
RPM x 1000
OFF
LOW
PUSH
SEEK
PRESET
AM FM
SRS

CHAPTER 7

Getting to Know Your Vehicle

It is important for you to know and understand your vehicle's systems and the checks you should make before you start driving. Understanding the function and purpose of each system and what the lights and gauges can tell you will help you manage risk. To manage risk when driving, you must be able to quickly locate, read, understand, and operate all controls and switches without taking your eyes off the road ahead for more than one second at a time.

Comfort and Control Systems and Risk Management

OBJECTIVES

1. Describe four devices that help make you comfortable in a vehicle.
2. List six devices that enable you to control a vehicle, and explain what each one does.

KEY TERMS

gear selector lever
gearshift
overdrive
power steering
accelerator
cruise control
brake pedal
power brakes
parking brake

Suppose you're driving along and suddenly you see a light blink on your control panel. What does it mean? If you don't know the answer, it means that you don't know your vehicle. Not knowing puts you, your passengers, and other drivers at risk.

Vehicles are equipped with a variety of comfort and control devices. You have to know what these devices do, where they are located, and how they operate. For specific information, refer to the owner's manual.

What Devices Help Make You Comfortable in a Vehicle?

You must concentrate while driving, and being uncomfortable can distract you from the driving task. Vehicles have comfort devices to help you, but you have to know how to use them to their best advantage. Some comfort devices help reduce muscle strain. Others control the interior climate of your car and make driving less tiring.

SAFETY TIPS

Cruise control should not be used when driving where grip between the tires and road is low or where frequent speed adjustments are necessary.

Seat-Position Controls

The driver's seat must be comfortable, and it must suit the driver. It should provide good visibility and access to the controls.

Many vehicles have power seat-adjustment controls, which allow you to adjust the seat up or down, forward or back, or tilt the seat to better fit the vehicle to the driver.

In vehicles without power seats, the seat-adjustment lever is usually located on the lower left side or front of the driver's seat. Pulling back or up on the lever allows the driver to adjust the seat forward or back for better access to vehicle controls and switches.

In a vehicle with a steering wheel air bag, adjust the seat so you are at least 10 inches from the steering wheel.

Steering Wheel

The top of the steering wheel should be no higher than the top of the driver's shoulders. Many vehicles have an adjustable (tilt wheel)

steering wheel. Drivers can adjust the steering wheel to a position that provides maximum comfort and control. In vehicles that do not have a tilt wheel, a driver may need to use a wedge-shaped driving cushion.

Air Conditioner and Heater

Use the air conditioner to cool the vehicle and lower the humidity, and use the heater to warm the vehicle interior and clear fogged windows. Never overheat your vehicle. An overheated vehicle can cause drowsiness.

Air Vents

Adjustable vents allow outside air to flow into the vehicle. They are usually located on the dashboard or on the front lower left and right sides.

FYI

The refrigerated truck was patented in 1949 by Frederick McKinley Jones, an African-American inventor. Until that time, fresh produce and other perishable food had to be transported by railroad. The refrigerated truck made it possible for towns not on railroad routes to receive regular deliveries of these products.

How Can You Control the Movement of Your Vehicle?

The parts of a vehicle's control system enable you to start and stop the vehicle and control its speed and direction.

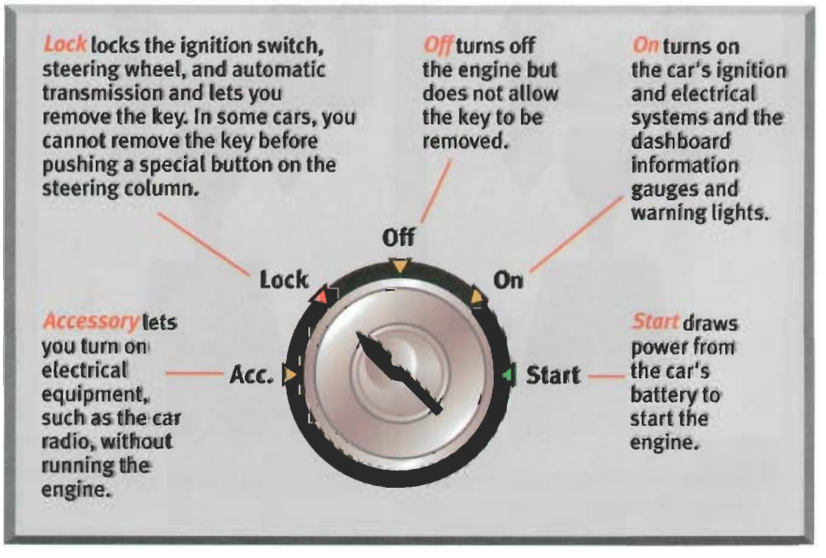
Ignition Switch

Inserting and turning the key in a vehicle's ignition switch starts the engine. This switch is usually found on the steering column. The ignition switch normally has five positions: Accessory, Lock, Off, On, and Start.

Selector Lever for Automatic Transmission

On vehicles that have automatic transmissions, you choose the gear you want by moving the **gear selector lever.** This lever is located either on the steering column or on the floor to the right of the driver's seat.

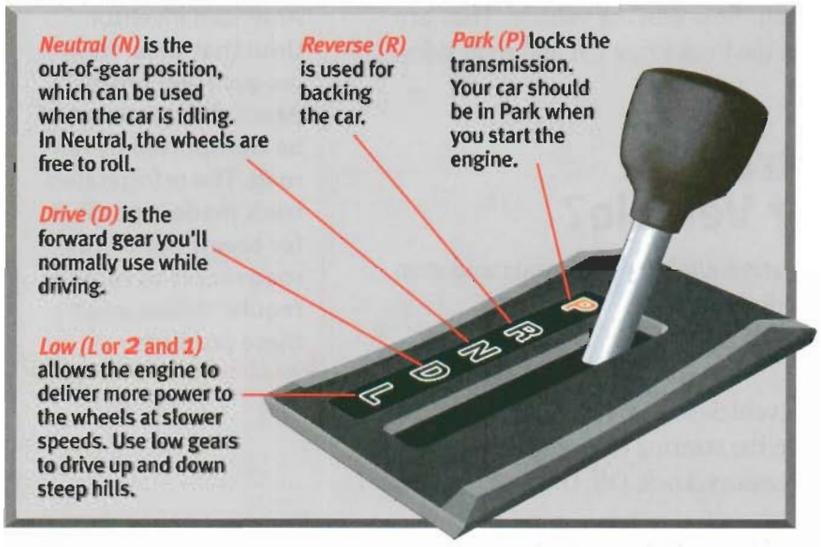
A vehicle with an automatic transmission will start only in Park or Neutral. Usually drivers start from Park, because Park is the gear in which they leave the car. In this position, a vehicle will not roll. A car in Neutral *will* roll on an incline.



