Operating Vehicle Control Devices

1. Identify the vehicle controls in the pictures below:

1. ___ accelerator 
2. ___ parking brake 
3. ___ foot brake 
4. ___ gear shift lever 
5. ___ steering wheel 
6. ___ ignition 
7. ___ turn signal lever 

2. If you want to back to the right, you should turn the steering wheel to the _______ right _______.

3. Give the meaning of each of the letters on the gear-shift selector and explain when each gear should be used.

| P | Park – the vehicle will not move |
| R | Reverse – vehicle will move backward |
| N | Neutral – no pulling power, but tires will roll |
| D | Drive – used for forward driving in most situations |
| L1 | Low – provides more engine power for hills or uneven terrain |
| L2 | Low – provides extra pulling power for steep hills or pulling heavy loads |
Vehicle Balance

1. Weight transfer from one side of the vehicle to the other is known as: **roll**

2. Weight transfer that causes the vehicle to “fishtail” is known as: **yaw**

3. Weight transfer to the front or rear of the vehicle is known as: **pitch**

4. Circle the actions this driver is probably taking.
   - Acceleration
   - Braking
   - Steering left
   - Steering right

5. Vehicle weight transfer is caused by **changes in speed** and **changes in direction**.

6. Quick acceleration will result in weight transfer to **the rear wheels**.

7. Braking results in weight transfer to **the front wheels**.

8. Steering to the right will result in weight transfer to **the left side**.

9. Describe a balanced seating position that helps the driver maintain vehicle control and balance.
   - steering wheel position: **at least 10 inches from driver’s torso**
   - position of backrest of driver’s seat: **straight (slightly beyond a 90 degree angle)**
   - left foot position: **on the “dead pedal” (left leg straight with foot on floor)**
   - right foot position (heel): **on the floor**
   - hand position: **8 o’clock & 4 o’clock or 7 o’clock & 5 o’clock position**

10. Maximum lock-to-lock steering movement in most modern vehicles is a total of **2 ½ - 3** turns.

11. Why is hand-to-hand steering recommended for most maneuvers? **Hand-to-hand steering provides better control. It helps the driver maintain vehicle balance by using smaller weight transfers and reduces the chance of too much steering input.**
12. Define:

- covering the brake – placing the right foot over the brake but not applying brake pressure
- controlled braking (squeeze on) – braking with sufficient pressure to slow the vehicle while maintaining vehicle balance
- threshold braking – braking to a point just short of wheel lockup
- trail braking (squeeze off) – used to maintain speed and balance. This technique is often used at the end of controlled or threshold braking.

13. In the diagram below,

   a. where will the vehicle’s weight transfer?
      Vehicle weight will transfer right side.

   b. when should the driver brake?
      The driver should slow down before entering the curve.

      - why?
      Braking in the curve would add more weight transfer to the right side compromising the stability of the vehicle.

14. Diagram (using arrows) and describe hand-to-hand (push/pull/slide) steering for a right turn.

   The driver pushes the steering wheel with the left hand from the 8 o’clock position to the 10 o’clock position and then pulls the steering wheel with the right hand from the 2 o’clock position to the 4 o’clock position.

15. The weight transfer illustrated below is caused by **quick acceleration**.
Visual Skills/BGE Mirror Settings/Vehicle Operating Space

1. Define the following.
   - **Focal vision**: used to read or identify distinct objects.
   - **Central vision**: fringe area around the focal vision. It is used to judge depth and position.
   - ** Peripheral vision**: outer vision fields. Motion changes are often detected in the peripheral vision area.
   - **Target**: - a fixed object that appears at the end of your path of travel.
   - **Targeting**: maintaining vehicle position by selecting a target well ahead of the vehicle
   - **Path of travel**: where the driver directs and intends for the vehicle to travel.
   - **Vehicle operating space**: the area around the vehicle which is not visible to the driver.
   - **Traditional mirror settings**: mirror setting in which the view through the side view mirrors overlaps with what is seen in the rear view mirror.
   - **BGE mirror settings**: Blindzone/Glare elimination setting – In this mirror setting, the side view mirrors are set to allow the driver to monitor the adjacent lane and the rearview mirror is set to monitor what’s behind the vehicle.

2. How can you determine a vehicle's operating space (footprint)? Diagram the vehicle operating space around the vehicle below.

   **Class activity**: With a student in the driver’s seat, have other students surround vehicle. One at a time, the students outside the vehicle will back up until the driver can see his/her feet.

3. Diagram the areas shown in the side view mirrors using:

   - Traditional Mirror Setting
   - BGE Mirror Setting

4. List the advantages of the BGE mirror setting.
   - Blindzones are greatly reduced. Peripheral vision should detect objects in blindzone.
   - Blindzones can be checked with less time needed away from front vision.
   - At night, glare from outside mirrors is virtually eliminated.
Reference Points/Lane Positions

1. What is a reference point?
   A part of the vehicle that can be seen by the driver and is used to help the driver determine the position of the vehicle in relation to the roadway.

2. How do reference points help the driver?
   The driver can determine the exact location of the vehicle on the roadway when parking, turning, establishing lane position, stopping at stop lines, etc.

3. Draw and describe the standard reference points for each of the following:

   Front limitation
   When the front bumper is even with a line, the line of sight from the driver to the line appears to run under the side view mirror.

   6" – 12" from right curb
   The line of sight from the driver to the runs through the center of the hood.

   Rear limitation
   When the rear bumper is even with a line, the line of sight from the driver to the line appears to run through the middle of the rear passenger’s window.

   0 – 6" from left line
   The line of sight from the driver to the line runs down the crease between the hood and fender.

   2 – 3 feet from curb
   The line of sight from the driver to the curb runs across the right ¼ of the hood to the curb.
4. Describe the lane position for each of the following vehicles.

\[ \text{A = LP}_1 \quad \text{B = LP}_2 \quad \text{C = LP}_4 \quad \text{D = LP}_3 \quad \text{E = LP}_5 \]

5. When the vehicle is in LP1, the line of sight (LOS) from the driver to the right edge or edge line of the roadway runs through the center of the right half of the hood to the edge of the roadway.

6. When the LOS from the driver to the center line runs through the hood seam, the vehicle is in LP2.

7. If there is construction on your right, you should move to LP2 to increase the space between your car and the construction area.

8. Move to LP3 prior to making a right turn.

9. LP4 and LP5 both involve occupying two lanes. Describe 2 situations that you may encounter that would cause you to choose either of these lane positions.

As you enter a curve, you see the oncoming vehicle coming into your lane. You have a small shoulder on your right side!

There is construction in your lane and there is no oncoming traffic.
Entering the Roadway/Moving to the Curb/Backing

1. List the seven (7) steps to safely pull away from a curb.

   1. _foot firmly on the brake_   2. _select proper gear___
   3. _check traffic_            4. _give proper signal________
   5. _release parking brake_____ 6. _select gap in traffic_______
   7. _move to proper lane________

2. When entering the roadway from a curb, your target should be lane position 1.

3. Describe the proper procedure for pulling to a curb.
   - check traffic
   - give proper signal
   - select target
   - recheck blind zones (bicyclists, pedestrians, etc.)
   - adjust speed with control braking
   - move gradually
   - use reference point to establish 6” from curb
   - cancel signal

4. Complete the following:

   Today I will begin practicing my backing skills. Let me refresh my memory about what we learned in the classroom. Before I begin backing, I must check___around my vehicle and look into my__mirrors___ to be sure the area is free of pedestrians and other obstacles. I will begin with my foot on the___brake___. I must remember that my___heel___ should be on the floor for good control. Now I will shift to___reverse___ and look over___my right shoulder________.

   I have often wondered what signal I should give when backing. In class we discussed the fact that the signal for backing is___the backup lights________ and that they come on___automatically__ when I shift to___reverse___.

   Before I begin moving, I must remember to release the___parking brake____. Just as I do when moving forward, it is important that I find a___target_____ to establish vehicle position. This will be at least___3___car lengths behind the vehicle since the area directly behind the vehicle is not visible to me.

