California Motorcyclist Safety Program

Motorcyclist Training Course

Student Handbook

Third Edition: April 2017

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Visit the CMSP website for more information on courses and course locations: **www.californiamotorcyclist.com**

CMSP

California Motorcyclist Safety Program

CALIFORNIAMOTORCYCLIST.COM

Total Control

Motorcyclist Training Course

Produced by Total Control Training, Inc.
(totalcontroltraining.net) for the
California Motorcyclist Safety Program

Third Edition: April 2017

Foreword

It's about the journey, not the destination.

The Motorcyclist Training Course offered by the California Motorcyclist Safety Program is designed to address the needs and interests of beginning riders. Our goal is to help you build a strong foundation of awareness and safety in what may develop into a lifelong activity. Because motorcycling requires mental and physical skills, we will focus on both throughout the courses. You will learn techniques to help sharpen your judgment and perception as well as the physical skills required for riding.

Learning is an ongoing process and doesn't end when you finish a course. This beginner course is intended as starting points from which to build lifelong skills. Becoming an experienced, skillful rider takes time and practice. That, of course, means riding and practicing the techniques presented in this course. Once you've gained experience and confidence, we encourage you to continue your formal training. We also offer motorcycle courses designed for experienced riders (you can find all of California's course offerings at www.californiamotorcyclist.com. In addition to helping riders step up to the next level, these courses are a great way to meet other riders and form lasting friendships.

So, welcome to the world of motorcycling! We're glad to have you along.

Acknowledgments

The California Motorcyclist Safety Program would like to recognize the TEAM Oregon and Idaho STAR Motorcycle Safety Programs—and the 2014 National Highway Traffic Safety Administration (NHTSA) publication "Model National Standards for Entry-Level Motorcycle Rider Training"—for assistance in content creation and guiding the development of this Student Handbook.

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Unit 1:
Welcome to the world of motorcycling

INTRODUCTION

There is a thrill and a sense of freedom that comes with riding a motorcycle. It is the rhythm of the ride, the road and surroundings, your motorcycle and you. Your senses delight with every passing sight, smell and sound. To achieve this level of motorcycling magic, your senses need to be sharp. Motorcycling demands attention and skill. It challenges you to be physically and mentally prepared to handle anything that comes your way. This course is your door into the world of motorcycling. Get ready for the first few miles of your motorcycling career. Welcome to The Ride.

COURSE OBJECTIVES

Acquire the knowledge and skills for safe and responsible motorcycle operation.

- Learn the mental skills for safe motorcycling:
  - Understand the risks associated with motorcycling.
  - Identify and develop strategies to manage risk.
  - Identify good quality protective gear as a strategy to lower risk.
- Gain the physical skills for safe motorcycling:
  - Develop the basic skills needed to balance, shift, turn and stop the motorcycle.
  - Improve skills and finesse to handle emergency situations.

To put this another way, the course addresses the two primary aspects of motorcycle safety needed to prepare you for street riding:

1. Preventing the crash
2. Surviving the crash

Your instructors are highly trained professionals who will promote your learning with classroom instruction and hands-on practice in a secure area. In the classroom, you'll discuss the risks of motorcycling and identify ways to manage those risks. You will learn identify strategies for becoming more alert and perceptive as well as the benefits of riding gear. The course also explores the handling dynamics of motorcycles so that you'll have the knowledge to continue developing your skills.

On the practice range, your instructors will provide coaching to increase your skills and confidence. The course is not competitive and allows riders of varied skill levels to learn in a safe environment. So relax and enjoy the experience. The goal is to help you be successful and safe. Ask lots of questions. The instructors are here to help you discover the answers. Concentrate on developing your skills, your strategies and your ride—the first steps to safety!

Successful riding requires practiced skill and good judgment. You'll develop critical skills and learn about the risks of motorcycling and ways to minimize them. That's the challenge of The Ride!

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Course Requirements

To successfully complete this course, you must:

- Attend all sessions. Be on time! Classes start promptly. Late-arriving students risk losing their reserved place in the class and tuition.
- Participate in class discussions. Experience has shown that students who engage in the discussions in class learn and remember the material best.
- Successfully complete a multiple-choice knowledge test on the material covered in class and this workbook.
- Successfully complete a riding skills test. The skills test consists of exercises practiced in the course, including basic handling skills, stopping quickly, cornering and swerving.

IMPORTANT NOTE:

Come to class rested and ready to ride.

Bring snacks and a drink if you want something other than water.

COURSE SCHEDULE

Note your course schedule here:

Day	Time	Classroom	Range

THE FOLLOWING RIDING GEAR IS REQUIRED:

- ☑ **Three-quarter or full face DOT-approved helmet**

  Sanitized loan helmets are usually available – check with your instructor. You may bring your own helmet but it is subject to inspection and approval by the instructor.
- ☑ **Eye protection**

  A helmet face shield, goggles or glasses.
- ☑ **Sturdy, over-the-ankle footwear**

  The ankle must be covered. Low heels are preferred.
- ☑ **Full-finger gloves**

  Motorcycle gloves are preferred. Avoid bulky gloves.
- ☑ **Pants**

  Full-length sturdy material such as denim with no holes or rips.
- ☑ **Long-sleeve shirt or jacket**
- ☑ **Rain gear if weather is threatening**

  Courses are not canceled because of rain.

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Unit 1:
Welcome to the world of motorcycling

KEEPING THE LEARNING SAFE AND FUN

This course is designed for beginning riders and the exercises progress from easy to more challenging. Your expectation may be to learn to ride, to improve your knowledge and skill and/or to comply with state law or court order. If you have other expectations, discuss them with your instructor.

UNDERSTANDING EXPECTATIONS

Experience has shown that not everyone who enrolls in a motorcycle rider course is ready to ride at that time. The problem could be nervousness, lack of concentration or coordination, balance difficulties, or repeated failure to respond to coaching. You will be given many opportunities to develop essential skills and strategies in a way that ensures your safety and the safety of those around you. However, if at any time during the course your instructor determines your safety and security, and/or others' safety and security to be at risk, the instructor must take immediate action. Unsafe conditions are not permitted and the instructor will dismiss any student who fails to demonstrate the ability to practice safely, regardless of the reason.

While there is no guarantee that you'll successfully complete this course, most students are successful and head for the open road. But please remember that successful completion of the course does not guarantee your safety. Your motorcycling journey starts with these first steps together, but it is up to you to use sound judgment, make wise decisions and keep your newly developed skills sharp. You are the only one responsible for your safety.

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Unit 2:
Introduction to motorcycling

Motorcycles have been around for over a century. The popularity of motorcycling increased in the 1960s, with the dramatic rise in imports of small displacement motorcycles. Today motorcycling is enjoyed by millions of Americans.

When traveling on public roadways, you'll be expected to comply with state laws, rules, regulations and equipment requirements. This will provide for a safer ride and help you avoid penalties for non-compliance.

Information regarding state laws and rules for the operation of a motorcycle can be found in the California Motorcycle Handbook published by the Department of Motor Vehicles. The manual may be provided to you at your class, you can find it online at dmv.ca.gov/ or you can pick up a copy at your local driver licensing office.

Smart Rider Commitment #1:

_____ (initial) "I acknowledge that part of being a responsible rider is knowing and following the 'rules of the road.' I accept this fact and commit to learning and complying with state laws, rules, regulations and equipment requirements."

WHAT'S RIGHT FOR YOU?

Motorcycles come in all shapes and sizes and some are designed for very specific uses. It's important for you to know what you want your motorcycle to do. Do you want to tour, or are you more interested in commuting? Do your interests lie in sport bikes, or are you more inclined to explore backcountry forest roads? What's your budget?