Gearshift for Manual Transmission

On vehicles that have manual transmissions, you choose the gear you need by stepping down on the clutch pedal and moving the **gearshift** (or stick shift). The gearshift is usually located on the floor to the right of the driver's seat, although occasionally you'll find the gearshift on the side of the steering column.

The gearshift may have three, four, or five speed positions, plus a reverse position. The fifth gear serves as an **overdrive** gear, which allows the engine to run more slowly and fuel efficiently at high speeds.

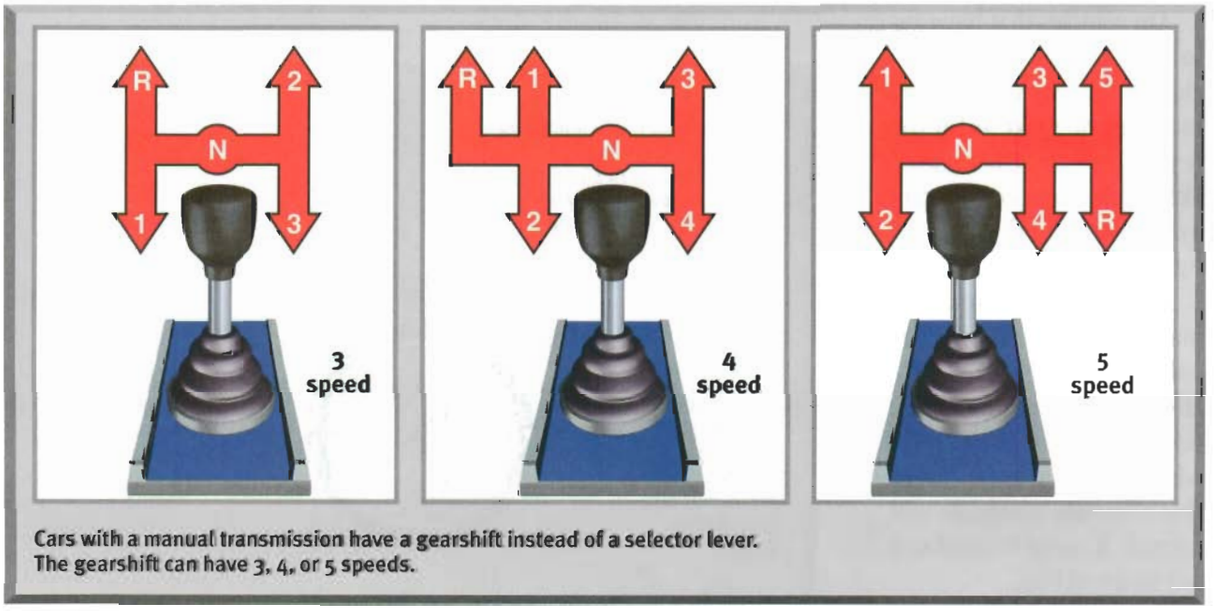


Clutch Pedal

Cars with manual transmissions have a clutch pedal located to the left of the brake pedal. In Chapter 8 you will read more about how to operate the clutch pedal and the gearshift.

Steering Wheel

You control the direction of your front wheels by turning the steering wheel. In cars equipped with **power steering,** it takes little effort to turn the wheel.



Cars with a manual transmission have a gearshift instead of a selector lever. The gearshift can have 3, 4, or 5 speeds.

Accelerator (Gas Pedal)

You move the vehicle and control its speed by pressing on the **accelerator,** or gas pedal, with your right foot. The greater the pressure you put on the accelerator, the more fuel the carburetor or fuel injectors feed to the engine. The more fuel that flows into the engine, the faster the vehicle will go.

Cruise Control

Cruise (or speed) **control** is an optional vehicle feature that lets you maintain a desired speed without keeping your foot on the accelerator. Cruise control is intended for highway driving, in situations where you can maintain a constant rate of speed.

To use cruise control, first accelerate to the speed of the traffic, then reduce speed by 2 or 3 mph. Set the control button or switch located on the turn-indicator arm or on the steering wheel. You can switch off cruise control whenever you choose, or you can cancel it by tapping the brake pedal.

Although cruise control is a convenience, think when you use it. Cruise control may lead you to be less alert than you should be.

Brake Pedal

You slow or stop the vehicle by pressing down on the **brake pedal. Power brakes** require less foot pressure to operate than non-power brakes. However, power brakes do *not* shorten the distance needed to stop the vehicle.

Parking Brake

The **parking brake,** frequently called the emergency or hand brake, is used to keep a parked vehicle from rolling. The parking brake control can be a small pedal located to the left side of the floor panel, a hand lever located under the left side of the dashboard, or a floor-mounted hand lever located to the right of the driver's seat.

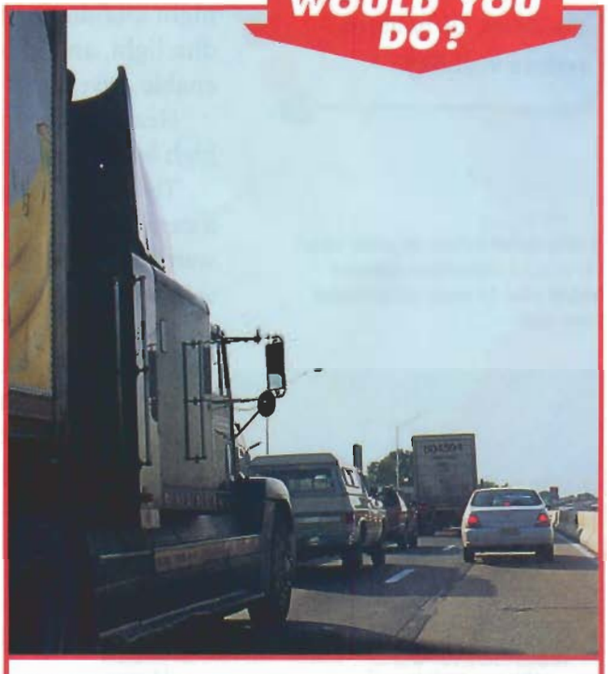
Lesson 1 Review

1. What equipment is designed to make drivers comfortable?
2. What devices control the vehicle? What does each device do?

