perform necessary action.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)=X (P)=X (ER)=
Cognitive Complexity Level	L, M, H
Benchmark Clarification	The student will inspect A/C-heater ducts, doors, hoses, cabin filters and outlets, and perform necessary action.
Content Focus	Actuator, vacuum ball, cabin filter
Content Limits	Items may include air conditioning systems related to passenger vehicles and light duty trucks.
Stimulus Attributes	None Specified
Response Attributes	None Specified
Sample Item	Which of the following is responsible for removing pollen and other allergens from the vehicle? A. air filter B. cabin filter C. fuel filter D. oil filter Answer B. cabin filter

Standard	15.0 Explain and apply proficiently the diagnosis, service and repair of engine computerized controls, fuel, air induction, exhaust, and emission control systems --The student will be able to:
Benchmark	15.02 Perform engine absolute (vacuum/boost) manifold pressure tests; determine necessary action. LAFS.1112.W.2.4, 6 LAFS.1112.L.1.2B
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)=X (ER)=
Cognitive Complexity Level	L, M
Benchmark Clarification	The student will use a vacuum gauge to perform manifold pressure tests and determine necessary action.
Content Focus	Vacuum, pressure gauge
Content Limits	Items should be limited to passenger vehicles and light duty truck. Items should not include hybrid or any alternative fuel vehicle.
Stimulus Attributes	None Specified
Response Attributes	None Specified
Sample Item	On the vehicle provided in the service bay, record manifold pressure using a vacuum gauge. Make your recommendation for repair based on your reading.

Standard	15.0 Explain and apply proficiently the diagnosis, service and repair of engine computerized controls, fuel, air induction, exhaust, and emission control systems --The student will be able to:
Benchmark	15.04 Perform cylinder cranking and running compression tests; determine necessary action. LAFS.1112.W.2.4, 6 LAFS.1112.L.1.2B
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)=X (P)=X (ER)=
Cognitive Complexity Level	L, M, H
Benchmark Clarification	The student will perform a cylinder compression test and running compression test and determine needed repairs.
Content Focus	Compression, compression tester, running compression test, wet compression test
Content Limits	Items should be limited to passenger vehicles and light duty truck. Items should not include hybrid or any alternative fuel vehicle.
Stimulus Attributes	None Specified
Response Attributes	None Specified
Sample Item	Perform a compression test on the vehicle in the service bay. Perform both a wet and dry test. Record all of your readings. Based on your readings, make a recommendation for repair.

Standard	15.0 Explain and apply proficiently the diagnosis, service and repair of engine computerized controls, fuel, air induction, exhaust, and emission control systems --The student will be able to:
Benchmark	15.06 Verify engine operating temperature; determine necessary action. LAFS.1112.W.2.4, 6 LAFS.1112.L.1.2B; SC.912.P.12.11
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)=X (ER)=
Cognitive Complexity Level	L, M
Benchmark Clarification	The student will inspect and verify engine operating temperature and determine necessary action needed.
Content Focus	Overheat, gauge, warning light , instrument panel, pyrometer, infrared thermometer
Content Limits	Items should be limited to passenger vehicles and light duty truck. Items should not include hybrid or any alternative fuel vehicle.
Stimulus Attributes	None Specified
Response Attributes	None Specified
Sample Item	Which of the following is the best tool to measure engine exhaust temperature? A. bi-metallic thermometer B. digital multimeter C. infrared thermometer D. oral thermometer Ansswe: C. infrared thermometer

Standard	15.0 Explain and apply proficiently the diagnosis, service and repair of engine computerized controls, fuel, air induction, exhaust, and emission control systems --The student will be able to:
Benchmark	15.09 Describe the importance of operating all OBDII monitors for repair verification.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)=X (P)= (ER)=
Cognitive Complexity Level	L, M
Benchmark Clarification	The student will describe the importance of operating OBDII monitors for repair verification.
Content Focus	Scanner, OEM, OBD II, self-test
Content Limits	Items should be limited to passenger vehicles and light duty truck. Items shoud not include hybrid or any alternative fuel vehicle.
Stimulus Attributes	None Specified
Response Attributes	None Specified
Sample Item	What are two reasons technicians need to operate all monitors after repairs relating to trouble codes? Sample response: Some parameters are only monitored once per drive cycle, so the code may come back until the drive cycle has been completed. A drive cycle must meet predetermined conditions before it is run.