Motorcycle riding is much more physically demanding than driving a car. You must be in good physical condition to handle the rigors associated with riding a motorcycle. You will need both upper and lower body strength to move your motorcycle around—for routine inspections, maintenance and parking. If you plan on carrying passengers, you will need the strength to hold the bike up (with a passenger) when stopped in traffic and every time your passenger mounts and dismounts. You will also need to be able to stand your bike back up if it should fall over.

The effects of wind, sun, heat, cold, rain and exposure in general will cause you to become tired more quickly. Therefore, to ride safely, you need to build up your physical endurance in addition to your strength. All these things should be considered when trying to decide whether or not you are physically capable of riding a motorcycle, and if so, which motorcycle is right for you.

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Unit 2:
Introduction to motorcycling

Motorcycles come in a variety of shapes and sizes and some will fit you better than others. Choose a motorcycle that fits your physical capabilities as well as your physical dimensions. A proper fit in both these areas will allow you to safely reach and operate all the controls and also reach the ground, so you can hold the bike up comfortably at a stop.

If you're uncomfortable with the motorcycle because you're afraid of dropping it or you don't think you can lift it, then it's too big. Your motorcycle dealer can help you select the motorcycle and accessories that suit you best.

SETTING UP YOUR MOTORCYCLE

When you first get your new motorcycle, take time to set it up to fit you. Many of the controls are adjustable, including the handlebars, brakes, shifter and clutch. Some motorcycles even have adjustable seat height. Adjust the controls so that they are a natural extension of your hands and feet. You should not have to strain to reach or maintain comfortable contact with any of the controls.

ASSESSING THE RISK OF RIDING

A universal truth of motorcycling is that riding a motorcycle is more dangerous than driving an automobile. Recent traffic fatality data suggest that motorcycling is 33 times more dangerous than driving a car. Motorcyclists are much more vulnerable than drivers because motorcycles lack the protective cocoon of steel roll cages, crumple zones, safety belts and airbags. Maneuvers that are routine in an auto can be hazardous on a motorcycle. Automobiles don't have to be balanced at a stop like motorcycles; drivers don't worry about minor wheel spins or skids; and, in a car, the rain and wind stay outside. All of these can be safety hazards for motorcyclists.

VULNERABILITY

When motorcycles collide with other vehicles, the riders may not be at fault, but they are almost always injured, sometimes seriously. About 80% of motorcycle crashes result in injury. Compare that to about a 20% injury rate for car crashes and you see just how vulnerable motorcyclists are (https://visual.ly/how-dangerous-are-motorcycles-really).

There is no benefit in being legally right but critically or mortally injured. As a motorcyclist, you are vulnerable. This is why motorcyclists must always be more attentive than other motorists—more aware of their surroundings and always prepared to react. Vulnerability is also the number one reason for always wearing protective gear; you never know when you might need it!

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Risk Acceptance

VISIBILITY—THE SIGHT TO SUCCESS

Visibility is a critical issue for motorcycles. Because motorcycles are so much smaller than autos they are more difficult to see in traffic. Motorists often fail to notice motorcycles, and even when they do, they often misjudge the approach speed and distance. All these factors raise the risk of motorcycling. "Invisible" motorcyclists are vulnerable to vehicles violating their right of way and the odds of a collision increase with each passing mile. It's up to you to take responsibility for these limitations. Make yourself visible. Don't let yourself be hidden in traffic!

JUDGMENT IS CRITICAL

Single-vehicle crashes involving motorcycles are over-represented in crash data. The cause is almost always rider error, and typically these errors are in judgment first, then skill. Good skill alone will not keep you from crashing, but good judgment can. It's up to you to make good decisions. It's up to you to manage risk. This is your ride. Manage the risks by thinking ahead—way ahead.

RISK ACCEPTANCE

Recognizing and accepting the risk of motorcycling is the first step in developing strategies to manage it. No sane motorcyclist intends to crash. Some researchers estimate that the danger (risk of injury) of riding a motorcycle is 27–33 times the danger of driving a passenger vehicle (www.nmcti.org). That's why you must be ready at all times.

Rider Readiness:

Be completely prepared for riding. This includes being mentally prepared and attentive, physically rested and unimpaired, having your motorcycle in good condition, wearing appropriate riding gear and being aware of and prepared for upcoming weather, roadway and traffic conditions.

MENTAL READINESS

Your mental readiness is very important. Motorcycling requires focused attention to the many riding tasks and challenges you'll face. Your mind must be attentive to these tasks and not consumed with other issues. It is especially important to avoid anything that dulls your judgment and coordination, including alcohol and other drugs.

Strive to achieve a constant state of Rider Readiness by understanding the challenges of motorcycling and riding within your ability.

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Unit 2:
Introduction to motorcycling

PHYSICAL READINESS

Ride rested. Avoid riding when excessively fatigued, stressed or preoccupied. These conditions can impair your judgment and focus—an invitation to disaster!

PROPER RIDING GEAR

Proper riding gear is essential for minimizing injuries should a crash occur. It provides comfort by sealing out the elements and helping you stay focused on the ride.

UNDERSTAND YOUR ABILITIES AND LIMITATIONS

It is important to know your abilities and not exceed those abilities. Riders get into trouble when they think they can do something that they really can't. Improve your skills in small steps. Be patient and keep practicing. No one becomes an expert rider overnight.

KNOW YOUR MOTORCYCLE

Not all motorcycles are created equal. Off-road and dual-purpose bikes excel where touring bikes flounder, but a touring bike in its element is a different story. Sport bikes tilt toward performance and cruisers are more laid back. It is up to you to understand the design limitations of your motorcycle and keep safely within that designed operating range.

Ride with the limits of your:

1: **Personal Ability**

2: **Motorcycle's Capabilities**

3: **Environmental Conditions**

AWARENESS OF RIDING CONDITIONS

Awareness of upcoming roadway, weather and traffic conditions improves Rider Readiness and minimizes surprise.

ACCEPT YOUR RESPONSIBILITY

Once you are prepared, know your abilities and understand your machine's capabilities, it is up to you to take responsibility for riding within those limits every time. Being a responsible motorcyclist reduces the risks associated with riding and sets an example for others around you. Demonstrating your acceptance of and commitment to managing the risks of riding will help reduce your chances of a crash, injury, or death. It's your ride!

Smart Rider Commitment #2:

_____ (initial) "I acknowledge that riding a motorcycle in a complex traffic and roadway environment is an activity involving risk and danger. I accept this fact and commit to managing those risks."

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MANAGE YOUR FEAR

Knowing that motorcycling is this dangerous means that it is normal for a rider to experience fear. Fear can affect our ability to ride safely and must be managed. It is recommended that you practice both the physical and mental skills of riding regularly. This way, when a situation arises and creates fear you may not become frozen with panic but be able to continue to operate the controls and manage risks.

Review Questions

1. Give three reasons why motorcycling is more risky than driving a car.

2. What is Rider Readiness?

3. What does it mean to “accept your responsibility”?

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Unit 3:
Preparing to ride

CHOOSING YOUR RIDING GEAR

Riding gear is a motorcyclist's best friend. As mentioned in Unit 1, there are two aspects to motorcycle safety: preventing the crash and surviving the crash. If and when a crash does occur, what the rider is wearing can make a dramatic difference in the degree of injury. In addition, by protecting you from the elements, good riding gear keeps you more comfortable, more relaxed, more focused on the task of riding. Appropriate gear makes all the difference in your comfort, concentration and safety.

