Auto Upkeep 5th Edition – Tools and Supplies

Chapter 1
Introduction and How Cars Work

- Workplace Skills Activity
  - Tools: None
  - Supplies: None
- Car Identification and Preparing for Vehicle Service Activity
  - Tools: None
  - Supplies: Vehicle protection supplies, *Vehicle Walk-Around Inspection Form* (Appendix I)
- Owner's Manual Activity
  - Tools: Internet access
  - Supplies: Vehicle protection supplies, *Vehicle Walk-Around Inspection Form* (Appendix I)

Chapter 2
Buying an Automobile

- Towing and Hauling Activity
  - Tools: Internet access, calculator
  - Supplies: Vehicle protection supplies, *Vehicle Walk-Around Inspection Form* (Appendix I)
- Advanced Driver Assistance Systems (ADAS) Activity
  - Tools: Internet access
  - Supplies: Vehicle protection supplies, *Vehicle Walk-Around Inspection Form* (Appendix I)
- Buying a New Automobile Activity
  - Tools: Internet access, calculator
  - Supplies: None
- Buying a Used Automobile Activity
  - Tools: Internet access
  - Supplies: None

Chapter 3
Automotive Expenses

- Automotive Expenses Activity
  - Tools: Internet access, calculator
  - Supplies: None

Chapter 4
Repair Facilities

- Repair Facilities Activity
  - Tools: Internet access

Supplies: Vehicle protection supplies, *Vehicle Walk-Around Inspection Form* (Appendix I), *Multi-Point Vehicle Inspection Form* (Appendix J), *Work Order/Repair Invoice* (Appendix H)

Chapter 5
Safety Around the Automobile

Automotive Safety Activity

Tools: None

Supplies: Vehicle protection supplies, *Vehicle Walk-Around Inspection Form* (Appendix I)

Safety Data Sheet (SDS) Activity

Tools: Internet access

Supplies: None

Personal Protection Equipment (PPE) and Fire Safety Activity

Tools: Internet access

Supplies: None

Chapter 6
Tools, Fasteners, and Equipment

Tools and Equipment Activity

Tools: A variety of tools for identification

Supplies: None

Fasteners Activity

Tools: Thread pitch gauge, extractor set, tap and die set, thread repair insert kit

Supplies: A variety of fasteners

Service Manual Activity

Tools: Internet access

Supplies: None

Chapter 7
Auto Care and Cleaning

Interior Cleaning Activity

Tools: Vacuum, bucket

Supplies: Vehicle protection supplies, *Vehicle Walk-Around Inspection Form* (Appendix I), detail towels, shop rags, chemical resistant gloves, car wash soap (environmentally safe), cotton swabs, auto glass cleaner, vinyl cleaner, fabric cleaner, lint-free cloths, multipurpose cleaner, water

Exterior Cleaning Activity

Tools: Hose with spray nozzle, bucket, chamois or microfiber towel, wash mitt, tire scrub brush

Supplies: Vehicle protection supplies, *Vehicle Walk-Around Inspection Form* (Appendix I), car wash soap (environmentally safe), whitewall/blackwall cleaner, shop rags, water

Waxing Activity

Tools: None

Supplies: Vehicle protection supplies, *Vehicle Walk-Around Inspection Form* (Appendix I), detail towels, wax applicator or cloth, automotive wax, bug and tar remover, auto glass cleaner, lint-free cloths

Chapter 8
Fluid Level Check

Fluid Level Check Activity

Tools: Safety goggles, chemical resistant gloves, basic hand tools, fender cover

Supplies: Vehicle protection supplies, *Vehicle Walk-Around Inspection Form* (Appendix I), shop rags, correct type and amount of fluids needed, distilled water (if needed)

Chapter 9
Electrical System

Ohm's Law Activity

Tools: Internet access

Supplies: None

Circuit Construction Simulator Activity

Tools: Internet access

Supplies: None

Simple Circuits Activity

Tools: Safety glasses, digital multimeter (DMM)

Supplies: Power source (batteries), battery holder, insulated wires, switch, light bulb, light bulb socket, resistor, electrical tape, **OR** a simple circuit kit