Standard	15.0 Explain and apply proficiently the diagnosis, service and repair of engine computerized controls, fuel, air induction, exhaust, and emission control systems --The student will be able to:
Benchmark	15.11 Inspect, service or replace air filters, filter housing and intake duct work.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)=X (P)=X (ER)=
Cognitive Complexity Level	L, M
Benchmark Clarification	The student will inspect, service or replace air filters, filter housing and intake duct work.
Content Focus	Debris, crack in the housing, air intake induction
Content Limits	Items should be limited to passenger vehicles and light duty truck. Items should not include hybrid or any alternative fuel vehicle.
Stimulus Attributes	None Specified
Response Attributes	None Specified
Sample Item	According to the photo above, what is being inspected? A. air filter B. cabin filter C. fuel filter D. oil filter Answer A

Standard	15.0 Explain and apply proficiently the diagnosis, service and repair of engine computerized controls, fuel, air induction, exhaust, and emission control systems --The student will be able to:
Benchmark	15.12 Inspect the integrity of the exhaust manifold, exhaust pipes, muffler(s), catalytic converter(s), resonator(s), tail pipe(s), and heat shields; perform necessary action.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)=X (ER)=
Cognitive Complexity Level	M, H
Benchmark Clarification	The student will inspect the integrity of exhaust systems and perform necessary action needed.
Content Focus	Leaks, corrosion, rust, noise, missing broken weld
Content Limits	Items may include exhaust systems related to passenger vehicles and light duty trucks.
Stimulus Attributes	None Specified
Response Attributes	None Specified
Sample Item	On the light duty truck on the service lift, perform a complete exhaust system inspection. Identify any concerns, and write them down. Make your recommendation(s) for repair and turn it in to your instructor.

Standard	15.0 Explain and apply proficiently the diagnosis, service and repair of engine computerized controls, fuel, air induction, exhaust, and emission control systems --The student will be able to:
Benchmark	15.15 Inspect, test and service positive crankcase ventilation (PCV) filter/breather cap, valve, tubes, orifices, and hoses; perform necessary action. LAFS.1112.W.2.4, 6 LAFS.1112.L.1.2B
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)=X (P)=X (ER)=
Cognitive Complexity Level	L, M
Benchmark Clarification	The student will inspect , test, and service positive crankcase ventilation, filter/breather cap, valve, tubes, orifices, and hoses and perform necessary action
Content Focus	PCV valve, breather tube, filter, emissions, vacuum
Content Limits	Items may include emission systems related to passenger vehicles and light duty trucks.
Stimulus Attributes	None Specified
Response Attributes	None Specified
Sample Item	What are two tests a technician can perform to test the PCV system? Sample response: Technicians can perform the card test which checks for vacuum in the crankcase. Also, a technician can perform a rattle test of the PCV valve to check for internal integrity.

Standard	16.0 Explain and apply proficiently the diagnosis, service, repair and overhaul of in-vehicle and off-vehicle automatic transmissions/transaxles--The student will be able to:
Benchmark	16.01 Research applicable vehicle and service information, fluid type, vehicle service history, service precautions, and technical service bulletins. LAFS.1112.RI.1.3; 2.4; 3.7; SC.912.P.8.2
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)=X (P)=X (ER)=
Cognitive Complexity Level	L, M
Benchmark Clarification	The student will research and explain applicable vehicle and service information, fluid type, vehicle service history, service precautions, and technical service bulletins.
Content Focus	Service bulletins, technical service bulletins, recalls, serve recalls owners manual, maintenance schedule
Content Limits	Items should be dentification only, Items should not include any operation of any vehicle or any hands on lab work or any type of actual or live work on any vehicle.
Stimulus Attributes	None Specified
Response Attributes	None Specified
Sample Item	Using service information (SI), locate one campaign and one recall for a 2007 Chevrolet Malibu. Print the information out and turn it in to your instructor.

