FIGURE 29.1 All computer systems perform four basic functions: input, processing, storage, and output.

FIGURE 29.2 Many electronic components are used to construct a typical vehicle computer (PCM), including chips, resistors, and capacitors.
FIGURE 29.3 The powertrain control module (PCM) is located under the hood on this Chevrolet pickup truck.

FIGURE 29.4 A typical engine coolant temperature (ECT) sensor. ECT sensors are located near the thermostat housing on most engines.

FIGURE 29.5 The IAT sensor on this General Motors 3800 V-6 engine is in the air passage duct between the air cleaner housing and the throttle body.
FIGURE 29.6 A typical TP sensor mounted on the throttle shaft on this port-injected engine.

FIGURE 29.7 The MAP sensor uses three wires and is located on the intake manifold of the engine in most vehicles.

FIGURE 29.8 The mass airflow (MAF) sensor is located between the air filter housing and the engine, where it can measure all of the air entering the engine.
FIGURE 29.9 The oxygen sensor is mounted on the exhaust manifold, which is hidden behind a heat shield.

FIGURE 29.10 The OBD-II catalytic converter monitor compares the signals of the upstream and downstream oxygen sensor to determine converter efficiency.

FIGURE 29.11 A dash display showing that one of the computers has detected a fault in an electrical circuit. The service technician will then follow the specified test procedures to pinpoint the cause and to correct the fault.