FYI

When a vehicle with power steering stalls, the power steering is lost. If the vehicle cannot be started and needs to be rolled off the road, the steering wheel will be very difficult to turn.

WHAT WOULD YOU DO?



You are driving in the right lane at 50 mph. What actions will you take to minimize risk? What vehicle controls will come into play?

The Visibility and Protective Systems of Your Vehicle

OBJECTIVES

1. Name at least five aids to visibility.
2. Describe four features that are designed to protect you and your passengers from injury.
3. Name three antitheft devices.

KEY TERMS

defroster
blind spot
passive safety device
air bag
head restraint
antitheft device

Some safety features reduce driving risk by aiding visibility. Others reduce or control risk by protecting the driver and passengers from injury. Still others guard the vehicle against theft.

What Devices Aid Visibility?

Seeing and being seen are critical to controlling risk and making driving easier and safer. A vehicle's visibility system better enables you to see the roadway and maximizes the ability of others to see you.

Lights

Using your headlights helps other roadway users to see you both at night *and* during the *day*. Headlights help you see better at night, in dim light, and in bad weather. Taillights and side-marker lights better enable drivers and other highway users to see your vehicle.

Headlights can be switched to either low beams or more intense high beams. Most of the time you'll be using the low beams.

The switch to turn on your headlights is either on the dashboard or on a stem on the left side of the steering column. You either pull the lever toward you or push it away to change to high or low beams. In some older vehicles, the switch is a button located on the left side of the floor panel.

When you turn on your headlights, your taillights and side-marker lights also come on. In addition, the dashboard gauges, dials, and controls light up. You can dim or brighten these dashboard lights by turning a knob located on the instrument panel or turn-indicator lever.

In many vehicles, the same light switch knob used to turn on exterior lights can also control the brightness of the dashboard lights and turn on the interior dome light.

Windshield Wipers and Washer

Vehicles normally have two-, three-, or variable-speed windshield wipers. Some vehicles also have a wiper in the rear window.

SAFETY TIPS

Always be sure that your headlights and taillights are clean. Dirty lights reduce visibility.

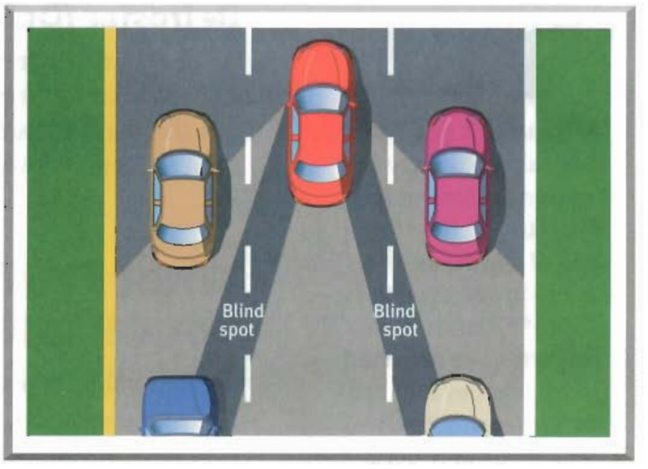
◆ *Glancing often in your rearview and sideview mirrors helps you to scan all around your car.*

Variable-speed wipers allow the driver to set the wipers to move at a very slow or very rapid rate. This feature is useful when only an occasional wipe is needed to keep the window clear, as during a light drizzle. It is also helpful during a driving rain when a faster rate is needed.

The windshield washer squirts water or an antifreeze solution onto the windshield. The liquid is stored in a container under the hood.

Rearview and Sideview Mirrors

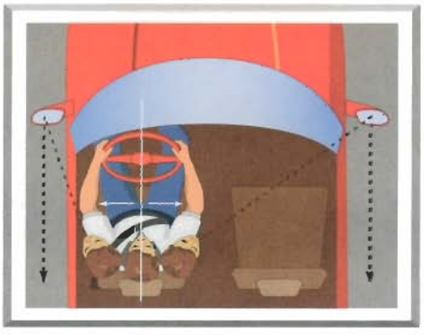
Your vehicle's rearview and sideview mirrors provide vision to the rear and sides of the roadway. Even when correctly adjusted, however, they cannot eliminate all **blind spots**—areas of the road that you cannot see in the mirrors. You must make a final check to the sides before you make any lateral move. Turning your head to use the side mirrors or to check over your shoulder should be limited to a quick glance to detect the presence of objects and not to gather detailed information.



◆ *Look over your shoulder for traffic in your blind spots before changing lanes, and try never to travel in another driver's blind spots. Adjust your mirrors carefully.*

Sun Visors

Sun visors can be moved up and down and turned to the side to prevent the sun from shining in the driver's eyes. However, be careful not to let the visors interfere with your view of the roadway or traffic to the side.



CONNECTIONS
Science

When you are planning to change lanes, you must be certain your blind spots are clear. One way you can reduce the size of blind spots is by adjusting your rearview and sideview mirrors 15 degrees outward.

Adjust the inside rearview mirror to take in as much as possible. You should be able to use this mirror with a shift of the eyes, not a turn of the head. Drivers 6 feet tall or more may find it helpful to turn the mirror 180 degrees so that the day/night switch is on the top of the mirror. This action raises the mirror about 2 inches and eliminates a blind spot to the front.

Adjust the sideview mirrors to reduce side and rear blind spots as much as possible. To adjust the driver's side mirror, place your head against the window and set the mirror so you can just see the side of the car. For the passenger's side mirror, position your head in the middle of the car and adjust the mirror in the same way, so you can just see the side of the car. Remember, though, that even properly adjusted mirrors will not eliminate all blind spots. You will still need to check over your shoulder. See the illustration above.