Voltage Drop Activity

Tools: None

Supplies: None

Wiring Diagram Activity

Tools: Internet access

Supplies: None

Battery Activity

Tools: Internet access, safety goggles, chemical resistant gloves, respirator, basic hand tools, digital multimeter (DMM), battery load tester, battery hydrometer, wire brush, battery terminal cleaner, battery post spreader, battery terminal puller, parts cleaning brush, mixing cup, fender cover

Supplies: Vehicle protection supplies, *Vehicle Walk-Around Inspection Form* (Appendix I), shop rags, baking soda, anti-corrosion spray, distilled water, water

Charging Activity

Tools: Internet access, safety glasses, basic hand tools, digital multimeter (DMM), current clamp, fender cover

Supplies: Vehicle protection supplies, *Vehicle Walk-Around Inspection Form* (Appendix I), shop rags

Starting Activity

Tools: Safety glasses, basic hand tools, digital multimeter (DMM), current clamp, fender cover, wheel chocks, and lifting tools (drive-on ramps or jack with jack stands) or an automotive lift

Supplies: Vehicle protection supplies, *Vehicle Walk-Around Inspection Form* (Appendix I), shop rags

Chapter 10
Lubrication System

Oil and Filter Change Activity

Tools: Safety glasses, basic hand tools, wrench for oil plug, oil filter wrench, oil drain pan, funnel, fender cover, wheel chocks, and lifting tools (drive-on ramps or jack with jack stands) or an automotive lift

Supplies: Vehicle protection supplies, *Vehicle Walk-Around Inspection Form* (Appendix I), shop rags, chemical resistant gloves, correct type and amount of oil, oil filter

Chapter 11
Fuel System

Fuel System Part Identification Activity

Tools: Internet access

Supplies: Vehicle protection supplies, *Vehicle Walk-Around Inspection Form* (Appendix I)

Fuel System Maintenance Activity

Tools: Safety glasses, safety goggles, basic hand tools, vacuum, drain pan, fender cover, wheel chocks, and lifting tools (drive-on ramps or jack with jack stands) or an automotive lift

Supplies: Vehicle protection supplies, *Vehicle Walk-Around Inspection Form* (Appendix I), shop rags, replacement parts (e.g., air filter, PCV valve, fuel filter) specific to your vehicle

Chapter 12
Cooling System and Climate Control

Air Conditioning Activity

Tools: Safety glasses, garden hose, dull object for probe, infrared thermometer, fender cover

Supplies: Vehicle protection supplies, *Vehicle Walk-Around Inspection Form* (Appendix I), water

Cabin Air Filter Activity

Tools: Safety glasses, vacuum, basic hand tools

Supplies: Vehicle protection supplies, *Vehicle Walk-Around Inspection Form* (Appendix I), new cabin air filter(s) for vehicle, vacuum, shop rag, towel

Cooling System Activity

Tools: Safety glasses, basic hand tools, funnel, garden hose, coolant tester, candy thermometer, portable electric burner, pan, piece of wire, fender cover
Supplies: Vehicle protection supplies, *Vehicle Walk-Around Inspection Form* (Appendix I), shop rags, antifreeze (coolant), test thermostat, coolant test strips, distilled water

Chapter 13
Ignition System

Ignition System Activity

Tools: Safety glasses, basic hand tools, ratchet, spark plug socket, spark plug gap gauge, spark plug wire boot puller, fender cover, DMM, vacuum
Supplies: Vehicle protection supplies, *Vehicle Walk-Around Inspection Form* (Appendix I), shop rags, spark plugs, COP boots (if applicable), distributor cap and rotor (if applicable), spark plug wires (if desired to change), anti-seize compound, dielectric grease

Chapter 14
Suspension, Steering, and Tires

Suspension and Steering Activity

Tools: Safety glasses, grease gun, fender cover, wheel chocks, and lifting tools (drive-on ramps or jack with jack stands) or an automotive lift
Supplies: Vehicle protection supplies, *Vehicle Walk-Around Inspection Form* (Appendix I), shop rags, chassis grease

Tire Inspection and Rotation Activity

Tools: Safety glasses, tread depth gauge, tire pressure gauge, lug wrench (manual, pneumatic, or electric), torque wrench, basic hand tools, air compressor, TPMS tool, wheel chocks, and lifting tools (jack with jack stands) or an automotive lift
Supplies: Vehicle protection supplies, *Vehicle Walk-Around Inspection Form* (Appendix I), shop rags, anti-seize compound

Choosing the Right Tires Activity

Tools: Internet access, calculator, a spread-sheet program such as Microsoft Excel, Apple Numbers, or Google Sheets
Supplies: Vehicle protection supplies, *Vehicle Walk-Around Inspection Form* (Appendix I)

Chapter 15
Braking System

Brake Inspection Activity

Tools: Safety glasses, basic hand tools, torque wrench, ruler (or brake pad thickness gauge), fender cover, wheel chocks, and lifting tools (jack with jack stands) or an automotive lift

Supplies: Vehicle protection supplies, *Vehicle Walk-Around Inspection Form* (Appendix I), shop rags, anti-seize compound, correct type and amount of brake fluid, brake fluid test strips

Chapter 16
Drivetrain

Drivetrain Activity

Tools: Safety glasses, basic hand tools, grease gun, fender cover, wheel chocks, and lifting tools (drive-on ramps or jack with jack stands) or an automotive lift
Supplies: Vehicle protection supplies, *Vehicle Walk-Around Inspection Form* (Appendix I), shop rags, grease, transmission fluid, differential fluid (if needed)

Chapter 17
Exhaust and Emission System

Exhaust and Emission Activity

Tools: Safety glasses, hammer, fender cover, wheel chocks, and lifting tools (drive-on ramps or jack with jack stands) or an automotive lift
Supplies: Vehicle protection supplies, *Vehicle Walk-Around Inspection Form* (Appendix I), shop rags

Chapter 18
Alternative Fuels and Designs

Payback Period Activity

Tools: Internet access, calculator
Supplies: None

Future Vehicle Activity

Tools: Internet access
Supplies: None

Chapter 19
Automotive Accessories

Automotive Accessories Activity

Tools: Internet access, calculator
Supplies: None

Chapter 20
Common Problems and Roadside Emergencies

Changing a Flat Tire Activity

Tools: Torque wrench, wheel chocks, tools in the vehicle (e.g., jack, lug wrench), work gloves

Supplies: Vehicle protection supplies, *Vehicle Walk-Around Inspection Form* (Appendix I), shop rags, anti-seize compound

Jump-Starting Activity

Tools: Safety goggles, chemical resistant gloves, fender cover, jumper cables, portable jump starter, tape measure

Supplies: Vehicle protection supplies, *Vehicle Walk-Around Inspection Form* (Appendix I), shop rags, distilled water (if needed)

Lighting Activity

Tools: Safety glasses, basic hand tools, test light, digital multimeter (DMM), screwdriver set, nut driver set, fender cover, wire stripper, soldering iron kit, soldering station

Supplies: Vehicle protection supplies, *Vehicle Walk-Around Inspection Form* (Appendix I), shop rags, dielectric grease, replacement lights, jumper wire materials

Replacing Wipers Activity

Tools: Safety glasses, flat-head screwdriver, basic hand tools

Supplies: Vehicle protection supplies, *Vehicle Walk-Around Inspection Form* (Appendix I), new wiper blades, windshield washer fluid

On-Board Diagnostics Activity

Tools: Safety glasses, OBD II scan tool, Internet access

Supplies: Vehicle protection supplies, *Vehicle Walk-Around Inspection Form* (Appendix I)

Chapter 21
Electric Vehicles

Electric Vehicles Activity

Tools: Internet access, calculator, a spread-sheet program such as Microsoft Excel, Apple Numbers, or Google Sheets

Supplies: None

Chapter 22
Next-Generation Vehicles

ADAS and Vehicle Automation Level Identification Activity

Tools: Internet access

Supplies: None