   It is often not necessary to use the___accelerator___ for speed. As a matter of fact, I may have to maintain some pressure on the___brake___ to maintain a slow, safe speed.
Vision and Perception

1. The vision needed to read and identify distinct objects is called **focal** vision. This visual area is usually **3 to 5** degrees wide.

2. The area of vision needed to judge distance and determine position is the **central** vision. This area is usually between **30** and **36** degrees in width.

3. The **peripheral** vision area (diagramed below) is approximately **175-185** degrees wide and is needed to detect **motion** and **color** changes.

4. If a vehicle is approaching from the side, you should be able to detect its motion using **peripheral** vision. You will then be able to identify the type of vehicle using **central** vision. Finally, you can determine make and model of the vehicle using **focal** vision.

5. Good visual habits involve establishing a path of travel with a targeted area **20** seconds ahead of the vehicle. This is known as a **visual lead**.

6. When you are unable to see your target area ahead, you should **reduce speed**.

7. As the speed of a vehicle increases, central and peripheral vision **decrease**.

8. A following interval of 2 seconds provides time to steer out of problem areas or brake for problems on dry surfaces at speeds up to **35** mph.

9. A following interval of 3 seconds provides time to steer out of problem areas or brake for problems on dry surfaces at speeds up to **45** mph.

10. A following interval of 4 seconds provides time to steer out of problem areas or brake for problems on dry surfaces at speeds up to **65** mph.

11. Using the following diagram, describe how to calculate a 3-second following interval.

   The rear of vehicle 1 passes the selected object. Driver of vehicle 2 begins counting 1001, 1002. The driver of vehicle 2 should complete the count to 1003 BEFORE the front of vehicle 2 reaches the selected object.
Space Management System/Developing Good Habits

1. Describe a Space Management System.

   A space management system is a process used to manage time, space & visibility to reduce risk situations. Examples of space management systems include the Smith, IPDE, SIPDE & the SEEiT systems.

2. What do each of the letters in the SEEiT space management system stand for?

   Search _____ E valuate _____ E xecute _____ T ime

3. The space around your vehicle is described as either ____open____, ____closed____ or ____changing____.

4. List three (3) potential hazards in this picture:

   1. ____pedestrians____
   2. ____oncoming vehicle____
   3. ____bicyclist____

5. What can you do if the bicyclist moves into your path of travel?

   Brake and steer to avoid a collision.

6. What lane position would you suggest for this situation?

   Lane position 4

7. When executing a decision to avoid a crash, you can either change

   ____speed____ or ____position____.

8. You are approaching an intersection and the light is green. There is a vehicle approaching from the left and an oncoming vehicle signaling a left turn. Describe the SEEiT space management process you would apply to this situation.

   Search – have identified two potential dangers
   Evaluate – Will the light turn yellow? Will the vehicle approaching from the left stop? Will the vehicle turning left yield right of way?
   Execute – Cover brake and be prepared to stop in case any of the above scenarios happen.
9. As the black vehicle approaches this intersection, what should the driver be searching for?
   The driver should be searching for traffic control devices, actions of the motorcyclist, traffic behind and cross traffic.

10. What action should the driver of the white vehicle take if the motorcyclist enters the intersection?
    The driver of the white vehicle should be prepared to stop in case the motorcyclist does not stop.

11. Complete the following chart listing the levels of driver awareness and performance.

<table>
<thead>
<tr>
<th>Driver Awareness Level</th>
<th>Driver Performance Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Habit</td>
<td>Acceptable</td>
</tr>
<tr>
<td>Judgment</td>
<td>Acceptable</td>
</tr>
<tr>
<td>Habit</td>
<td>Unacceptable</td>
</tr>
<tr>
<td>Judgment</td>
<td>Unacceptable</td>
</tr>
</tbody>
</table>

12. Which of the above levels of awareness and performance are most likely to lead to a crash?
   The habit level with unacceptable performance is the level most likely to lead to a crash.

13. List the top four driver errors leading to a crash. (According to Virginia Crash Facts)
    1. inattention
    2. failure to yield
    3. following too close
    4. speed too fast