Defroster (Defogger)

Use the **defroster**—sometimes called the defogger—to clear moisture or frost from the front, rear, and side windows. Heat from the defroster can also make it easier to scrape ice from the windows. In most vehicles, front and rear defrosters have separate controls.

What Features Protect You and Your Passengers from Injury?

Your vehicle's protective features help reduce risk by guarding you and your passengers against injury in case of a collision or sudden emergency maneuver.

Some safety features, such as air bags, are **passive safety devices.** **Passive safety devices** operate without the user having to do anything. Other features, such as manual **safety belts,** require drivers and passengers to take some action to protect themselves.

Safety Belts

Drivers and passengers should always wear safety belts—preferably, shoulder-lap belts—whenever the vehicle is in motion. If you are wearing a shoulder-lap belt at the time of a crash, your risk of being killed is reduced by about 50 percent, and your risk of serious injury is reduced by 70 percent.

Properly worn safety belts protect the wearer against injury in a collision. They lessen the chance that you or your passengers will be thrown against the dashboard, through the windshield, or out a door that has sprung open in a crash. In addition, safety belts help keep you behind the wheel and in control of the vehicle if you have to swerve or brake abruptly or are struck by another vehicle.

Forty-nine states have passed laws that require the driver and front-seat passengers to wear safety belts. All 50 states have laws requiring very young children to ride only in special safety-tested and approved child safety seats.

Air Bags

Almost 79 million vehicles are now equipped with air bags, which inflate automatically in a frontal crash, then deflate again in a fraction of a second. Some vehicles also have air bags that inflate in a side collision. Air bags are very effective in preventing injuries, but they do not reduce the need for wearing a safety belt.

FYI

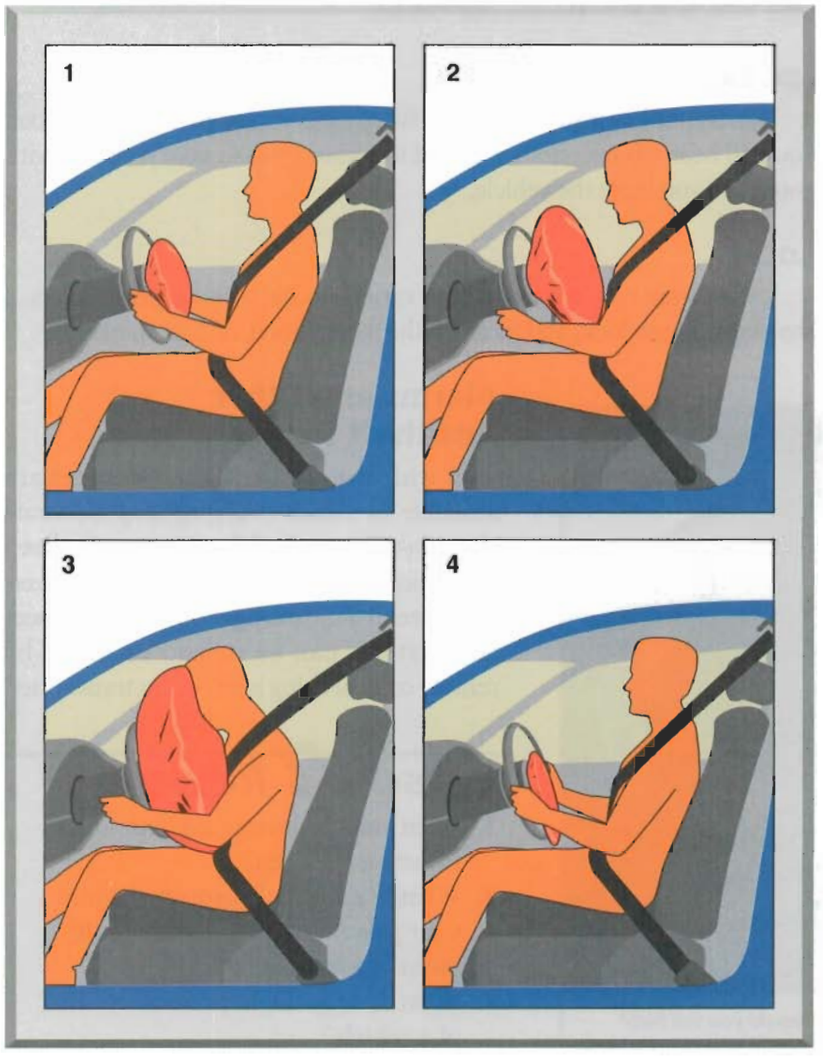
All new cars equipped with air bags carry this warning: "Sitting too close to the steering wheel can result in injury in the event of a crash." Crash investigations have reported facial injuries and broken forearms. Such injuries usually occur when drivers using hand-over-hand steering have their forearm across the steering wheel at the moment the air bag inflates.

Head Restraints

Head restraints are standard equipment on front-seat backs and optional on the rear seats of some vehicles. These padded restraints protect against whiplash (neck injury), especially when your vehicle is hit from behind. To get the maximum benefit from head restraints, make sure that they are properly adjusted. Head restraints should be high enough to make contact with the back of your head, not the base of your skull.

Door Locks

Keep vehicle doors locked. Locked doors not only are unlikely to open in a crash, but they also help prevent uninvited people from entering your car when you're stopped.



◆ *In less than one second, airbags (1) begin to inflate on impact, (2) become fully inflated, (3) cushion the driver from the frontal blow, and (4) deflate.*

SAFETY TIPS

In cold weather, leave the blower off and turn the temperature control to the hottest setting for the first couple of minutes. This allows the air to warm up and prevents that initial ice-cold blast from freezing the inside of the windshield.

FYI

Nearly one out of seven recovered stolen vehicles still have the keys in them!

FYI

Very soon some automotive manufacturers will put air bags in back seats. "Smart" air bags will also be installed in vehicles. During a crash, the size and weight of an individual will determine whether and how the air bag deploys.