- Motorcycle riding gear should be brightly colored and have retro-reflective material to catch the attention of surrounding traffic especially at night.
- Riding gear should have protective pads or armor and resist abrasion to reduce the chance of injury in the event of a fall or collision.
- For comfort and to arrive in style your gear must be designed to stand up to all kinds of riding conditions, from rain and wind to flying debris.

Your gear is designed to protect you, provide comfort and cover, and improve your control. Remember that your passenger needs the same level of protection and comfort!

HELMETS

Protect your head! The most important piece of safety equipment you can wear is a good quality helmet that, at a minimum, bears DOT approval. There is no substitute. Look for labeling on the outside of the helmet and also sewn to the inside of the helmet. While DOT does not make helmets, they set performance standards that the manufacturers must follow by federal law. Another good indicator is a Snell Memorial Foundation sticker, which indicates the helmet has passed Snell's safety tests. You may also see an ECE standard which is a European Union standard used in most other parts of the world.

Head protection is vital! Head injuries account for the majority of motorcycle fatalities.

Choose a helmet that at a minimum meets DOT standards and fits you comfortably. Wear and securely fasten the helmet every time you ride.

You never know when you might need it.

Even though helmets are a great way to enhance rider safety, some myths about helmets persist. You should know that helmets don't block vision, impair hearing or cause head or neck injuries. Further, studies have repeatedly shown that helmets protect against head and brain injuries. Wear a high-quality motorcycle helmet every time you ride.

CHOOSING A HELMET

Fit, price, color and style are all important considerations when choosing a helmet, but protection should be your first consideration.

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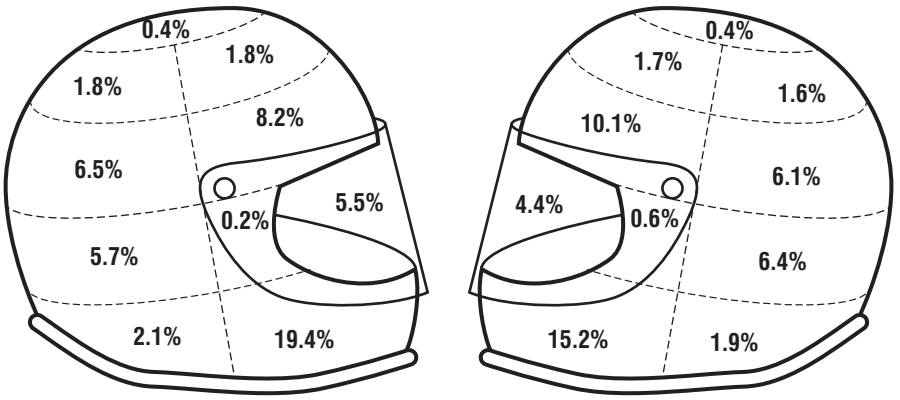
Helmets

PROTECTION

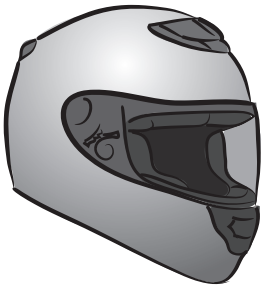
Research indicates that in crashes involving an impact to the head, a large percentage of those impacts occur in the jaw and face area (see graphic). When choosing a helmet type, give serious consideration to what areas of your head and face are protected.



Distribution of Impact Locations on Motorcycle Helmets; All Collisions based on a study by Dietmar Otte2.

FULL-FACE HELMETS

When choosing a helmet, know that full-face models provide the most protection through their coverage of the face and jaw, and the greatest comfort from the elements. They have integrated face shields for face and eye protection.



MODULAR OR "FLIP-UP" HELMETS

Modular helmets (often called "flip-up" or "flip-face" helmets) are increasingly popular. They are designed to allow the rider to flip the chin-bar up for talking, eating, drinking, etc. when stopped. NOTE: The majority of these types of helmets are not designed to be used in motion with the chin-bar in the up position. If you choose this type of helmet, read your owner's manual carefully and remember to ride with it in the down and latched position.

THREE-QUARTER HELMETS

This style of open-face helmet is the choice of some riders who prefer the wind in their faces. Of course that wind can carry rain, bugs, sand and road debris that can be painful and distracting. And there's no protection from the continued exposure of sun and wind on your face. A three-quarter helmet affords riders good head protection but lacks the face protection of a full-face helmet.

HALF HELMETS

Half-shell helmets provide the least protection. If this is your style, make sure you get one that's designed for motorcycling so that you have the most protection afforded by this minimal helmet. Look for the DOT labeling and the impact-absorbing liner. For a helmet to protect your head, it has to stay on your head. If you are considering a half-shell helmet, you should know that research has shown that partial coverage helmets are ejected (come off) more often than full-face helmets.1

Some "beanie" style helmets may look like half-shell helmets, but they lack the impact absorbing liner and are not designed for motorcycle use. They provide no protection in the event of a crash.

[1]Hurt, Thom & Ouellet, 1998
[2]Dietmar Otte, Medizinische Hochschule Hannover, Abteilung Verkehrsunfallforschung, Germany

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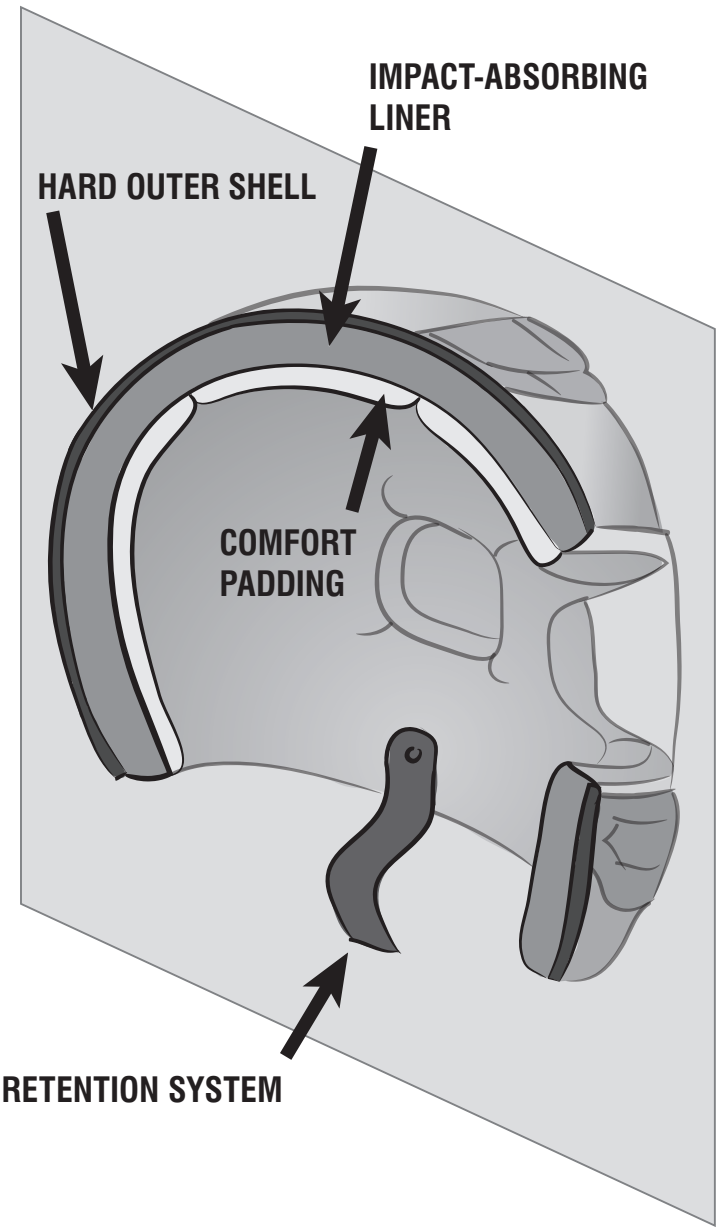
HELMET FIT

A helmet should fit snugly but comfortably. A helmet that is too loose can lift in the wind or come off your head in a fall. One that is too tight can create sores or cause headaches. When choosing a helmet, try on several brands and sizes to get an idea of fit and comfort.

Check for the right fit by doing the "roll-off test." The roll-off test applies to all helmets, but is more critical for three-quarter and half-shell helmets. Here's how to do the test:

- Put the helmet on and adjust the chinstrap.
- Reach both hands behind your head and try to rotate the helmet forward and down over your face.
- If the helmet comes off or even comes close to coming off, it does not pass the roll-off test. Get a different helmet size or model that does pass the roll-off test.



HOW HELMETS WORK

Motorcycle helmets are designed to protect your head in case of a collision or fall and to provide comfort from the elements. A full-face helmet with a shield also incorporates excellent face and eye protection.

OUTER SHELL

Helmet shells are typically made from fiberglass, polycarbonate or composite materials. They protect wearers by dispersing energy away from the head. They also resist penetration by any object that might come in contact with the helmet. However, not all helmet damage is always visible to the eye. It is important to replace any helmet that has taken an impact.

IMPACT-ABSORBING LINER

The impact-absorbing liner is usually made of expanded polystyrene. This is a dense layer that cushions and absorbs shock by spreading the impact forces throughout the helmet. Think about it: the more impact energy that is absorbed by the helmet, the less that's left to reach your head and brain.

COMFORT PADDING

The padding within the helmet helps to increase helmet comfort and maintain fit. Some helmet padding may even be removable for cleaning purposes.

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Helmets

RETENTION SYSTEM

The retention system is the chinstrap with D-rings or clips that secures the helmet in place. This is very important! If properly used, the chinstrap keeps the helmet on your head in the event of a collision. Helmets that come off your head in a collision or fall can't protect you at the time when they are most needed.

HELMET CARE

Helmets are designed to absorb energy that would otherwise be transmitted directly to your head. Treat your helmet with care. Don't jam it on a mirror or carry a spare on a backrest, as that compresses the inner liner, reducing its protective ability. Be sure not to expose the helmet to fuel, aerosols, or other petroleum based products as they may cause damage to the inner liner. Likewise, use caution when resting the helmet on the seat of your motorcycle. A small gust of wind can knock it to the ground and damage it. Follow the manufacturer's directions for caring for and storing your helmet.

Helmets will show signs of wear over time. Helmets with obvious signs of wear may have defects that can compromise the helmet's integrity and jeopardize your safety. Inspect your helmet periodically. Look for cracks or dings in the outer shell. Check for loose or worn out comfort padding. Check the chin strap, looking for any sign of frayed material. If your helmet has a visor or a face shield, check for loose or broken hinges. Inspect the face shield itself for scratches and any cracks or chips and replace it when necessary.

WHAT DOES THE RESEARCH TELL US?

Out of every 100 motorcycle fatalities in which riders were not wearing helmets, 37 would have survived those crashes if all 100 had been wearing helmets.[3]

EARPLUGS

Protect your hearing! The roar of engine and the rushing wind is exhilarating, but sustained exposure, even in a good-fitting helmet, can result in hearing loss. Good earplugs will minimize wind noise without limiting your ability to hear traffic. Because of that your comfort and ability to concentrate will improve! Earplugs are cheap and disposable—keep a supply handy and use them!

Tests show that earplugs can prevent hearing loss by reducing sound levels by 30 decibels.

[3]Deutermann, 2004

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EYE PROTECTION (FACE SHIELDS OR GOGGLES)

Protect your eyes! Once upon a time you could identify happy motorcyclists by the bugs in their teeth. While a mouth full of dead insects may appeal to some, no one wants to lose their vision due to a fly in the eye at 50 mph—not to mention road dust, pebbles, wind and rain. Protect your vision! Windshields and eyeglasses do not provide adequate eye protection. Helmets with full-face coverage provide the best protection, but snap-on face shields and goggles also provide good protection. Be aware that goggles and some safety eyewear can restrict peripheral vision.

FACE SHIELDS

Helmet face shields are available in an increasing range of styles and tints. For full-face helmets, face shields flip up for added convenience. Riders should make sure that their face shields are designed specifically for the helmet they are using, are impact resistant and are fastened securely to their helmets. Face shields should accommodate eyeglasses or sunglasses worn while riding and should be optically clear and free from scratches that might impair vision. Use a clear (un-tinted) shield at night or in low-light conditions.

CARE

Clean your shield or goggles with a mild solution of soap and water and use a soft cloth for washing and drying. Don't use paper products because they can scratch the plastic. When your shield becomes scratched, replace it.

Whether you choose a helmet with a face shield or goggles to protect your eyes, it will show signs of wear over time. You need to watch for potential defects that may compromise the effectiveness of your eye and face protection. As it wears, it will fit less snugly and can become loose. Look for any cracks, frayed straps and loose or broken face shield hinges.

GLOVES

Protect your hands! Gloves provide comfort from the elements, improve your grip on the controls and reduce hand fatigue. They also protect your hands from abrasion and injury in a crash. Gloves specifically designed for motorcycling are best. They are curled to provide a natural grip and have seams on the outside to prevent irritation. Gauntlet gloves fit over the cuff of your jacket and keep cold air from rushing up your sleeves. There are also lighter gloves designed specifically for warmer weather, as well as heavier, insulated gloves that are ideal for winter riding. Adjustable retention straps help keep gloves snug. A high quality motorcycle glove will improve your control and comfort.

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Gear

WHAT DOES THE RESEARCH TELL US?

In crashes, riders wearing gloves with body armor were 45% less likely to have any injuries on their hands and 73% less likely to have any open wound injuries.[4]

BOOTS

Protect your ankles and feet! Sturdy over-the-ankle boots are recommended for motorcycling. They protect you from the elements and from hot or sharp motorcycle parts. Boots with rubber soles and low heels are best. They provide a secure grip on the pavement when stopped and provide a good grip on the footrests. In the event of a collision, sturdy boots protect you from foot and ankle injuries. If your boots have laces, be sure to tuck them in so they don't get caught in moving parts of the motorcycle.

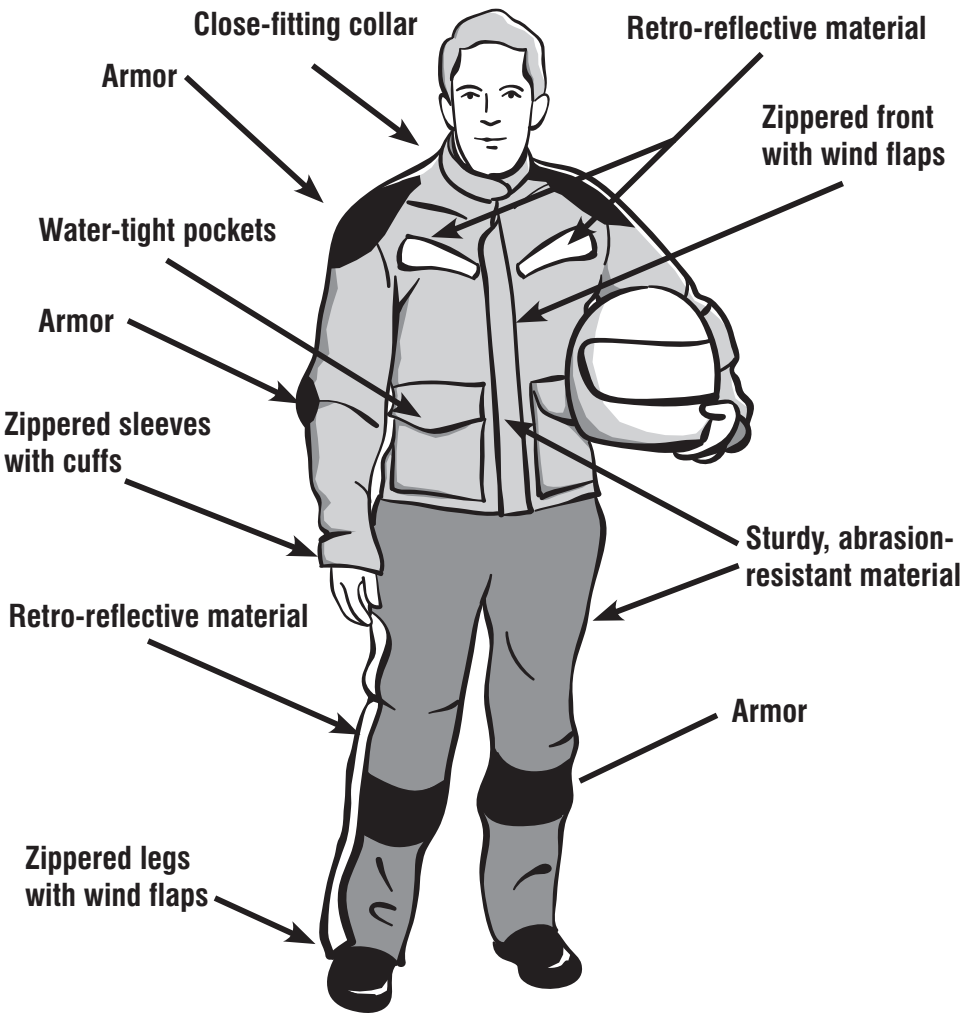
WHAT DOES THE RESEARCH TELL US?

In crashes, riders wearing motorcycle boots were 45% less likely to have any injuries to their feet or ankles, and riders wearing any sort of over-the-ankle boot were 53% less likely to have any injuries to their feet or ankles compared to people wearing other kinds of shoes.[5]

JACKETS, PANTS, RIDING SUITS

Protect your body! Motorcycle jackets, pants and riding suits provide comfort in just about all conditions as well as protection in case of a collision. This gear is specifically designed for riding. Riding jackets, pants and suits are made to allow a comfortable riding position. Sleeves and legs are cut longer. Extra material and armor are often installed at the knees, back, shoulders and elbows to provide lasting comfort and protection.

Zippers and flaps that seal out the wind can be opened for ventilation with wind flaps



[4]De Rome L., et al (2011). Effectiveness of motorcycle protective clothing: Riders' health outcomes in the six months following a crash. Injury, doi:10.1016/j.injury.2011.10.025
[5]Ibid.

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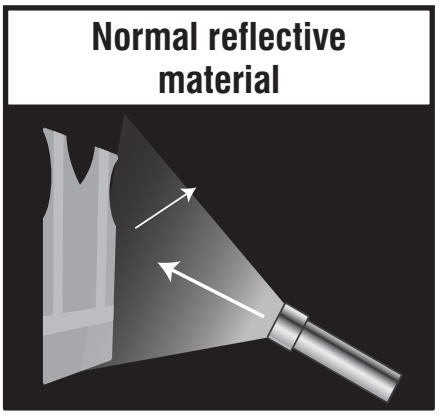
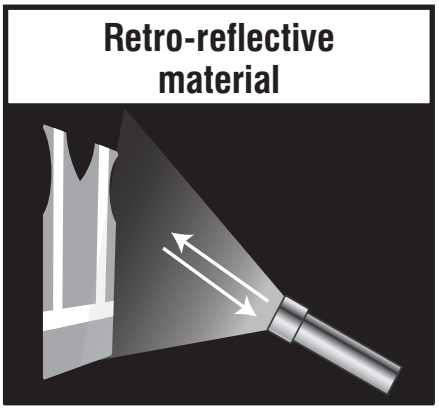
Good quality gear helps insulate you from inclement conditions, allowing you to concentrate on riding rather than battling the elements. Even a collar that flaps against your helmet or your skin can be irritating and distracting. Avoid these distractions by choosing quality riding gear.

Leather has always been a popular choice, because its durability provides protection against injury and wind fatigue.



Normal reflective vs. Retro-reflective



Another option is durable, abrasion-resistant outerwear designed specifically for motorcycling (using material such as Cordula nylon, Kevlar, etc.).

One- or two-piece riding suits made of water-resistant materials are good choices for year-round riders. For warmer climates, consider hot-weather riding gear made with mesh and ventilation panels with armor. Note that denim (jeans) is not considered "abrasion-resistant" and will offer very little protection against injury.

WHAT DOES THE RESEARCH TELL US?

In crashes, riders who were wearing motorcycle jackets with body armor (compared to riders who were not) were 23% less likely to have any injuries to that part of the body and 63% less likely to have open wounds (including cuts, lacerations or abrasions). Riders who were wearing pants with protective armor on the knees were 39% less likely to have any injuries and 91% less likely to have any open wounds to their legs.6

COMFORT AND VISIBILITY

Choose gear for durability, comfort, protection and visibility. Black is hard to see in daytime and invisible at night. Select gear with retro-reflective striping or patches. Retro-reflective material reflects light back to the source and illuminates the rider.

There may be times when visibility becomes limited due to nighttime, fog, heavy rainfall or wind in a dusty area. Remember that if you're having trouble seeing, so are the drivers that share the road with you. Wear bright and reflective gear to make yourself more visible. Retro-reflective tape, piping or a retro-reflective vest provide additional visual cues to others and are far more effective than just bright clothing alone. Bright colors and retro-reflective materials are the best choices for keeping you visible to surrounding traffic both day and night.

Select your riding gear with three things in mind: comfort, protection and visibility—safety in style and motion!

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Comfort and Visibility

Protect yourself in all kinds of weather. Constant exposure to the elements is both physically and mentally hazardous. Dehydration, overheating and hypothermia can compromise your judgment and cause decreased vision, light-headedness and impaired coordination. Be prepared by choosing proper riding gear. In hot weather, wear gear with adequate ventilation. Properly ventilated riding gear promotes cooling, which results in less dehydration and overheating. Also, riding in hot weather can cause you to lose a surprising amount of fluid through perspiration—drink plenty of water to keep yourself hydrated. When riding in cooler weather, wind chill can cool the body quickly and can cause hypothermia, a dangerous lowering of body temperature.

Dress in layers to stay comfortable as conditions change. Remember, proper protective gear is essential for safety. Don't allow your senses to become so dulled that you fail to register changing traffic conditions. More information on hot and cold weather riding can be found in Unit 14.

RAIN GEAR

Riding in the rain is not a problem if you are prepared for it. A warm and dry rider is much more attentive and comfortable than a cold, wet one. Choose a rain suit specifically designed for motorcycling. It will keep the water out, provide comfort and visibility, and stand up to the wind. Don't forget waterproof gloves and boot covers. Be prepared—always carry rain gear!

Smart Rider Commitment #3:

_____ (initial) "I acknowledge that when riding a motorcycle, the only thing between me and the elements (hot, cold, rain, hail, bugs, asphalt, other vehicles, etc.) is the gear I am wearing. I accept this fact and commit to getting and wearing riding gear that is right for me and any passengers I may carry."

INSPECTION AND MAINTENANCE

"An ounce of prevention is worth a pound of cure." This is especially true with motorcycles. It is always better to deal with a mechanical problem before the ride than suffer a breakdown during the ride.

For your added safety, take a few moments before every ride to inspect your motorcycle.

- Fluids—Check your fuel and oil levels. Always be on the lookout for weeps and leaks that indicate fluid loss.
- Tires—Check for wear and damage. Make sure tires are inflated to the proper pressure.
- Controls—Controls should operate smoothly and be properly adjusted.
- Electrics—Check your headlight, high beam, brake light, signals and horn.
- Final Drive—Chain drives should be properly adjusted and lubricated. Belt drives should be inspected for wear or damage. Shaft drives should be checked for leaks.

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Unit 3 | PREPARING TO RIDE

Your motorcycle owner's manual (MOM) is the best source of information for operating and maintaining your motorcycle. If you don't have one for your motorcycle, you can purchase a replacement from your dealer. Some manufacturers offer owner's manuals as a free download on their websites.

Follow the recommended maintenance schedule prescribed in the MOM. Regular maintenance is the best way to avoid expensive emergency repairs. Plan ahead—don't risk mechanical failures. Always follow the recommendations in the MOM.

Smart Rider Commitment #4:

_____ (initial) "I acknowledge that a motorcycle requires more frequent inspection and maintenance than a car. I accept this fact and commit to learning how and when to perform a pre-ride check on my motorcycle."

REVIEW QUESTIONS

1. What is the benefit of wearing apparel specifically designed for motorcycling?
2. How does riding gear make a rider more comfortable?
3. What is the difference between retro-reflective and reflective?
4. Why aren't ordinary glasses or sunglasses sufficient eye protection?
5. What three things should you consider when shopping for riding gear?
6. Where do you find the recommended maintenance schedule for your motorcycle?

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Unit 4 | WHEELS IN MOTION

Get to know the location and operation of your motorcycle's controls. Using these controls should become second nature, a comfortable extension of your hands and feet.

PRIMARY CONTROLS

Six primary controls make the motorcycle go and stop. You will find that it takes both hands and both feet to operate these six controls.

THROTTLE

The throttle is the right handgrip and is operated by rolling the handgrip toward you to increase speed and away from you to decrease speed. When released, the throttle snaps back to an "idle" position. To use the throttle safely and comfortably, keep four fingers around the throttle/handgrip and the wrist in a low position.

CLUTCH LEVER

The clutch lever is located in front of the left handgrip. Operate the clutch lever by squeezing it toward the left handgrip, disconnecting power from the rear wheel.

To re-engage power, slowly release the clutch lever while gently applying throttle.

GEARSHIFT LEVER

The gearshift lever, located on the left side of the motorcycle in front of the footrest, is operated by the left foot. To shift to a higher gear (upshift), squeeze the clutch and then lift the gearshift lever. To shift to a lower gear (downshift), squeeze the clutch and then press the gearshift lever. Remember that motorcycle transmissions shift only one gear per each lift or press—the shift lever must be released before you can shift again.

The shift pattern is 1-N-2-3-4-5-(6). Neutral (N) is typically a half-shift up from first or a half-shift down from second; a full upshift or downshift will bypass neutral. The green instrument light indicates neutral.

Shift Lever Operation

FRONT BRAKE LEVER

The front brake lever is located in front of the right handgrip and controls braking on the front wheel. To operate, use all four fingers and squeeze smoothly.

REAR BRAKE PEDAL

The rear brake pedal controls braking on the rear wheel and is located in front of the right footrest. Press down with your right foot to operate.

HANDLEBARS

The handlebars control steering inputs. For low speed riding (less than 15mph approximately) you use the handlebars to point the tire in the direction you want to go. For road speed riding (above 15mph) you push the grip forward in the direction you want to go.

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OTHER CONTROLS AND EQUIPMENT

The location and operation of some of these controls vary from model to model. Consult your motorcycle owner's manual.

ENGINE CUT-OFF SWITCH

Located on the right handgrip and operated by the right thumb. It allows you to shut off the engine without removing your hands from the controls.

FUEL SUPPLY VALVE

Most newer motorcycles do not have a fuel supply valve. If your bike does have one, it is most likely located under the tank on the left side of the motorcycle. The fuel supply valve controls fuel supply to the engine. Turn from OFF to ON to run. It also may include RESERVE and PRIME positions.

IGNITION

Usually located near the instrument cluster and activated with a key. The key can rotate to positions that include ON, OFF, LOCK and PARK. The LOCK position allows the key to be removed and engages a steering-lock mechanism. PARK activates the taillight for increased visibility if you park alongside a roadway at night.

CHOKE

Most newer motorcycles do not have a choke. If your bike does have one, your choke may be located near the left handgrip and operated with the left thumb, or it might be near the fuel-supply valve (locations vary). The choke provides an enriched fuel mixture to assist in cold engine starts. Turn the choke off when engine is warmed and before riding.

TURN SIGNAL SWITCH

Usually located on the left handgrip and operated by the left thumb. Most models do not self-cancel. Check your owner's manual.

HIGH/LOW BEAM

Located on the left handgrip. On most motorcycles, the headlight activates when the ignition is on.

HORN

Located on the left handgrip. Press with your thumb.

STARTER

Located on the right handgrip. Press with your thumb.

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Other Controls and Equipment

SPEEDOMETER

Located in the instrument cluster. Indicates motorcycle road speed. An odometer shows miles ridden, and a re-settable trip meter can be used to show trip miles or miles since the last gas stop.

TACHOMETER

Located in the instrument cluster. Indicates motorcycle engine speed in revolutions per minute (RPM). Never exceed red line RPM.

INDICATOR LIGHTS

Located in the instrument cluster. Includes lights for neutral, turn signals, oil pressure, high beam, side-stand down and possibly other actions or warnings.

MIRRORS

Every motorcycle should have a left and right mirror. Most mirrors are convex. Convex mirrors provide a wider view than flat mirrors but make vehicles seem further away than they really are. Get familiar with your motorcycle's mirrors. Adjust them so that your shoulder and upper arm are just visible. This gives you the maximum view to the rear and the side.

SIDE AND CENTER STANDS

Support the motorcycle when parked. Not all models have center stands. Most stands have return springs that snap them up and hold them in place. Always raise the stand before riding.

REVIEW QUESTIONS

1. What are the six primary controls and where is each located?
2. What is the purpose of the engine cut-off switch and where is it located?
3. What must you remember when using your motorcycle turn signal?

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Unit 4 | WHEELS IN MOTION

IDENTIFYING THE MOTORCYCLE'S CONTROLS

Use the illustration below to identify the motorcycle's controls.

