Port Fuel-Injection System Diagnosis

Meets NATEF Task: (A8-D-1) Diagnose hot or cold no-starting, hard starting, poor driveability, and etc.; determine necessary action (P-2)

Name _____ **Date** _____ **Time on Task** _____

Make/Model/Year _____ **VIN** _____ **Evaluation: 4 3 2 1**

_____ **1.** Check service information for the recommended procedure to follow to diagnose the fuel injection system.

_____ **2.** Attach a fuel pressure gauge to the Schrader valve on the fuel rail, if available.

_____ **3.** Turn the ignition key to "on" or start the engine to build up the fuel pump pressure.

_____psi (should reach specified fuel pressure, usually about 35-45 psi)

_____ **4.** Turn the ignition off and wait 20 minutes and observe the fuel pressure retained in the fuel rail = _____ psi. If the drop is less than 20 psi in 20 minutes, everything is OK. (The fuel pressure should *not* drop more than 20 psi in 20 minutes.)

If the drop is *greater* than 20 psi in 20 minutes, there is a possible problem with:

a. the check valve in the fuel pump.
b. leaking injectors.
c. a defective (leaking) fuel pressure regulator.

To determine which unit is defective, perform the following:

Step #1:	Re-energize the electric fuel pump.
Step #2:	Clamp the fuel *supply* line, wait 10 minutes. If the pressure drop does *not* occur - replace the fuel pump. If the pressure drop still occurs - continue with Step #3.
Step #3:	Repeat the pressure build up of the electric pump and clamp the fuel return line. If the pressure drop time is now OK, replace the fuel pressure regulator.
Step #4:	If the pressure drop still occurs, the injectors are leaking. Remove the injectors with the fuel rail and hold over paper. Replace those injectors that drip a drop or more after 10 minutes with pressurized fuel.

CAUTION: Do not clamp plastic fuel lines. Connect shut-off valves to the fuel system to shut off supply and return lines.

_____ **5.** Based on the test results, what is the necessary action? _____