Standard	16.0 Explain and apply proficiently the diagnosis, service, repair and overhaul of in-vehicle and off-vehicle automatic transmissions/transaxles--The student will be able to:
Benchmark	16.02 Retrieve and record diagnostic trouble codes, OBD monitor status, and freeze frame data; clear codes when applicable. LAFS.1112.RI.2.4
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)= (SA)=X (P)=X (ER)=
Cognitive Complexity Level	M, H
Benchmark Clarification	The student will retrieve diagnostic trouble codes, OBD monitor status, and freeze frame data. The student will clear codes when applicable.
Content Focus	OBD II, DTC, freeze frame, monitors
Content Limits	Items should be limited to passenger vehicles and light duty truck. Items should not include hybrid or any alternative fuel vehicle.
Stimulus Attributes	None Specified
Response Attributes	None Specified
Sample Item	The vehicle in the shop has the check engine light on. Using a scan tool, record the DTC and freeze frame data. Save the data to your USB flash drive. Then clear the codes. Provide your data to your instructor.

Standard	16.0 Explain and apply proficiently the diagnosis, service, repair and overhaul of in-vehicle and off-vehicle automatic transmissions/transaxles--The student will be able to:
Benchmark	16.03 Check fluid level in a transmission or a transaxle equipped with a dipstick.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)= (SA)=X (P)=X (ER)=
Cognitive Complexity Level	L, M
Benchmark Clarification	The student will check fluid level in a transmission or transaxle equipped with a dipstick.
Content Focus	None Specified
Content Limits	Items may include transmission and transaxles related to passenger vehicles and light duty trucks. Items should not iinclude hybrid or alternative fuel vehicles.
Stimulus Attributes	None Specified
Response Attributes	None Specified
Sample Item	On the car provided in the service bay, demonstrate to your instructor how to check the transaxle fluid level.

Standard	16.0 Explain and apply proficiently the diagnosis, service, repair and overhaul of in-vehicle and off-vehicle automatic transmissions/transaxles--The student will be able to:
Benchmark	16.05 Check transmission fluid condition; check for leaks. SC.912.P.8.2
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)=X (ER)=
Cognitive Complexity Level	L, M
Benchmark Clarification	The student will check an automatic transmission fluid condition and check for leaks.
Content Focus	None Specified
Content Limits	Items may include automatic transmission and transaxle related to passenger vehicles and light duty trucks. Items should not include hybrid or alternative fuel vehicles.
Stimulus Attributes	None Specified
Response Attributes	None Specified
Sample Item	On the vehicle provided in the service bay, check the transmission fluid condition. Document your findings for your instructor.

Standard	16.0 Explain and apply proficiently the diagnosis, service, repair and overhaul of in-vehicle and off-vehicle automatic transmissions/transaxles--The student will be able to:
Benchmark	16.07 Inspect for leakage at external seals, gaskets, and bushings.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)= (SA)= (P)=X (ER)=
Cognitive Complexity Level	M
Benchmark Clarification	The students will inspect a transmission and transaxle for leaks and identify needed repairs.
Content Focus	Leak, seap, weep
Content Limits	Items may include transmission and transaxles related to passenger vehicles and light duty trucks.
Stimulus Attributes	None Specified
Response Attributes	None Specified
Sample Item	On the light duty truck on the service lift, inspect the transmission for any signs of leaks. Make a recommendation for repair.

Standard	16.0 Explain and apply proficiently the diagnosis, service, repair and overhaul of in-vehicle and off-vehicle automatic transmissions/transaxles--The student will be able to:
Benchmark	16.09 Drain and replace fluids and filter(s).
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)=X (P)=X (ER)=
Cognitive Complexity Level	L, M
Benchmark Clarification	The student will drain and replace fluids and filters.
Content Focus	Transmission fluid
Content Limits	Items may include transmission fluid maintenance procedures related to passenger vehicles and light duty trucks.
Stimulus Attributes	None Specified
Response Attributes	None Specified
Sample Item	On the vehicle provided, replace the transmission filter, drain the transmission fluid, and refill the system according to manufacturer's procedures.

Standard	16.0 Explain and apply proficiently the diagnosis, service, repair and overhaul of in-vehicle and off-vehicle automatic transmissions/transaxles--The student will be able to:
Benchmark	16.10 Describe the operational characteristics of a continuously variable transmission (CVT). LAFS.1112.W.2.4 LAFS.1112.L.1.2B
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)=X (P)= (ER)=
Cognitive Complexity Level	L, M
Benchmark Clarification	The student will describe the operational characteristics of a continuously variable transmission.
Content Focus	CVT
Content Limits	Items should be dentification only, Items should not include any operation of any vehicle or any hands on lab work or any type of actual or live work on any vehicle.
Stimulus Attributes	None Specified
Response Attributes	None Specified
Sample Item	Which of the following is the purpose of a CVT transaxle? A. fuel efficiency B. low-end torque C. performance D. towing capacity Answer A

Standard	16.0 Explain and apply proficiently the diagnosis, service, repair and overhaul of in-vehicle and off-vehicle automatic transmissions/transaxles--The student will be able to:
Benchmark	16.11 Describe the operational characteristics of a hybrid vehicle drive train. LAFS.1112.W.2.4 LAFS.1112.L.1.2B
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)=X (P)= (ER)=
Cognitive Complexity Level	L, M
Benchmark Clarification	The student will describe the operation characteristics of a hybrid vehicle drive train
Content Focus	Hybrid, series, parallel, series-parallel
Content Limits	Items should be dentification only, Items should not include any operation of any vehicle or any hands on lab work or any type of actual or live work on any vehicle.
Stimulus Attributes	None Specified
Response Attributes	None Specified
Sample Item	How does the drivetrain operate on a series-parallel hybrid vehicle? A. electric motor powered by fuel cells B. electric motor alone or with the assist of the engine C. engine alone or with the assist of the electric motor D. electric motor alone and the engine charges the batteries Answer B

Standard	17.0 Explain and apply proficiently the diagnosis, service and repair of manual drivetrain, clutches, transmissions/transaxles, drive and half-shafts, universal and constant velocity joints, differential case assemblies, drive axles, four-wheel and all-wh
Benchmark	17.03 Drain and refill manual transmission/transaxle and final drive unit.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)= (SA)= (P)=X (ER)=
Cognitive Complexity Level	M
Benchmark Clarification	The student will drain and refill manual transmission/transaxle unit
Content Focus	None Specified
Content Limits	Items should be limited to passenger vehicles and light duty truck. Items should not include hybrid or any alternative fuel vehicle.
Stimulus Attributes	None Specified
Response Attributes	None Specified
Sample Item	On the vehicle provided on the service lift, drain and refill the manual transmission.

Standard	17.0 Explain and apply proficiently the diagnosis, service and repair of manual drivetrain, clutches, transmissions/transaxles, drive and half-shafts, universal and constant velocity joints, differential case assemblies, drive axles, four-wheel and all-wh
Benchmark	17.05 Check and adjust clutch master cylinder fluid level.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)=X (P)= (ER)=
Cognitive Complexity Level	L
Benchmark Clarification	The student will check and adjust clutch master cylinder fluid level
Content Focus	None Specified
Content Limits	Items may include clutch master cylinder systems related to passenger vehicles and light duty trucks.
Stimulus Attributes	None Specified
Response Attributes	None Specified
Sample Item	Where should the technician top off the clutch master cylinder reservoir to if it is found to be low? A. fill to the middle B. fill to 1/4 inch below the top C. fill to the top D. fill to 1/4 inch from the bottom Answer B

Standard	17.0 Explain and apply proficiently the diagnosis, service and repair of manual drivetrain, clutches, transmissions/transaxles, drive and half-shafts, universal and constant velocity joints, differential case assemblies, drive axles, four-wheel and all-wh
Benchmark	17.07 Describe the operational characteristics of an electronically controlled manual transmission/transaxle. LAFS.1112.W.2.4 LAFS.1112.L.1.2B
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)=X (P)= (ER)=
Cognitive Complexity Level	L, M
Benchmark Clarification	The student will describe the operational characteristics of an electronically controlled manual transmission and transaxle
Content Focus	None Specified
Content Limits	Items should not include hybrid or any alternative fuel vehicle. Items should be identification only only, Items should not include any operation of any vehicle or any hands on lab work or any type of actual or live work
Stimulus Attributes	None Specified
Response Attributes	None Specified
Sample Item	What are two reasons for electronically controlled manual transmissions? Sample response: Electronically controlled manual transmissions improve fuel economy. They also prevent the transmission from shifting into reverse while driving forward.

Standard	17.0 Explain and apply proficiently the diagnosis, service and repair of manual drivetrain, clutches, transmissions/transaxles, drive and half-shafts, universal and constant velocity joints, differential case assemblies, drive axles, four-wheel and all-wh
Benchmark	17.08 Inspect, remove, and replace front wheel drive (FWD) bearings, hubs, and seals.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)=X (P)=X (ER)=
Cognitive Complexity Level	L, M, H
Benchmark Clarification	The student will inspect, remove, and replace front wheel drive bearings, hubs, and seals.
Content Focus	FWD, hub bearing, sealed bearing
Content Limits	Items may include heel bearings related to FWD passenger vehicles or light duty trucks.
Stimulus Attributes	None Specified
Response Attributes	None Specified
Sample Item	On the car provided on the lift, check the front wheel bearings for play.

Standard	17.0 Explain and apply proficiently the diagnosis, service and repair of manual drivetrain, clutches, transmissions/transaxles, drive and half-shafts, universal and constant velocity joints, differential case assemblies, drive axles, four-wheel and all-wh
Benchmark	17.09 Inspect, service, and replace shafts, yokes, boots, and universal/CV joints.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)=X (P)=X (ER)=
Cognitive Complexity Level	L, M
Benchmark Clarification	The student will inspect, service, or replace drive shafts, yokes, U-joints, CV joints, CV shafts and boots.
Content Focus	CV, drive shaft, U-joint
Content Limits	Items should not include Hybrid or any alternative fuel vehicle.
Stimulus Attributes	None Specified
Response Attributes	None Specified
Sample Item	On the vehicle provided, inspect the drive shaft and its components and make a recommendation for repair.

Standard	17.0 Explain and apply proficiently the diagnosis, service and repair of manual drivetrain, clutches, transmissions/transaxles, drive and half-shafts, universal and constant velocity joints, differential case assemblies, drive axles, four-wheel and all-wh
Benchmark	17.12 Drain and refill differential housing.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)=X (ER)=
Cognitive Complexity Level	L, M
Benchmark Clarification	The student will drain and refill the differential.
Content Focus	differential, fill plug, drain plug
Content Limits	Items should not include Hybrid or any alternative fuel vehicle.
Stimulus Attributes	None Specified
Response Attributes	None Specified
Sample Item	On the vehicle provided, drain and refill the differential housing.

Standard	17.0 Explain and apply proficiently the diagnosis, service and repair of manual drivetrain, clutches, transmissions/transaxles, drive and half-shafts, universal and constant velocity joints, differential case assemblies, drive axles, four-wheel and all-wh
Benchmark	17.15 Check for leaks at drive assembly seals; check vents; check lube level.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)=X (P)=X (ER)=
Cognitive Complexity Level	L, M
Benchmark Clarification	The student will check for leaks at drive assembly seals able to check vents and check lube level
Content Focus	None Specified
Content Limits	Items should not include hybrid or any alternative fuel vehicle.
Stimulus Attributes	None Specified
Response Attributes	None Specified
Sample Item	On the truck in the stall, check for leaks from the 4WD drive assembly.