**Vehicle Inspection**

**Description**

This activity plan will enable students to understand the importance of customer service in the automotive industry. Customers are not normally charged for courtesy checks, but these

inspections may often reveal problems that need to be repaired. Most of these checks are done routinely during an oil and filter service.

The vehicle inspection checklists found at the end of this activity plan may be used for maintenance checks. Inspection checklists are normally based on a vehicle’s service requirements and its mileage. These inspection checklists correspond to the service checklists found in any vehicle owner’s manual.

### Lesson Outcomes

The student will be able to:

* Assess a vehicle’s needs and possible service requirements
* Keep regular maintenance records of work done and possible work needed
* Perform regularly scheduled maintenance work

### Assumptions

* Students will have little or no prior knowledge of maintenance or repairs of a motor vehicle.
* The teacher must have a good working knowledge to demonstrate to students maintenance procedures and how they are to be performed on a vehicle.
* Students will have been taught how to safely lift a vehicle.

### Terminology

Terminology will be taught and explained by the teacher as it is required during the lesson.

### Estimated Time

90 minutes

### Recommended Number of Students

20, based on the *BC Technology Educators’ Best Practice Guide*



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### Facilities

* A fully equipped automotive facility with hoists and/or floor jacks and stands. In order to do a thorough and proper inspection, a vehicle must be raised on a hoist for an under-vehicle inspection.
* More than one vehicle would be beneficial, depending on the class size.

### Tools

* Several rolls of paper towel or wipes for checking oil levels, cleaning windows, etc.
* Window cleaner is recommended as a customer service to clean the windows when finished
* Tire pressure gauges
* Tire inflation tool
* Hoist or jack and stands
* Vacuum cleaner
* A typical tool box assortment of mechanics’ hand tools found in any good repair shop
* Antifreeze tester
* Tools and chemicals to service the battery
* Tire machine to change over from winter to summer tires (see Tire Change)

### Materials

* Radiator antifreeze/coolant
* Windshield washer liquid
* A selection of various oils and lubricants needed for changes or top-up of fluid levels
* Inspection sheets
* Clipboards
* Pencils

### Resources

* Work orders
* Vehicle service specifications that can be found online, in shop manuals, owner’s manuals, etc.
* Vehicle inspection checklists
* **“Cleaning with Compressed Air.”**

**Canadian Centre for Occupational Health and Safety**

[www.ccohs.ca/oshanswers/safety\_haz/compressed\_air.html](http://www.ccohs.ca/oshanswers/safety_haz/compressed_air.html)

**2** Youth Explore Trades Skills

**Discussion of Activities**

1. **Courtesy Check**—A visual or “hands off” inspection is done quickly with little or nothing being touched. Safety items like lights and wipers are checked, along with some courtesy cleaning.
2. **Under the Hood Inspection**—This is a quick visual of items that can be checked under the hood, for example fluid levels. This general inspection is more in-depth than the visual inspection and can include some minor work.
3. **Under Car Inspection**—A quick visual of items that can be checked under the car, like exhaust and tires. This inspection can involve more detailed adjustments and repairs than the visual inspection and the under the hood inspection.

At the end of this activity plan, checklists are included for each of these services. The checklists can be introduced progressively, but could also be used in conjunction with other lessons (e.g., Lifting Vehicles).

Youth Explore Trades Skills **3**

# Activity

The teacher should first demonstrate or describe the skills as the students observe. Then have students work in pairs to display the skills learned on the same or a different vehicle. Students should alternate when doing the skills, so the same students are not doing all the work.

* 1. Vehicle should be washed and cleaned out to allow for a good inspection of both the inside and outside of the vehicle. This is a valuable customer service that students should learn.
  2. A work order needs to be filled out with all the relevant vehicle and customer information. This information is necessary for step #4.
  3. Service inspection sheets should be completed as required.
  4. Wheels should be removed so that brakes and related components can also be inspected.
  5. Any items that need attention arising from the inspection such as belts, hoses, lights, brakes or oil change should be listed on the work order along with a repair estimate.

### Evaluation Guidelines

The following components of the activity can be assessed:

* Completion, legibility and accuracy of each work order and service inspection sheet
* Estimates can be evaluated for accuracy, based on the detailed list of repairs to be done.
* Quality of work done to complete the service or repair
* Quality of washing and detailing of the vehicle (inside and out)
* If students are working in groups, one student can be designated as a group leader and can be evaluated on leadership and organizational skills.

