# Chapter 5
Vehicle Operation Basics

## 5-1 STARTING THE ENGINE AND ENGAGING THE TRANSMISSION

A. In the spaces provided, identify each of the following gears.

**AUTOMATIC TRANSMISSION**

![Diagram of automatic transmission and steering wheel]

B. Indicate the word or phrase in Column B that best matches each item in Column A by writing the correct letter in the space provided.

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIRST GEAR 1</td>
<td>a. Use on steep hills and when pulling a trailer in mud, sand, or snow</td>
</tr>
<tr>
<td>DRIVE 2</td>
<td>b. Use while stationary for long periods of time with the engine running</td>
</tr>
<tr>
<td>REVERSE 3</td>
<td>c. Use for extra power during normal driving</td>
</tr>
<tr>
<td>PARK 4</td>
<td>d. Use when SECOND GEAR is not sufficient for existing road conditions</td>
</tr>
<tr>
<td>OVERDRIVE 5</td>
<td>e. Use when parked or starting your engine</td>
</tr>
<tr>
<td>THIRD GEAR 6</td>
<td>f. Allows a car to use fuel more efficiently when traveling at higher speeds</td>
</tr>
<tr>
<td>SECOND GEAR 7</td>
<td>g. Use to back up</td>
</tr>
<tr>
<td>NEUTRAL 8</td>
<td>h. Use for normal driving</td>
</tr>
</tbody>
</table>
C. In the spaces provided, identify each of the following gears.

**MANUAL TRANSMISSION**

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D. In the spaces provided, indicate when you would use each of the following gears found on a manual transmission.

NEUTRAL: ______________________________________________________________________________________

FIRST GEAR: ____________________________________________________________________________________

SECOND GEAR: __________________________________________________________________________________

THIRD GEAR: ___________________________________________________________________________________

FOURTH GEAR: __________________________________________________________________________________

FIFTH GEAR: ____________________________________________________________________________________

REVERSE: ______________________________________________________________________________________
E. Complete each of the following sentences by writing the correct word or phrase in the space provided.

1. The main difference between automatic and manual transmissions is the number of ________.

2. On some vehicles with a manual transmission, you do not have to depress the ________ while starting the engine.

3. On some vehicles with an automatic transmission, you must push a button to turn ________ on or off.

4. If your manual-transmission vehicle has ________ gear, it is best for freeway driving.

5. Engine flooding can be caused by depressing the ________ too many times before starting a car.

F. Using the following illustration as a guide, describe each step in the process of engaging a manual transmission in the spaces provided.

1. __________________________________________________________________________________________

2. __________________________________________________________________________________________

3. __________________________________________________________________________________________

4. __________________________________________________________________________________________

5. __________________________________________________________________________________________

6. __________________________________________________________________________________________

7. __________________________________________________________________________________________
G. Select the word or phrase that best completes each of the following sentences and write the letter in the space provided.

_____ 1. When putting a vehicle with an automatic transmission in motion, you should press firmly on the brake pedal and shift to:
   a. DRIVE.  b. FIRST GEAR.  c. REVERSE.  d. Any of the above.

_____ 2. When shifting to higher gears in a vehicle with a manual transmission, you should always:
   a. shift up one gear at a time in sequence.  b. ride the clutch.  c. depress the accelerator and clutch together.  d. leave the transmission in “D”.

_____ 3. For normal driving, you do not need to ________ an automatic transmission.

_____ 4. Downshifting allows you to:
   a. gain more control on curves.  b. pass on upgrades.  c. switch gears faster.  d. pass on downgrades.

_____ 5. When starting your vehicle on a hill, make absolutely sure that the ________ is securely set.
   a. friction point  b. clutch  c. emergency brake  d. choke
H. CHECK IT OUT.

In the space provided, draw a diagram of the gear configuration of your vehicle.

In the space provided, draw a diagram of the gear configuration of a friend's vehicle that has a different type of transmission.
A. Where on the steering wheel should you place your hands while driving?

B. What is tracking? Why is it important?

C. Using the following illustration as a guide, describe each step in the hand-over-hand steering method for making a left turn.

1. ____________________________________________________________
2. ____________________________________________________________
3. ____________________________________________________________
4. ____________________________________________________________
5. ____________________________________________________________
D. Using the following illustration as a guide, describe each step in the push-pull steering method for making a sharp right turn.

1. __________________________________________________________________________________________
2. __________________________________________________________________________________________
3. __________________________________________________________________________________________
4. __________________________________________________________________________________________

E. For each of the following sentences, circle T if it is true and F if it is false.

1. T  F  Steering is the same thing as turning.
2. T  F  “Dry steering” is effective on sharp turns.
3. T  F  Tracking is effective on straight roads but not curving roads.
4. T  F  The hand-over-hand steering method allows you to make sharp turns quickly.
5. T  F  On most turns, you need to complete the push-pull cycle twice to make the turn.
F. CHECK IT OUT.

Interview a taxi driver, law-enforcement officer, delivery driver, or some other person who does a lot of driving for a living. Have the person demonstrate his or her steering techniques on wide, slow turns and on sharp turns. In the space provided, describe each steering technique.

Wide, slow turns: __________________________________________________________

________________________________________________________________________

________________________________________________________________________

Sharp turns: ____________________________________________________________

________________________________________________________________________

________________________________________________________________________

How do these techniques differ from the model steering methods discussed in the textbook?