Structural Features

Automotive manufacturers build a wide range of safety features into their vehicles. These features include tempered safety-glass windows, impact-resistant bumpers, protective padding on the dashboard and interior roof, energy-absorbing steering columns, and childproof door locks that are controlled by the driver. Factors such as a vehicle's size and weight also help determine how well occupants are protected in a crash.

What Devices Guard Against Vehicle Theft?

Vehicle theft is a nationwide problem. Various devices help protect your vehicle against thieves and vandals.

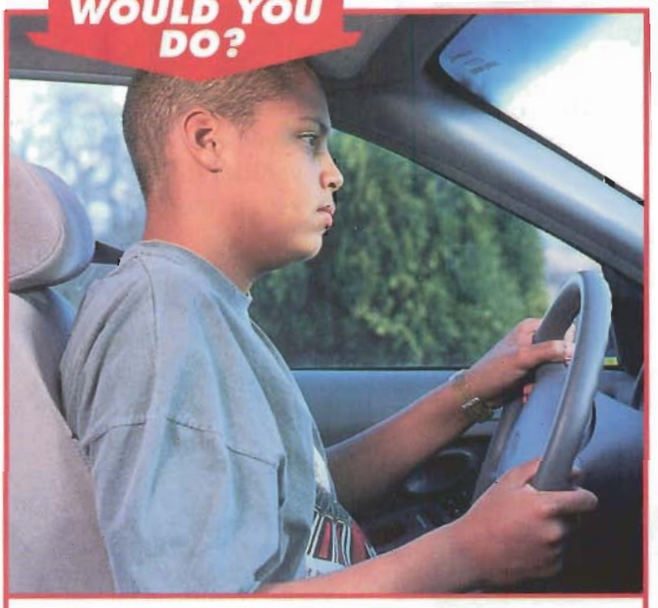
Ignition Buzzer

When your key is in the ignition switch and you open the driver's door, you will hear a buzz or other sound to remind you to take your key with you when you leave the vehicle.

Locks

Vehicles are now equipped with various locks, including door locks, a steering-column lock, and locks on the trunk, hood, and gas tank.

WHAT WOULD YOU DO?



What is this driver doing wrong? What would you tell him?

Alarms and Other Antitheft Devices

A wide range of antitheft devices are available for vehicles, ranging from elaborate alarm systems to disabling devices that keep the vehicle from starting or prevent the steering wheel from turning. Some vehicle security systems can be turned on or off by remote control using a key chain transmitter.

Lesson 2 Review

1. What vehicle devices aid your ability to see and be seen?
2. What features help protect you and your passengers from injury in the event of a collision?
3. What devices might prevent the theft of a vehicle?

Information and Communication Systems

OBJECTIVES

1. Name at least seven devices that provide information about your vehicle.
2. Name and describe how at least five devices let you communicate with other drivers and pedestrians.

KEY TERMS

speedometer
odometer
alternator
directional signal
emergency flashers

As you drive, you gather information about other roadway users, the roadway itself, and off-road conditions by searching in all directions. You get information about the workings of your own vehicle by checking the instruments, gauges, and lights on the dashboard.

While you gather information, you are letting other roadway users know where you are and what you intend to do.

What Devices Provide Information About Your Vehicle?

Drivers need to know how fast they are going, how far they have gone, and how their vehicle systems are working. The instruments, gauges, and lights on your dashboard can give you this information.

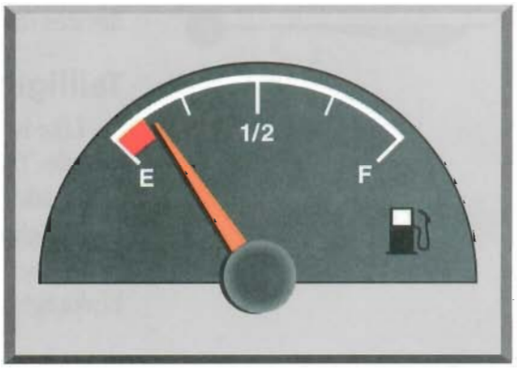
Speedometer and Odometer

The **speedometer** shows, in miles per hour and kilometers per hour, how fast your vehicle is moving.

The **odometer** keeps track of the total number of miles the vehicle has been driven. Some vehicles also have a separate trip odometer, which can be reset to zero at any time.

Fuel Gauge

Your fuel gauge shows how close to full—or empty—your fuel tank is. Your owner's manual tells you how many gallons of fuel your tank holds.



◆ *It is time to refuel when the needle on your fuel gauge reaches the red area.*

Alternator Gauge or Warning Light

Your vehicle's **alternator** provides electricity to keep the engine running, recharge the battery, and operate such equipment as lights and radio. If the alternator does not produce enough power, the electricity stored in your battery will be drained. The alternator gauge will indicate "discharge" or a red warning light will come on.

When the alternator does not work properly, turn off unnecessary electrical devices and check with a mechanic as soon as possible. If you delay, your battery will die.

◆ *The safety-belt light turns red when you start the car to remind you to buckle up.*

Temperature Gauge or Warning Light

The temperature gauge or light lets you know if your engine temperature is too high. Overheating can damage your engine. Get off the road as soon as possible, turn off the engine, and have the problem checked.

Oil-Pressure Gauge or Warning Light

The oil-pressure gauge warns you when the pressure at which oil is being pumped to the engine is low. This means that the engine is not being lubricated properly. To avoid serious engine damage, stop driving immediately and consult a mechanic.

Note that the oil-pressure gauge or light does not indicate how much oil is in the engine. You need to check the oil dipstick for that information.

Brake Warning Light

Most vehicles have a brake warning light. When it goes on, you might be low on brake fluid, the fluid is leaking, or the brakes are not working properly. Check with a mechanic immediately.

Other Dashboard Lights

Your parking-brake light reminds you to release the parking brake before moving the vehicle. A daytime running light indicator shows when your daytime running lights are on. A high-beam indicator light shows when your vehicle's high-beam headlights are on, and a safety-belt warning light and buzzer remind you to fasten your safety belt. There is also an air bag light and an antilock brake system (ABS) light.

SAFETY TIPS

A warning light flashing alerts you to a problem, but it does not tell you what is wrong. Take your vehicle to a mechanic as soon as possible. Do not drive any farther than you absolutely must.

