

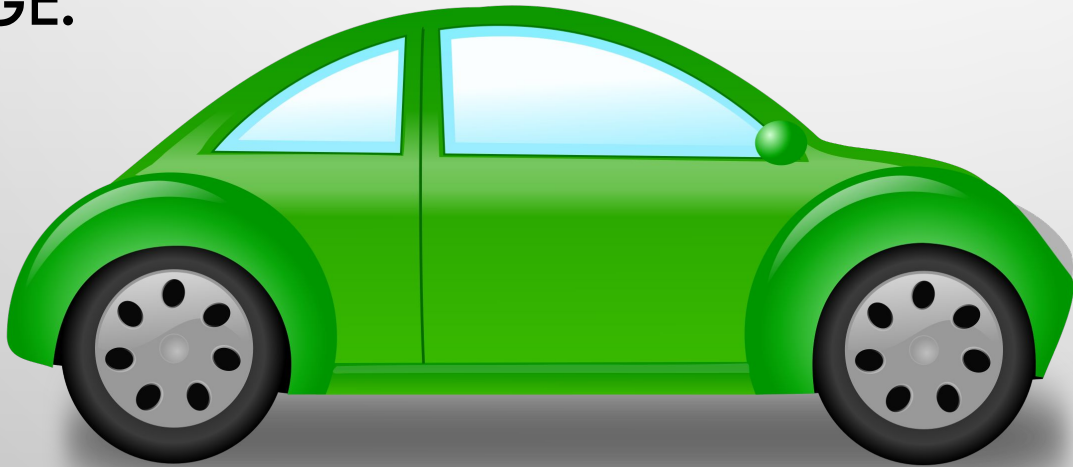
The background of the slide is a light gray gradient. It is decorated with several realistic water droplets of various sizes and shapes, scattered across the top and bottom edges. The droplets have highlights and shadows, giving them a three-dimensional appearance.

THE PHYSICS OF DRIVING

HOW THE LAW OF PHYSICS PLAYS A ROLE IN DRIVING

WHAT DOES THE LAW OF INERTIA STATE?

- INERTIA IS THE IDEA THAT AN OBJECT WILL CONTINUE ITS CURRENT MOTION UNTIL SOME FORCE CAUSES ITS SPEED OR DIRECTION TO CHANGE.



SPEED & STOPPING DISTANCE

If Jake drives 30 miles per hour, it takes 75 ft. to come to a complete stop.

If Jake drives 60 mph, how many feet will it take him to stop?

SPEED AND STOPPING DISTANCE

Typical Stopping Distances



ACCELERATION, DECELERATION, AND COASTING

Driving is not all **GAS** and **BRAKE**. A lot of the time we are using our momentum to our advantage. We then coast, using the energy we created. It also provides for a smoother ride.