________________________________________________________________________

________________________________________________________________________

5-3 BACKING UP

A. Where should you place your right foot, if possible, while backing up? Why?

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

B. How does a vehicle's turning radius affect how you back up?

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________
C. Indicate the proper sequence for backing up in a vehicle with a manual transmission by placing a 1, 2, 3, etc. before each of the following steps.

   ____ Look through the back window, and identify where you intend to move.
   ____ Turn your head and look behind you to make sure that your path of travel is clear.
   ____ Place your hand at the 12 o’clock position of the steering wheel.
   ____ Fully depress the clutch and come to a complete stop.
   ____ Maintain the clutch at the friction point to slowly back up, and keep your foot over the brake.
   ____ Turn away from anything you get too close to by making slight steering adjustments.
   ____ Depress the clutch and shift into reverse.
   ____ Turn your body to the right, and put your right arm over the back of the passenger seat.
   ____ Release the brake, and ease up on the clutch until you reach the friction point.

D. CHECK IT OUT.

Interview the driver of a tractor-trailer truck to find out what special precautions he or she must take when backing up. In the space provided, write down what you discover.

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

5-4 PARKING

A. Complete each of the following sentences by writing the correct word or phrase in the space provided.

   1. ______ are flexible metal rods that act as “whiskers” to let you know when you are close to the curb.

   2. No matter how experienced a driver you are, you should always enter and exit parking spaces ________.

   3. ______ parking involves parking alongside a curb where there are no surrounding vehicles.

   4. When parallel parking, you must back up into ________.

   5. You should choose a parallel parking space that is at least ________ longer than your vehicle.

   6. Angled parking involves parking in a space that is angled to the curb, usually at about ________ degrees.
7. When exiting a parking space, always give the _______ to traffic on the roadway.

8. When parking a vehicle with a manual transmission, make sure that the transmission is in FIRST GEAR or _______.

9. Visibility is often limited in parking _______.

10. _______ is parking beside another parked or stopped vehicle.

B. Where should you never park?

________________________________________________________________________________________

________________________________________________________________________________________

________________________________________________________________________________________

________________________________________________________________________________________

C. What is the proper procedure for entering and exiting an angled or perpendicular parking space?

________________________________________________________________________________________

________________________________________________________________________________________

________________________________________________________________________________________

________________________________________________________________________________________

D. Using the illustration on page 44 as a guide, describe each step in the process of entering a parallel parking space on the right side of the street in the spaces provided.

1. __________________________________________________________________________________________

2. __________________________________________________________________________________________

3. __________________________________________________________________________________________
E. Using the following illustration as a guide, describe each step in the process of exiting a parallel parking space on the right side of the street in the spaces provided.

1. __________________________________________________________________________________________

2. __________________________________________________________________________________________

3. __________________________________________________________________________________________

4. __________________________________________________________________________________________
F. Select the word or phrase that best completes each of the following sentences and write the letter in the space provided.

_____ 1. If you misjudge the distance while attempting to parallel park, you should:
   a. pull out of the spot and try again.  
   b. gently nudge the car behind you.  
   c. shift to NEUTRAL.  
   d. apply the parking brake.

_____ 2. After parking at a curb, always look before:
   a. locking your door.  
   b. applying the parking brake.  
   c. opening the door.  
   d. adjusting your mirrors.

_____ 3. When parking in an angled space, leave about __________ between your vehicle and the parked car to your right.
   a. 1 foot (2½ cm)  
   b. 3 feet (1 m)  
   c. 5 feet (1½ m)  
   d. 6 feet (2 m)

_____ 4. When parking with your vehicle facing uphill, keep the front wheels:
   a. turned toward the curb.  
   b. turned away from the curb.  
   c. straight ahead.  
   d. in the position that you parked the car

_____ 5. The dangers of parking garages include:
   a. shopping carts.  
   b. pedestrians.  
   c. vehicles backing out of spaces.  
   d. All of the above.

G. CHECK IT OUT.

Go to a parking lot and measure the area of several parking spaces. Are all the spaces equal? How much smaller are the spaces reserved for compact cars?

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

Repeat this exercise in a second parking lot. Are there any differences between the sizes of parking spaces in the two lots? In the space provided, write down what you discover.

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
<table>
<thead>
<tr>
<th>Event</th>
<th>Date</th>
<th>Time</th>
<th>Where</th>
<th>What Happened?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stalled car while starting</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flooded the engine</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jerked car while switching gears</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drove in wrong gear</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Rode the clutch</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rolled backwards while starting on hill</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jerked car while starting on hill</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Stalled car while starting on hill</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Used improper steering method</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Failed to straighten out of turn properly</td>
<td></td>
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<tr>
<td>Jerked car while backing up</td>
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<tr>
<td>Stalled car while backing up</td>
<td></td>
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<tr>
<td>Hit object while backing up</td>
<td></td>
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<td></td>
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<tr>
<td>Cited for illegal parking</td>
<td></td>
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<td></td>
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<tr>
<td>Close call when entering parking space</td>
<td></td>
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<td></td>
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<tr>
<td>Close call while exiting parking space</td>
<td></td>
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<tr>
<td>Difficulty parallel parking</td>
<td></td>
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<tr>
<td>Improperly parked on hill</td>
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<tr>
<td>Close call in parking lot</td>
<td></td>
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<tr>
<td>Close call in parking garage</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Trouble at airport loading zone</td>
<td></td>
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</tbody>
</table>