FIGURE 21.1A A typical tire tread depth gauge. The center movable plunger is pushed down into the groove of the tire.

FIGURE 21.1B The tread depth is read at the top edge of the sleeve. In this example, the tread depth is 6/32 inch.
FIGURE 21.2 Wear indicators (wear bars) are strips of bald tread that show when the tread depth is down to 2/32 inch, which is the legal limit in many states.

FIGURE 21.3 The tire tread runs around the circumference of the tire, and its pattern helps maintain traction.

FIGURE 21.4 Hydroplaning can occur at speeds as low as 30 mph (48 km/h).
FIGURE 21.5 Typical construction of a radial tire. Some tires have only one body ply, and some tires use more than two belt plies.

FIGURE 21.6 The major splice of a tire can often be seen and felt on the inside of the tire.

FIGURE 21.7 Complete stage 1) (body plies, sidewall components, and beads) 2) Building drum expands in preparation to receive the belts and tread 3) Application of belt #1 4) Application of belt #2 5) Application of the tread 6) Drum retracts to release the completed green (uncured) tire.
FIGURE 21.8 After the entire tire has been assembled into a completed “green” tire, it is placed into a tire-molding machine where the tire is molded into shape and the rubber is changed chemically by the heat.

FIGURE 21.9 Notice that the overall outside diameter of the tire remains almost the same and at the same time the aspect ratio is decreased and the rim diameter is increased.

FIGURE 21.10 (a) Tire size designation includes cross-sectional width and aspect ratio. (b) Cross-sectional view of a typical tire showing the terminology.
FIGURE 21.11 Typical sidewall markings for load index and speed rating following the tire size.

FIGURE 21.12 The E.C.E. symbol on a sidewall of a tire. Notice the small -s at the end, indicating that the tire meets the “pass-by” noise limits.

FIGURE 21.13 A typical door placard used on a General Motors vehicle indicating the recommended tire inflation.
FIGURE 21.14 Conicity is a fault in the tire that can cause the vehicle to pull to one side due to the cone effect (shape) of the tire.

FIGURE 21.15 Notice the angle of the belt material in this worn tire.

FIGURE 21.16 Slip angle is the angle between the direction the tire tread is heading and the direction it is pointed.
FIGURE 21.17 Typical "Uniform Tire Quality Grading System" (UTQGS) ratings imprinted on the tire sidewall.

FIGURE 21.18 Typical DOT date code. This tire was built the 52nd week of 2010.

FIGURE 21.19 Cutaway of a run-flat tire showing the reinforced sidewalls and the required pressure sensor.
FIGURE 21.20 A conventional tire on the left and a run-flat tire on the right, showing what happens when there is no air in the tire.

FIGURE 21.21 The PAX run-flat tire system is composed of three unique components—a special asymmetrical wheel, a urethane support ring, and a special tire.

FIGURE 21.22 The Tire Performance Criteria (TPC) specification number is imprinted on the sidewall of all tires used on General Motors vehicles from the factory.
FIGURE 21.23 The size of the wheel is usually cast or stamped into the wheel. This wheel is 7 inch wide.

FIGURE 21.24 The wheel rim well provides a space for the tire to fit during mounting; the bead seat provides a tire-to-wheel sealing surface; the flange holds the beads in place.

FIGURE 21.25 A cross section of a wheel showing part designations.
FIGURE 21.26 Offset is the distance between the centreline of the wheel and the wheel mounting surface.

FIGURE 21.27 Back spacing (rear spacing) is the distance from the mounting pad to the edge of the rim.

FIGURE 21.28 Bolt circle is the diameter of a circle that can be drawn through the center of each lug hole or stud.
FIGURE 21.29 Measuring the bolt circle on a five-lug wheel is difficult, but a quick and easy way includes measuring as shown to determine the approximate bolt circle of a five-lug wheel.

FIGURE 21.30 Measure center-to-center distance and compare the distance to the Figures in the chart in the text to determine the diameter for a five-lug bolt circle.

FIGURE 21.31 A typical JWL symbol for the Japan Wheel Light Metal standard mark.
FIGURE 21.32 (a) A rubber snap-in style tire valve assembly. (b) A metal clamp-type tire valve assembly used on most high-pressure (over 60 PSI) tire applications such as is found on many trucks, RVs, and trailers.

FIGURE 21.33 Various styles of lug nuts.

FIGURE 21.34A A typical knock-off-type wheel showing the large three prong wing nuts and the threads on the wheel hub.
FIGURE 21.34B A look-alike knock-off wheel that looks like a knock-off but uses lug nuts.

Check the tire information placard, usually located on the driver’s door or door jamb, for the specified tire size and inflation pressure.

Visually check the tires for abnormal wear or damage.
Remove the tire valve cap and visually check the condition of the valve stem.

Check inflation pressure by pushing the tire-pressure gauge straight onto the end of the tire valve.

Read the pressure and compare to specifications.
A typical tire tread depth gauge.

The blade of the tire tread depth gauge is pushed down into the groove of the tire at the lowest part.

Remove the gauge from the tire and read the tread depth at the metal housing. Tread depth is usually measured in 1/32's of an inch.
If the top of Lincoln's head is visible, then the tread depth is lower than 2/32 inch, which is the legal limit in many states.