How Can You Communicate with Other Roadway Users?

Other drivers need to know where you are and what you are planning to do. You cannot talk to them verbally, but your vehicle has a number of devices that you can use to communicate with other roadway users.

Taillights

Like headlights and side-marker lights, taillights help others see your vehicle. Taillights also help communicate your intentions.

In addition to red taillights, the back of your car is equipped with red brake lights, white backup lights, and red or amber turn indicators. All vehicles manufactured since 1986 also have a third centered high-mounted brake light located at the bottom or above the top of the rear window.

Brake lights go on when you step on the brake, to warn others that you are slowing or stopping. The backup lights signal that you've shifted into Reverse and intend to back up.

One other light on the back of your vehicle is the license-plate light, which comes on with headlights and parking lights. This light is required by law and aids in identifying vehicles.

Directional (Turn) Signals

Your flashing red or amber **directional,** or turn, **signal**—sometimes called a blinker—shows that you plan to turn or change lanes. To operate the signal, move the turn-indicator arm up for right and down for left.

Normally, the signal lever clicks into position, then clicks off when you straighten the wheel. If the signal doesn't stop flashing, move the lever back manually.

Emergency Flashers (Hazard Lights)

The emergency-flasher switch is usually located on the steering column or dashboard. **Emergency flashers** make all four turn-signal lights flash at the same time. Use your flashers to warn other drivers that your vehicle is stopped on or near the road or that you are moving very slowly.

Parking Lights

In addition to low- and high-beam headlights, your vehicle is equipped with parking lights. Use parking lights (or emergency flashers) to help other drivers see you when your car is stopped along the side of the road. Parking lights are *not* designed to light the roadway when your vehicle is in motion. In some states it is illegal to drive with parking lights on.

Horn

Use your vehicle's horn to alert drivers, pedestrians, or cyclists to your presence or to warn them of danger.

The horn is generally located on the steering wheel. Before driving any vehicle, it is wise to locate and try the horn.

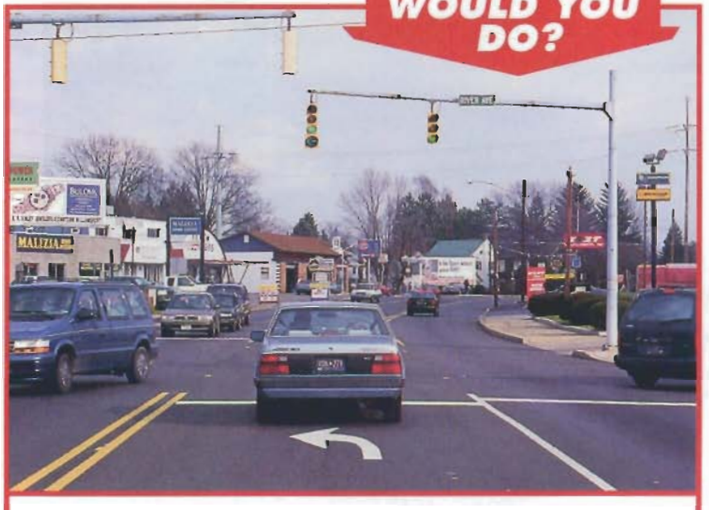
Lesson 3 Review

1. What devices provide information about your vehicle?
2. What devices enable you to communicate with other roadway users?

FYI

Daytime running lights are now standard equipment on many U.S. vehicles. These headlights go on automatically when the driver starts the vehicle. Daytime running lights have been required on Canadian vehicles since 1989, resulting in an 11 percent decrease in two-vehicle, different-direction collisions, according to a recent study.

WHAT WOULD YOU DO?



You want to turn left, then pull over to the right side of the road. How will you communicate to others what you plan to do?

LESSON FOUR

OBJECTIVES

1. Describe six checks you should make before entering your vehicle.
2. Describe five checks you should make after entering your vehicle.

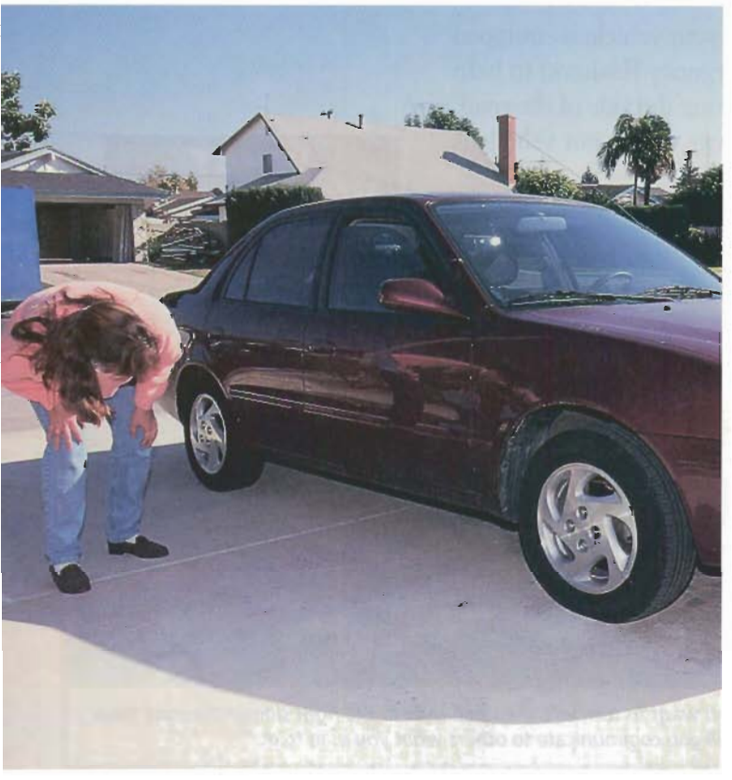
Checks and Procedures to Use Before Driving

If you were a pilot, you wouldn't dream of taking off without thoroughly checking your airplane first. Safety and equipment checks are equally important when you're about to drive a motor vehicle. The best time to find out about a problem or potential problem is *before* your vehicle is moving.

What Should You Check Before Entering Your Vehicle?

You should inspect the vehicle and the area around it before you enter your vehicle. If you need to step into the roadway, check carefully for approaching traffic.