Clutch Lever _____

Ignition _____

Gear Shift _____

Horn _____

Throttle _____

Front Brake _____

Rear Brake _____

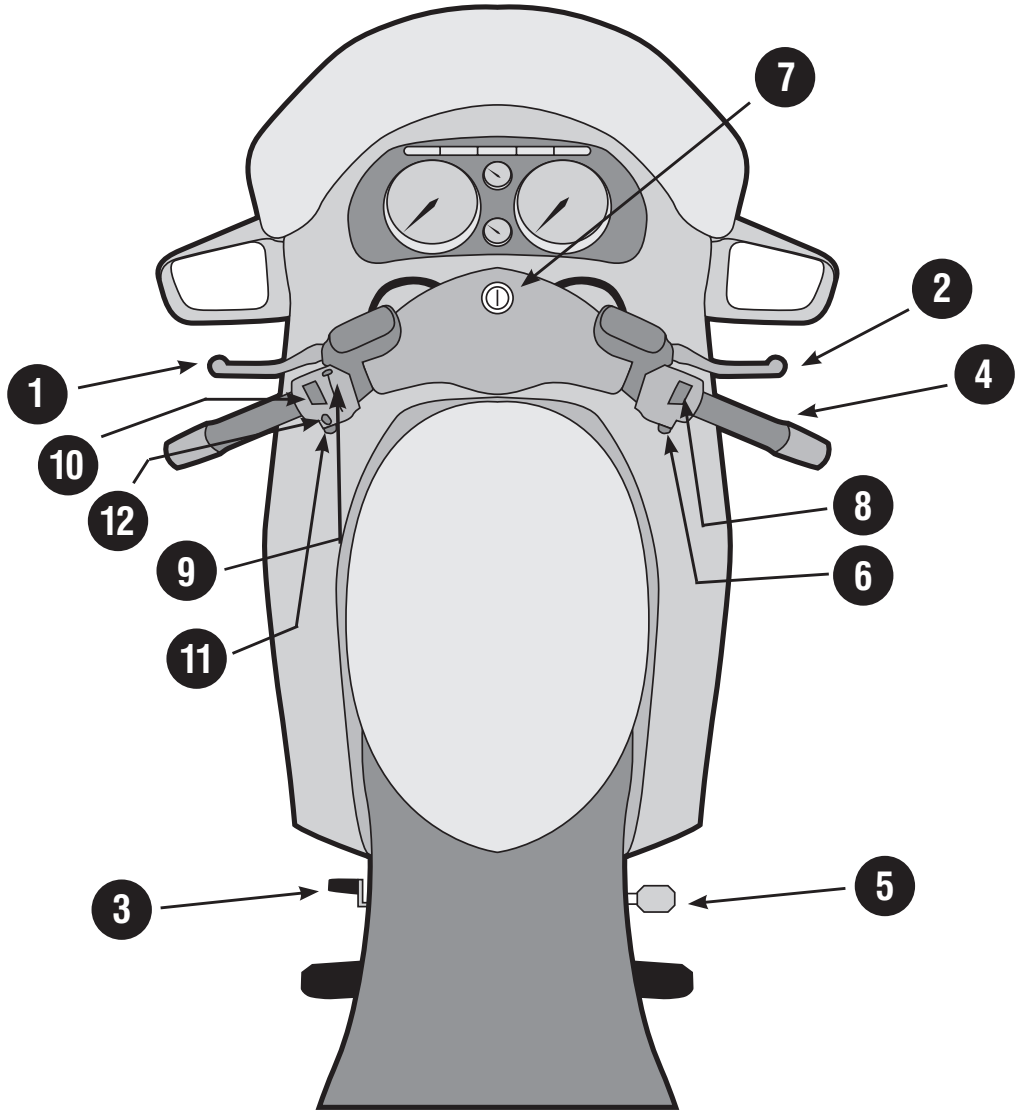
Starter _____

Engine Cut-Off _____

High Beam _____

Choke _____

Turn Signal _____



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MOUNTING AND DISMOUNTING

Let's get ready to ride! Stand on the left side of the motorcycle. Grasp the handgrips, squeeze the front brake to keep the motorcycle from rolling, keep your head and eyes up and swing your right leg over the seat. Sit and straighten the bike; raise the sidestand with your foot. Now is a good time to adjust the mirrors so that you can just see the edge of your shoulders in the mirrors.

To dismount, put the sidestand down. Lean the motorcycle onto the sidestand, squeeze the front brake and swing your leg over. Turn the handlebars fully toward the sidestand for stability.

STARTING THE MOTORCYCLE

To start the motorcycle, use the ONE-C pre-start routine:

- Turn the fuel valve from OFF to ON. Turn the ignition switch ON.
- Shift the transmission to NEUTRAL. Don't rely on the indicator light. Rock the motorcycle back and forth with the clutch out before starting the engine. If it rolls freely and the neutral light is on, it's in neutral.
- Move the engine cut-off switch to RUN or ON.
- Many motorcycles require squeezing the clutch before the starter will operate. Even if this is not required, it is a good precaution against accidentally starting the bike in gear. Use the choke as needed. Turn the choke ON for cold starts.

ONE-C

O On

N Neutral

E Engine Cut-Off Switch

C Clutch/Choke

START IT UP!

Press the starter button. Avoid using the throttle; the motorcycle should start without it. Many motorcycles have a safety mechanism that cuts power to the motor if the bike is placed in gear with the sidestand down; if you haven't brought the sidestand up, do it now. If the motor doesn't start in the first 5–8 seconds, stop and repeat ONE-C. After starting the engine, remember to turn off the choke after the engine is warmed up.

TO STOP THE ENGINE

Turn the engine cut-off switch to OFF. Do this every time so that you will automatically reach for the switch quickly in an emergency. Turn the ignition OFF. Turn the fuel valve OFF if your motorcycle has one.

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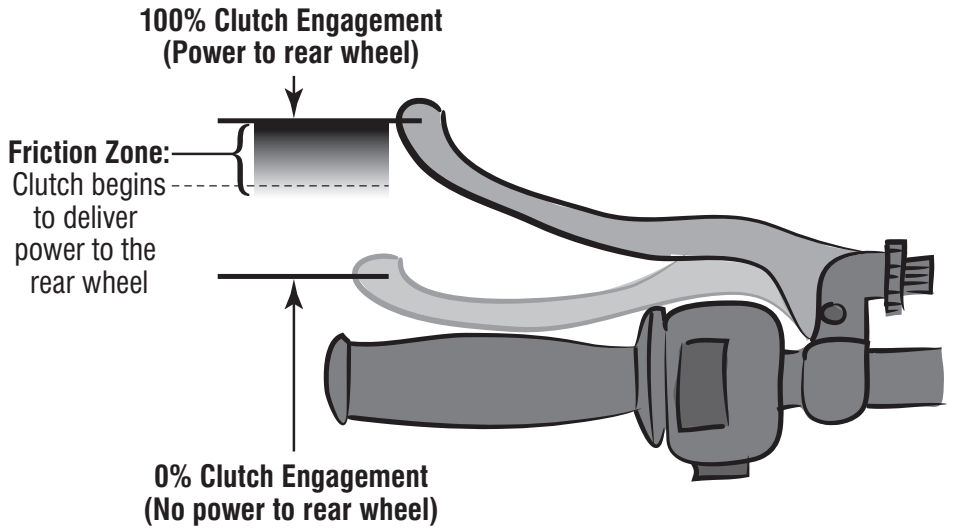
GETTING UNDERWAY

With the motorcycle started and your head and eyes up looking where you want to go, you are now ready to start moving. Follow these procedures to smoothly get underway.

USE THE FRICTION ZONE

Squeeze the clutch and shift into first gear. Because a motorcycle has a manual transmission, it takes a little "clutch slip" to get underway. Use the friction zone—the area of clutch travel where the engine's power begins to transmit to the rear wheel.

This partial engagement allows you to smoothly and precisely control engine power to the rear wheel. Don't be in a hurry. Take your time easing out the clutch. Let the motorcycle get underway before fully releasing the clutch.