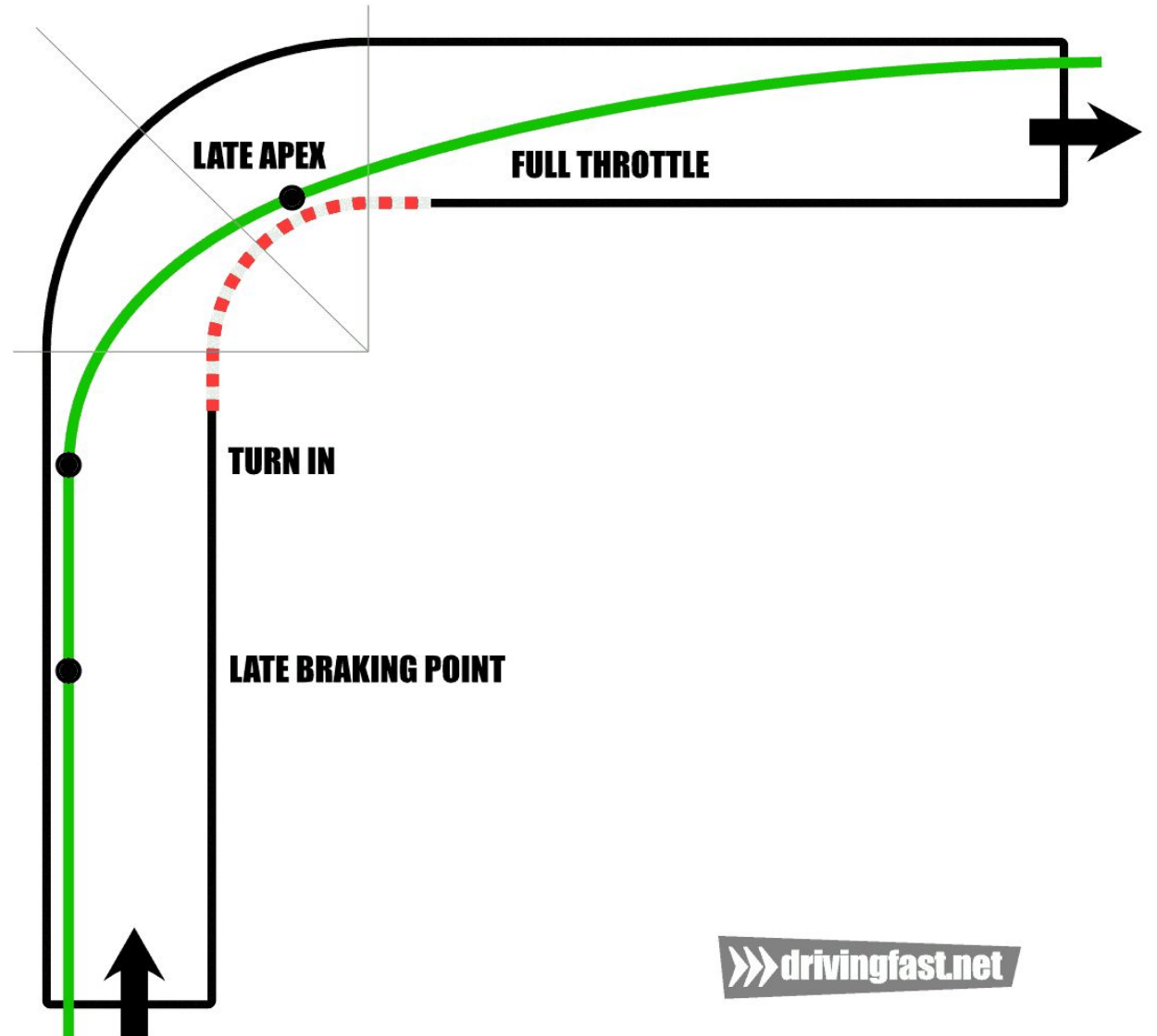
When coasting, is it best to have your foot over the gas or the brake? Why?



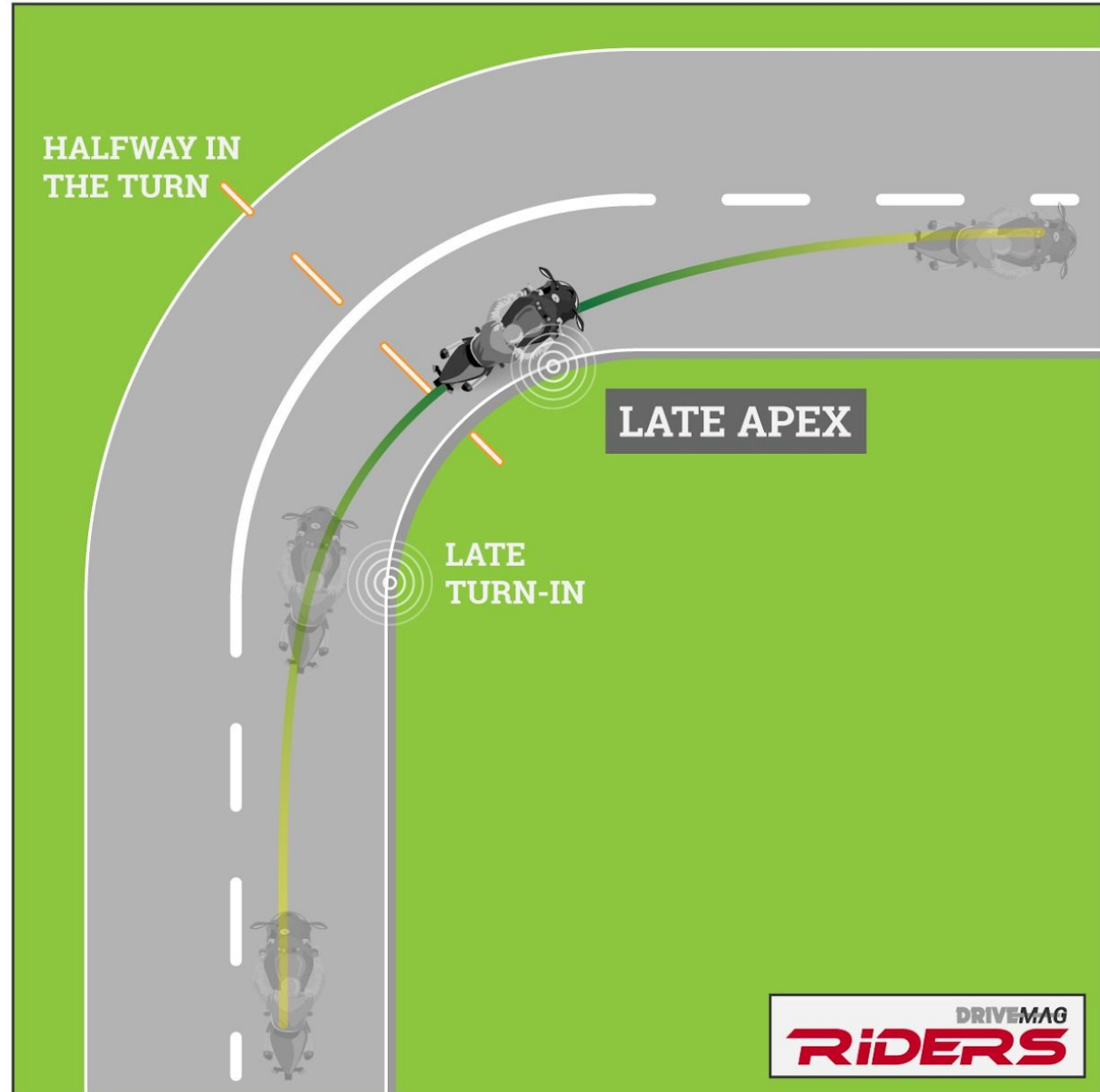
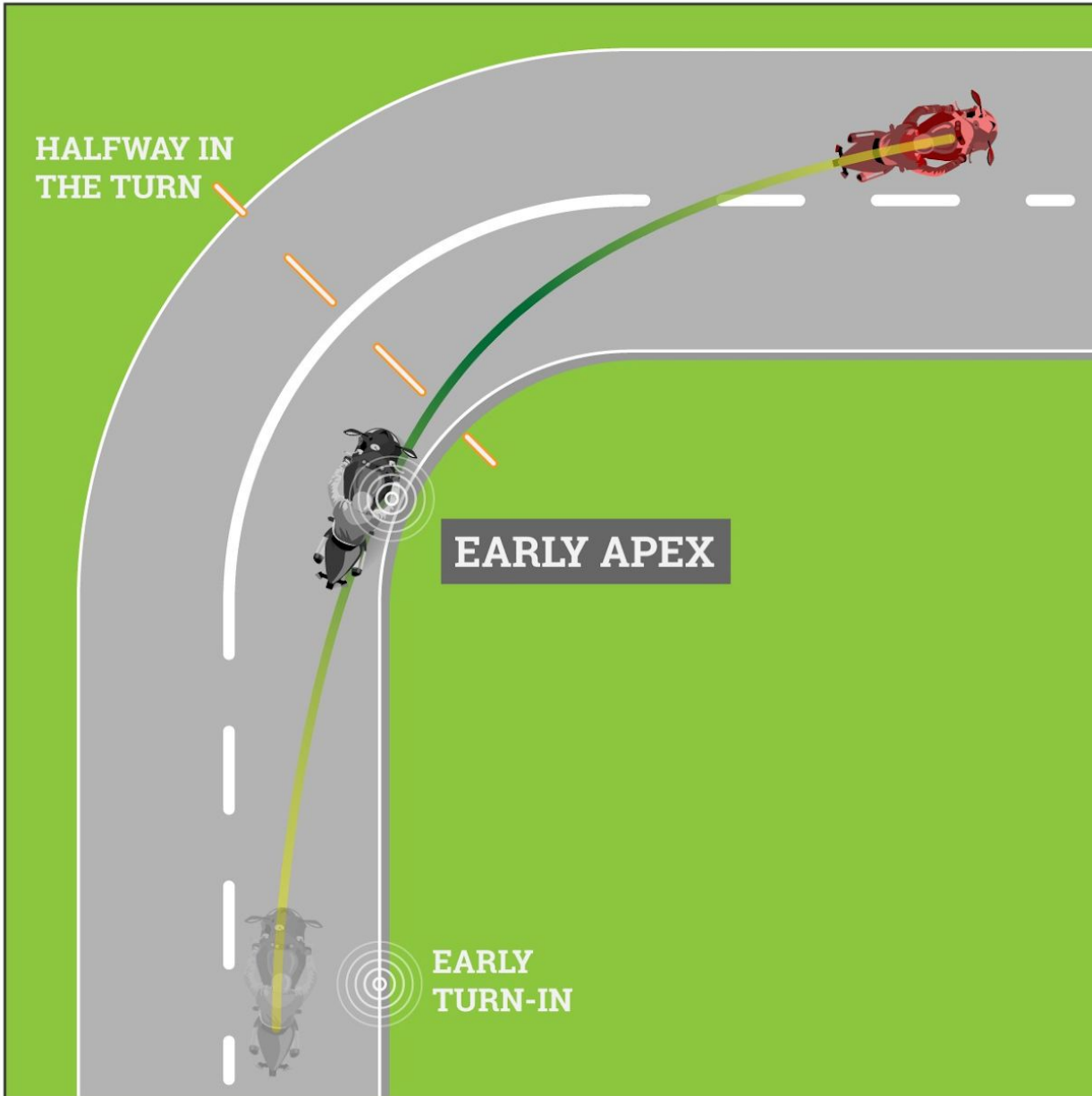
PRECISE TURNING

When to accelerate and decelerate

Generally, we brake or slow down coming into the turn and during the first half of the turn, and then accelerate once you reach the apex and have overcome inertia.



EARLY AND LATE APEX



INERTIA



When driving through this curve, inertia creates the sensation that you are being pulled to the outside of the curve. Why?

Because you are traveling in a straight line, and inertia wants to keep you going in a straight line. SLOW DOWN FOR CURVES!!

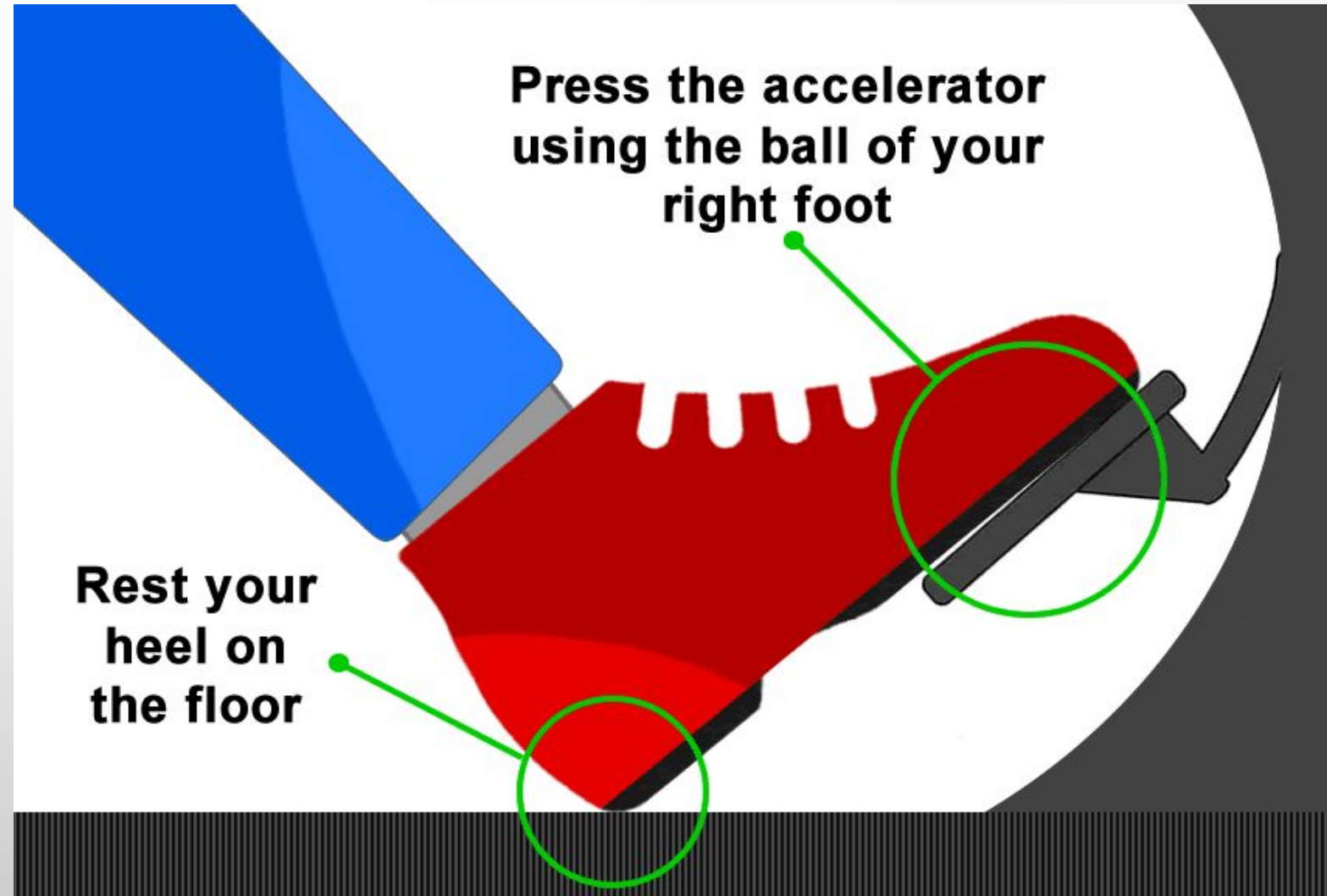
PROPER HAND PLACEMENT ON STEERING WHEEL

- 9 AND 3 O'CLOCK



Proper Foot Placement

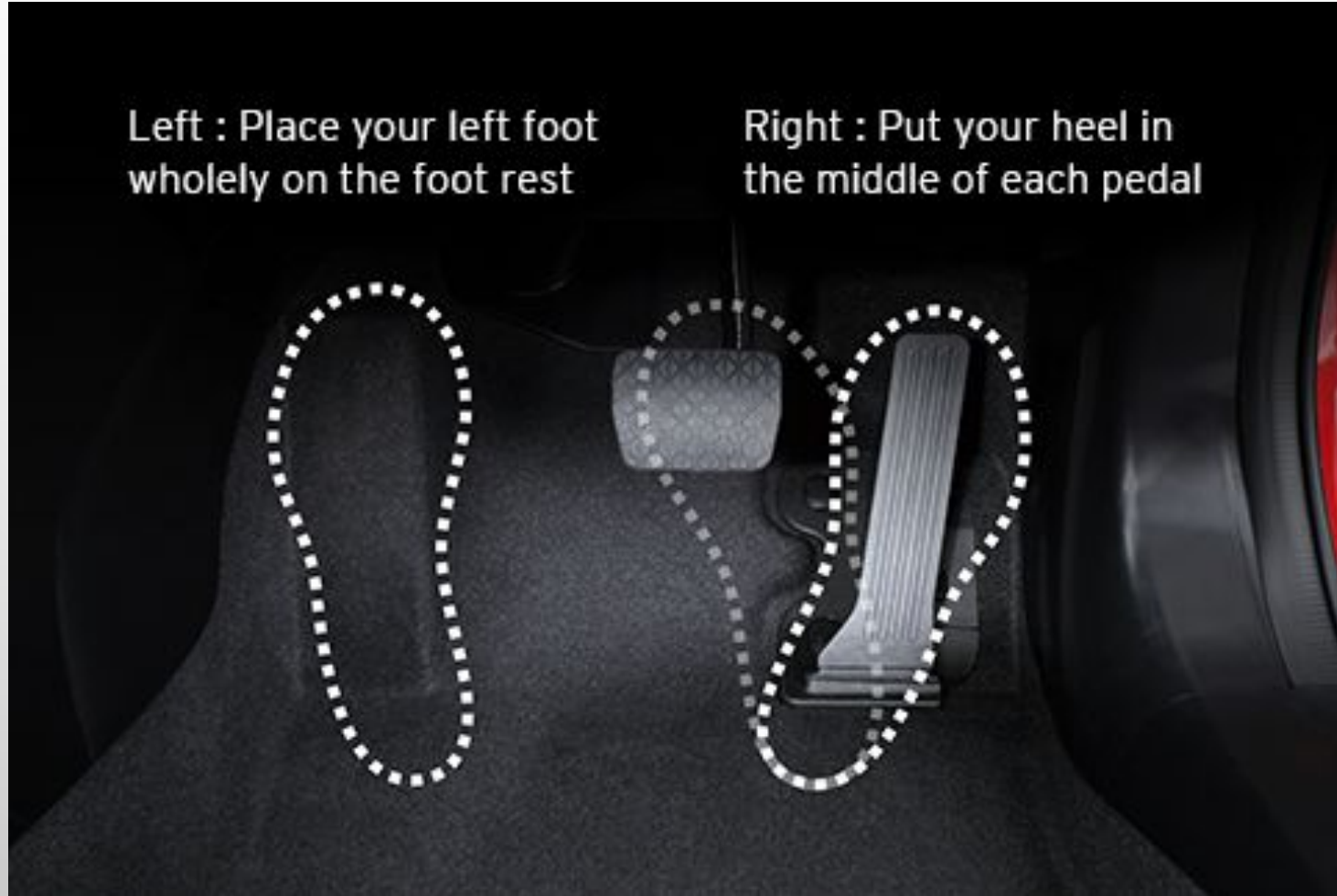
Try to be resting your heel on the ground when accelerating and decelerating. Your gas and braking sensitivity will be much better.



Pivot on your heel

Left : Place your left foot
wholly on the foot rest

Right : Put your heel in
the middle of each pedal



MOMENTUM

- Momentum is inertia in motion
- Momentum is the product of speed and weight



A truck filled with potatoes traveling at 20mph has more momentum than a 3,000 lb car traveling at the same speed

As momentum increases so does the potential for lots of damage in a collision



MOMENTUM



A 150 lb passenger traveling in a vehicle going 30 mph will have momentum

No matter how strong that passenger may be, he/she will not be strong enough to stop the body's momentum if the vehicle comes to an abrupt stop during a crash

FORCES OF IMPACT

When two objects collide, three factors determine how much force there will be on impact

1. Speed



2. Weight

3. Duration

FORCES OF IMPACT

3. Duration

When a collision stops a vehicle in a very short time the impact will be greater than if it took a longer time to stop



FRICTION

Friction is the force when two surfaces move against each other and one surface resists the other

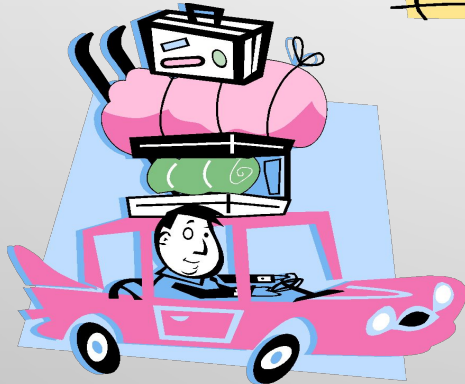
The amount of friction between the surfaces depends on:



- **What the surface is made of**
- **What is on the surface**
- **How rough or smooth it is**
- **How much force is pushing the two surfaces together**

MAXIMUM VEHICLE LOAD

Load capacity includes the combined weight of people, fluids and cargo that the vehicle is designed to safely handle



OVERLOADED VEHICLE

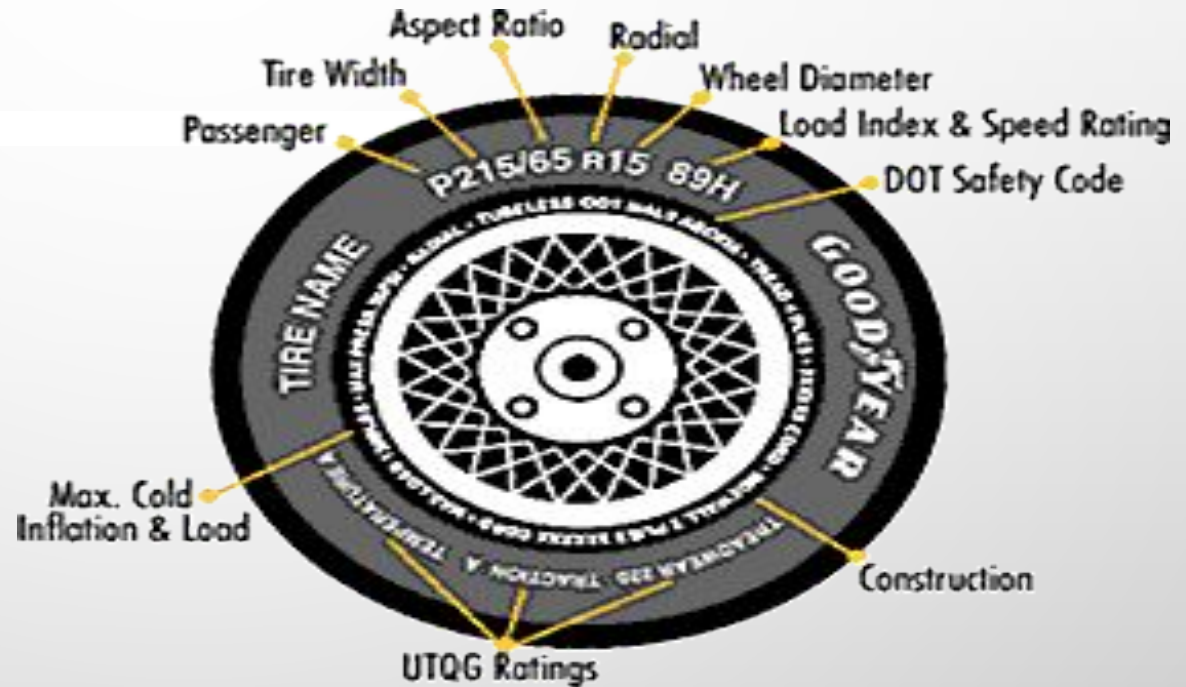
- ALL VEHICLES HAVE A GROSS VEHICLE WEIGHT RATING (GVWR). IF YOU OVERLOAD THE VEHICLE IT WILL AFFECT THE WAY THE CAR DRIVES.
- DO YOU THINK THESE VEHICLES ARE DRIVING VERY FAST? WHY OR WHY NOT?



MAXIMUM TIRE LOAD

All tires have the maximum load limit stamped on the tire along with other safety information.

Why is tire pressure important?



LOAD EFFECT ON BALANCE

What could occur if the driver of this vehicle made a quick steering maneuver?



CONDITIONS CAUSING TRACTION LOSS

- **By the driver**
- **By the vehicle**

- **By the surface of the road**





Watch this video for winter driving tips.

<https://www.youtube.com/watch?v=TZQXuWzBC18&t=679s>