◆ ***Check under your car for leaks, objects, and animals every time you plan to drive.***



Surrounding Area

- Look for children playing nearby. Each year about 200 children under the age of six are killed while playing in the family driveway.
- Look for animals that may be hiding under or walking or sleeping near the vehicle.
- Look for objects in the area of the vehicle and on the roadway that may interfere with safe movement or damage the tires.
- Check under the vehicle for fresh stains that could be indications of fluid leaks.

Wheels

- Check for underinflated tires and for tire wear or damage.
- Note which way your front wheels are turned. This is the direction in which your vehicle will go as soon as it begins moving.

Car Body

- Check for damaged or missing parts, and make sure that all lights and windows are clean and undamaged.
- In winter, scrape off snow and ice.

Under the Hood

- At least once a week or when you stop for gas, check the engine oil, radiator coolant, battery charge, brakes, transmission, and windshield-washer fluids.
- Check the battery connections. Are the cables tight? Are the terminals free from corrosion?

Getting into the Vehicle

Now you are ready to get into your vehicle. Do it safely.

- Load packages and have passengers enter from the curbside.
- Look carefully for approaching traffic before stepping into the roadway. Have your keys in hand.
- Walk around the front of the vehicle, facing oncoming traffic.
- Wait for a break in traffic before opening the door, and open it only far enough and long enough to allow you to get into the vehicle.

FYI

On a warm day, condensation from a vehicle's air-conditioning unit may form a puddle under the vehicle. It is important to be able to distinguish this puddle from those formed by fluid leaks.

What Should You Check After Entering the Vehicle?

Get into the habit of making safety checks and adjustments as soon as you get into the vehicle. In addition to observing the following guidelines, consult your owner's manual for further information.

Inside-the-Vehicle Checks and Procedures

- Close and lock all doors.
- Place the key in the ignition.
- Adjust the seat so that you can clearly see the roadway and comfortably reach the floor pedals and other vehicle controls.

Adjust mirrors and seats, fasten your safety belt, and lock the doors before you move into traffic.

ADVICE FROM THE EXPERTS

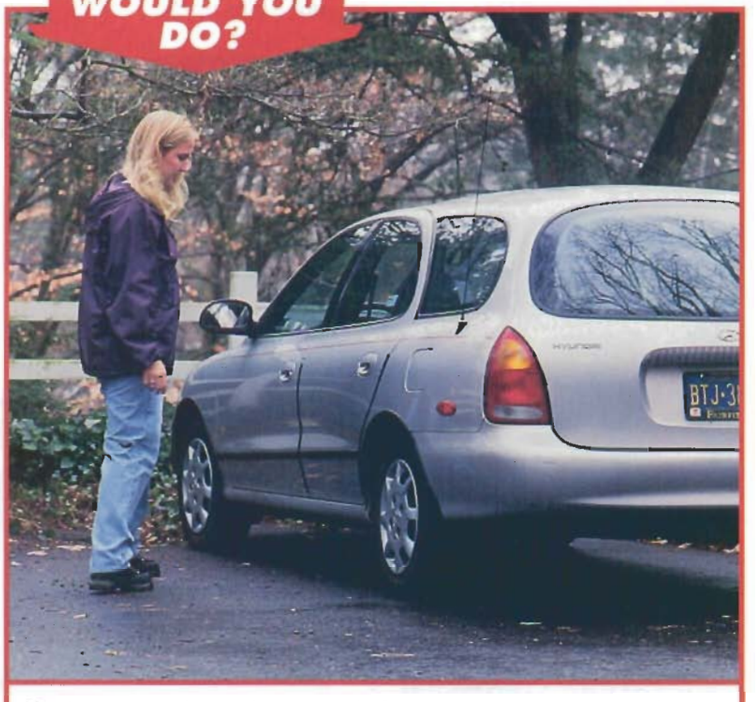
Charles A. Butler

Director, Safety Services, AAA

How well you manage risk is determined by what you do before you start driving. Make sure all vehicle system devices are working properly, and know how to use and adjust them—especially mirrors, seat, lights, steering wheel, and occupant restraints. Vehicle system devices improve visibility and improve your ability to steer, accelerate, and brake. They also protect you in the event of a crash. Good risk managers always make predriving vehicle systems checks.

- Adjust the head restraint. Have passengers adjust theirs.
- Adjust rearview and left sideview mirrors so that you can use them with just your eyes and do not need to move your head. Adjust the right sideview mirror for the best vision with the least head movement.
- Check the inside of the windows. Then clean, defog, or defrost as necessary.

WHAT WOULD YOU DO?



You have never driven this vehicle before. What checks and procedures will you use before entering and driving it?

- Make sure there are no objects inside the vehicle that will block your view or tumble about as you drive.
- Familiarize yourself with the controls for any devices you may need to use. While moving, minimize the time you take to use any of these devices. Make any adjustments when traffic and roadway conditions do not pose a threat.
- Fasten your safety belt and make sure all passengers have fastened theirs.

Lesson 4 Review

1. What should you check before getting into your vehicle?
2. What should you check once you are inside the vehicle?

Making a Circle Graph

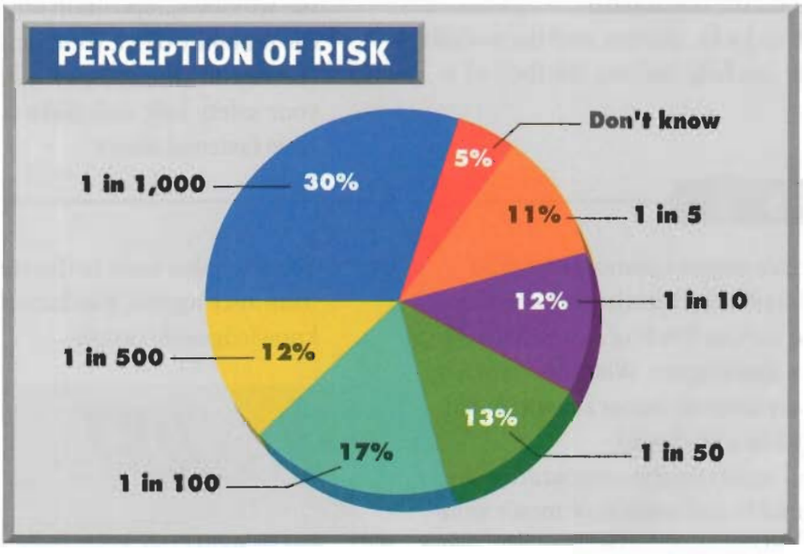
A poll is a way of finding out what a group of people think about a certain topic. You've probably seen or heard of polls showing what people think about political events, celebrities, and economic situations.