**4** Youth Explore Trades Skills

**Courtesy Check**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Date: | Customer name: | | W/O # | |
| Year: | Make: | Model: | | Licence: |
| Mileage: | | VIN: | | |

Place a check mark if an item passes inspection or an X if it fails.

|  |  |  |  |
| --- | --- | --- | --- |
| **Item to be Checked Pass Fail Comments** | | | |
| **Glass** | | | |
| Front windshield—cracked, chipped, broken |  |  |  |
| Rear window—cracked, chipped, broken |  |  |  |
| Side windows—cracked, chipped, broken |  |  |  |
| Driver’s window—operates up and down |  |  |  |
| Mirrors—interior and exterior |  |  |  |
| **Lights** | | | |
| Headlights—low beam |  |  |  |
| Headlights—high beam |  |  |  |
| Tail lights |  |  |  |
| Licence plate light |  |  |  |
| Brake lights |  |  |  |
| Back-up lights |  |  |  |
| Rear turn signals |  |  |  |
| Front turn signals |  |  |  |
| Front running lights |  |  |  |
| Hazard lights |  |  |  |
| Side/clearance lights |  |  |  |
| Interior light |  |  |  |
| Fog lights |  |  |  |
| **Other** | | | |
| Windshield wipers—cracked, broken, hard |  |  |  |
| Horn |  |  |  |
| Tire pressure check (x4) |  |  |  |
| Spare tire pressure check |  |  |  |
| Body damage |  |  |  |
| Shock bounce test (x4) |  |  |  |
| Clean windows inside |  |  |  |
| Clean windows outside |  |  |  |
| Vacuum inside |  |  |  |

#### Technician’s signature:

**Under Hood Inspection Checklist**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Date: | Customer name: | | W/O # | |
| Year: | Make: | Model: | | Licence: |
| Mileage: | | VIN: | | |

Place a check mark if an item passes inspection or an X if it fails.

|  |  |  |  |
| --- | --- | --- | --- |
| **Item to be Checked Pass Fail Comments** | | | |
| **Battery** | | | |
| Clamps tight |  |  |  |
| Clamps clean |  |  |  |
| Battery fluid level (where applicable) |  |  |  |
| **Fluid Levels** | | | |
| Oil level and condition |  |  |  |
| Brake fluid level and condition |  |  |  |
| Power steering level and condition |  |  |  |
| Windshield washer fluid |  |  |  |
| Clutch fluid level and condition (manual transmission only) |  |  |  |
| **Coolant Hoses (squeeze and visually check connections for leaks)** | | | |
| Radiator top hose |  |  |  |
| Radiator bottom hose |  |  |  |
| Heater hoses (2) |  |  |  |
| Heater bypass hose |  |  |  |
| Fluid leaks |  |  |  |
| **Fan belt(s)** | | | |
| Cracks |  |  |  |
| Tension – 1/4 – ½” deflection (6-12 mm) |  |  |  |
| **Coolant** | | | |
| Radiator coolant fluid level (expansion tank and/or radiator cap removal)  **Note: do not remove radiator cap while engine is hot!** |  |  |  |
| Antifreeze protection strength |  |  |  |
| Radiator cap test |  |  |  |
| Radiator pressure test (to cap pressure only) |  |  |  |
| Automatic transmission level (engine on and in park) |  |  |  |

#### Technician’s signature:

**Under Car Inspection Checklist**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Date: | Customer name: | | W/O # | |
| Year: | Make: | Model: | | Licence: |
| Mileage: | | VIN: | | |

Place a check mark if an item passes inspection or an X if it fails.

|  |  |  |  |
| --- | --- | --- | --- |
| **Item to be Checked** | **Pass** | **Fail** | **Comments** |
| **Fluid levels** | | | |
| Differential fluid level |  |  |  |
| Transmission fluid level (manual only) |  |  |  |
| **Suspension** | | | |
| Shocks—loose, broken, leaking |  |  |  |
| Spring—loose, broken |  |  |  |
| **Exhaust system** | | | |
| Loose, broken, leaking, rusted |  |  |  |
| **Front brakes** | | | |
| Brake pads and rotors |  |  |  |
| Brake hoses—cracked |  |  |  |
| Fluid leaks |  |  |  |
| **Rear brakes** | | | |
| Shoes or pads and rotors or drums |  |  |  |
| Brake hoses—cracked |  |  |  |
| Fluid leaks |  |  |  |
| **Drive line** | | | |
| U joints on driveshaft (if equipped) |  |  |  |
| Rubber boots on CV shafts (if equipped) |  |  |  |
| **Front Tires** | | | |
| Rotation |  |  |  |
| Wear patterns |  |  |  |
| Tread life |  |  |  |
| Physical damage |  |  |  |
| **Rear tires** | | | |
| Rotation |  |  |  |
| Wear patterns |  |  |  |
| Tread life |  |  |  |
| Physical damage |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **Steering** | | | |
| Ball joints—movement or play |  |  |  |
| Tie rod—movement or play |  |  |  |
| Wheel bearings—movement or play |  |  |  |
| Chassis lubrication (if equipped) |  |  |  |
| **Leaks** | | | |
| Engine oil leaks |  |  |  |
| Transmission oil leaks |  |  |  |
| Engine coolant leaks |  |  |  |

#### Technician’s signature: