Wheels: Brian of Dayton wants to know what to look for when purchasing jumper cables. He does not want to spend anymore money than necessary but he does want to purchase cables that will be able to jump start his vehicle in case the battery goes dead.

Halderman: I would suggest you purchase a set of jumper cables that have the following features:

- **copper wire** – Copper is a better conductor than aluminum and will not break as easily as aluminum. If several strands of an aluminum cable breaks, it can result in a hot spot and will decrease the current-carrying ability of the cable.
- **4-gauge** – The lower the number, the larger the cable wire size. Gauge number is usually used to indicate the size of the cable. Do not purchase jumper cables that do not state the gauge. Smaller gauge cables (gauge numbers higher than 4) *may* be able to jump start your engine but the cables may overheat. Smaller gauge jumper cables also have higher resistance to current flow. As a result, your engine may not be able to be started under severe conditions if the gauge of the jumper cable is not large enough to handle the necessary current flow.

  HINT: Think of electricity as water flowing through a pipe. For the same pressure (voltage), the larger pip (larger wire gauge) will be able to supply more gallons per minute of water (amperes of electrical current) than a small water pipe.
- **16 feet long** – Jumper cables will not help if they are not long enough to reach from the disabled vehicle to the good vehicle. To try to save some money, consider purchasing 12-foot long cables, but there is the possibility that you may be parked in an area that the 12-foot cable may not be able to reach.

Wheels: What about these battery jumper boxes. Are they a good alternative to jumper cables?

Halderman: Yes. I have both a jumper box and jumper cables and I would use the jumper box before using the jumper cables. A jumper box is a high-capacity battery encased in a plastic box with a carrying handle with two short jumper cables attached. To use, simply attach the red lead to the positive post of the battery and the black lead to a good engine ground and start the disabled vehicle.

A jump box can also be used to power a cell phone or even a laptop computer if a power inverter is used with the jumper box. A power inverter converts 12 volts direct current (DC) into 110 volts AC (alternating current). Some battery boxes include a built-in flash light to make jump starting easier in the dark.

Wheels: How should you safely jump start a dead vehicle?

Halderman: To safely jump start a vehicle with a dead or discharged battery, begin by positioning the vehicles close to each other but do not allow the vehicles to touch to avoid possible damage to not only the outside metal portion of the vehicle, but also to the small body ground wire(s).

Be sure the ignition switch is in the off position of both vehicles and then attach one end of the red jumper cable to the positive (+) terminal of the good vehicle and attach the other end to the positive terminal of the disabled vehicle. Then attach one end of the black cable to the negative (-) terminal of the good vehicle. Attach the other end of the black cable to a good engine ground of the disabled vehicle. Start the good vehicle and wait about 5 minutes, then start the disabled vehicle. To disconnect the jumper cables, reverse the procedure starting with the last connection made, the ground connection.