Conduct a poll to find out what members of your class think are their chances of being involved in a collision.

Try It Yourself

Follow these steps.

1. Count the number of people in your class. This number represents 100 percent of the class.
2. Ask each person this question: *What do you think the chances are of your being in a collision?* Then ask each person to choose one of the following as a response:
   a. 1 in 5, **b.** 1 in 10, **c.** 1 in 50, **d.** 1 in 100, **e.** 1 in 500, **f.** 1 in 1,000, **g.** don't know
3. Tally the number of responses to each choice.
4. Divide the number of responses to a choice by the total number of people in the class to get the percentage of people who responded to that choice. For example, if four people said "1 in 10" and there are 27 people in the class, the fraction would be $\frac{4}{27}$, or about 15 percent.
5. Make a circle graph to show the results. A full circle represents the whole class, or 100 percent. First divide the circle into fourths. Each fourth represents 25 percent. Then mark segments of the circle to show the approximate percentage of people who responded to each choice.
6. Your finished graph might look something like the one below.
   The chances of being in a traffic collision in any given year are actually 1 in 5. In a poll of 1,506 people, only 1 person out of 10 chose that rate. How does your class compare?



CHAPTER 7 REVIEW

KEY POINTS

Lesson One

1. Devices that help make you comfortable in a vehicle include seat-position controls, adjustable steering wheel, heater, air conditioner, and air vents.
2. Devices that enable you to control a vehicle include the ignition switch, the gear-selector lever or gearshift, the steering wheel, cruise control, the accelerator, the brake pedal, and the parking brake.

Lesson Two

1. Devices that aid visibility include lights, windshield wipers and washer, sun visors, defroster, and rearview and sideview mirrors.
2. Car features that protect you and your passengers from injury include safety belts, air bags, head restraints, door locks, and various structural features such as safety-glass windows, impact-resistant bumpers, and protective padding on the dashboard.
3. Devices such as locks, alarms, and the audible key reminder can help prevent the theft of a vehicle.

Lesson Three

1. The speedometer, odometer, fuel gauge, alternator gauge, temperature gauge, oil-pressure gauge, brake warning lights, and various dashboard lights provide information about your vehicle.
2. Taillights, directional signals, emergency flashers, parking lights, and horn let you communicate with others.

Lesson Four

1. Before entering your vehicle, you should check the surrounding area for children, animals, objects, or fluid leaks; check the condition and direction of the tires; inspect the body of the vehicle for damage and clean the lights and windows; and regularly check the fluid levels and battery connections.
2. After entering the vehicle, lock the doors; adjust the seat, head restraint, and mirrors; clear the windows; reposition any objects inside the car that may block your view or tumble about; familiarize yourself with all controls; fasten your safety belt; and make sure passengers have fastened theirs.

PROJECTS

1. Obtain a vehicle owner's manual and read through the contents. Find the sections that deal with the various kinds of systems you've read about in this chapter. What information can you obtain from an owner's manual that you won't find in a textbook?
2. Research and report on the comparative safety of different makes and models of motor vehicles. Try to find out specific reasons why some vehicles are safer than others. Your librarian can help you identify sources of information. You may also want to discuss this subject with insurance agents, mechanics, and other knowledgeable people.

internet CONNECTION

For the latest news on air bag safety, visit Glencoe's Web site.
drivered.glencoe.com

CHAPTER 7 REVIEW

CHAPTER TEST

Write the letter of the answer that best completes each sentence.

1. Three features that improve visibility are
   a. sun visors, bucket seats, and headlights.
   b. defroster, windshield wipers, and side-view mirrors.
   c. sunroof, air bags, and brake lights.
2. Head restraints should make contact with
   a. the base of your skull.
   b. the top of your head.
   c. the back of your head.
3. Cruise control
   a. increases your control of a vehicle.
   b. may lead you to be less alert.
   c. is best used in heavy inner-city traffic.
4. An odometer indicates
   a. the distance a vehicle has traveled.
   b. the speed at which a vehicle is traveling.
   c. the amount of current in your battery.
5. Three devices that control the speed and direction of your vehicle are the
   a. gearshift, brake pedal, and steering wheel.
   b. engine, battery, and accelerator.
   c. tires, air conditioner, and ignition switch.
6. Ice has formed on your windshield. You should
   a. pull the sun visor into the "up" position.
   b. turn on the air conditioner.
   c. turn on the defroster.
7. Each year approximately 200 children under the age of six are killed while playing
   a. on highways.
   b. in driveways.
   c. on sidewalks.
8. Taillights, emergency flashers, and parking lights
   a. are parts of a vehicle's communications system.
   b. cannot be activated with the ignition in the "off" position.
   c. are parts of a vehicle's information system.
9. Using a safety belt will
   a. protect you from getting whiplash.
   b. increase your chances of surviving a collision.
   c. decrease your chances of surviving a collision.
10. Directional signals
    a. are controlled by the turn-indicator arm.
    b. are controlled by a button on the dashboard.
    c. become activated whenever you turn the steering wheel.

Write the word or phrase that best completes each sentence.

safety check	blind spots	air bags
antitheft devices	automatic	manual

11. You should look over your shoulder when turning to detect anything in your _____.
12. Vehicles that have a(n) _____ transmission require you to use a clutch pedal.
13. _____ are considered passive safety devices because they operate automatically.
14. A(n) _____ enables you to find out about a problem before your vehicle is moving.
15. Alarm systems and audible key reminders are examples of _____.

DRIVER'S LOG

In this chapter, you have learned about the different systems of your vehicle and checks you should make before and after entering your vehicle. When you become a driver, what will you do to be sure that you do not forget to make these checks—even if you feel you're in too much of a hurry to take the time? Write a paragraph telling what you will do.