ASSUME GOOD RIDING POSTURE

Good riding posture enhances your comfort and control, and makes you look good, too! Straighten your back, keep your head and eyes up and look where you want to go. Place your feet on the footrests near the controls, knees against the tank. Relax your arms and bend your elbows slightly. Hands should comfortably reach the controls without straining.

During this course you will be coached to cover the clutch with all four fingers and keep your right wrist low on the throttle. Keep all fingers curled around the throttle—do not cover the front brake when you are learning to ride. Learn to roll off the throttle as you reach for the front brake lever with all four fingers. Reach and squeeze, and then return your hand to the throttle.

Proper Riding Position

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Shifting

You must change gears to keep the engine within its best operating range at all speeds.

SHIFTING TO A HIGHER GEAR

Your goal is to match engine speed to road speed and avoid over-revving or lugging the engine. As engine speed increases, upshift to a higher gear. You'll soon find shifting routine and enjoyable. Use this five-step process to upshift to a higher gear:

- Roll off, or close, the throttle.
- Squeeze the clutch.
- Lift the shift lever. Use firm pressure. Release the shift lever after each shift is completed.
- Ease the clutch out.
- Roll on the throttle.

SHIFTING TO A LOWER GEAR

Downshift to match engine speed with road speed, provide more acceleration, or to use engine compression to slow the motorcycle. To use this four-step process when downshifting:

- Roll off the throttle.
- Squeeze the clutch.
- Press down firmly (but don't stomp) on the shift lever.
- Ease. Engine braking is at work here, and that can have the effect of stepping hard on the rear brake—eeeease out the clutch to avoid skidding the rear tire.

It is possible to downshift several gears in succession. Hold the clutch in and press once for each gear. When you can't downshift anymore, you're in first. Remember to release the shift lever so it can return to the center position after each shift.

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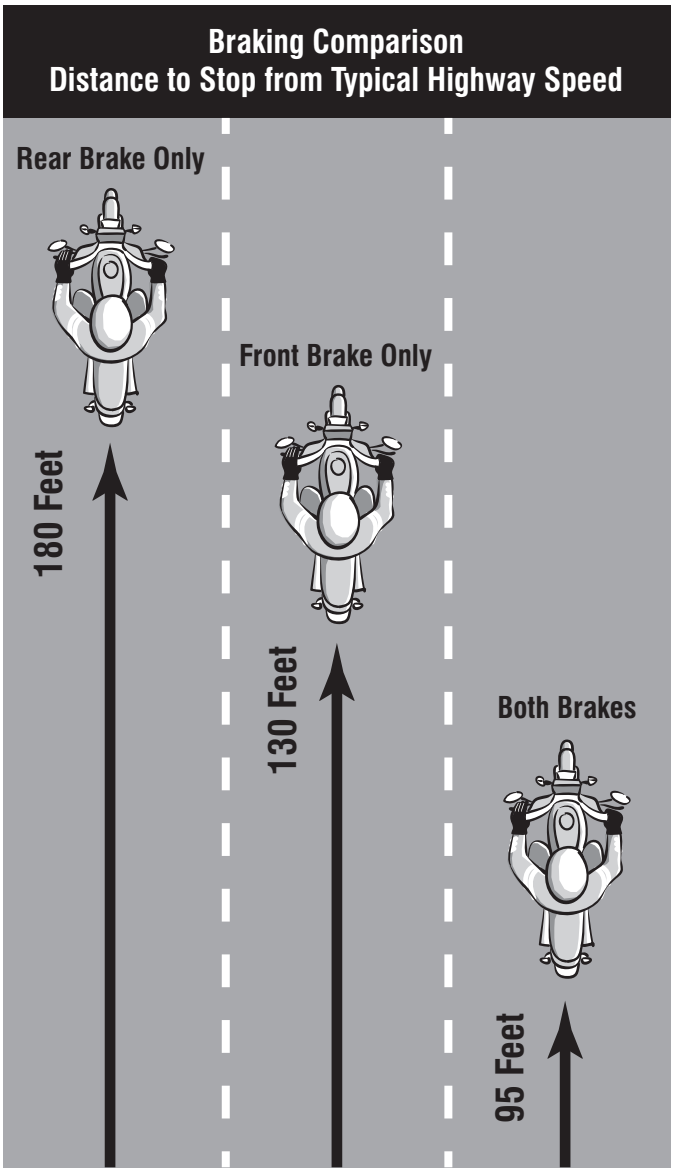
STOPPING



Your hands and feet must work together to bring the motorcycle to a smooth and coordinated stop. All the braking controls are on the right side—right hand and right foot—and all shifting controls are on the left side. When stopping, keep your head and eyes up, looking ahead. Always begin braking first, then squeeze the clutch and downshift. With practice the action becomes nearly simultaneous: IN (brake, clutch) and DOWN (rear brake and shift lever). Keep the clutch squeezed as you complete your downshifts to first gear.

To maintain balance and control, keep your head and eyes up and the handlebars square (straight) as you stop. As you come to a stop, place your left foot down first. The right foot continues to apply the rear brake. Once stopped, place the right foot down if necessary.

The front brake provides at least 70% of the motorcycle's total stopping power. Always use both brakes, even for routine stops. Habits formed now will become automatic actions later.

There will be times when you will need to slow and come to a stop in a curve. It is important to remember that when braking in a turn, traction (your tire's grip on the road) is being shared. Traction is being used for cornering and for braking at the same time. This means the amount of traction available for each is limited.

To slow and stop safely in a curve, brake smoothly and gently. You'll also need to be able to identify important roadway information that could affect your available traction. Look through the turn to gather this important information. Looking well ahead will tell you how tight the turn is. It will allow you to determine your stopping point. While looking through the turn, you can also check for any slope in the road and see whether or not the road surface is free of any hazards and debris. As stated above, make sure you keep your eyes up and handlebars square as you come to a stop.

Using both front and rear brakes shortens stopping distance.

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TURNING

One of the keys to smooth and successful cornering lies in proper head turns and keeping your eyes up. You tend to go where you look. As you'll discover on the range, if you look through the turn you'll ride through the turn. If you look out of the turn, you'll ride out of the turn. Remind yourself to look ahead. Turn your head to face all the way through corners. This gives you the essential information to negotiate turns safely and skillfully. Use the SPAT decision making process below to turn any motorcycle on any corner.

There is a four step mental process used to successfully negotiate turns on a motorcycle:

Speed
Position
Aim
Turn

SPEED

Adjust your speed before you get to the turn. Close the throttle and/or apply the brakes as necessary. Downshifting can also help reduce speed if necessary. Slow enough before beginning the turn to allow smooth and constant throttle application through the turn. On rare occasion such as a turn from a stop the speed may need to be increased before the turn.

POSITION

Select an outside lane position prior to the turn. Additionally for road speed turns above 15mph adjust your body position to the inside and for slow speed turns move your body position to the outside. Position also refers to ensuring that there is a safe position within traffic or within the group of other riders.

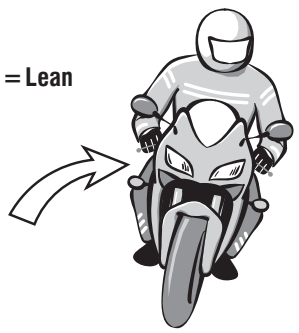
AIM

Prior to starting the turn your head and eyes and visually aim through the curve. Look ahead as far as you can see and continue to look at the new path throughout the curve. Use peripheral vision to gather information closer to you. A benefit to looking all the way through the curve throughout the curve is that a mental plan may be developed to manage any risks through the curve.

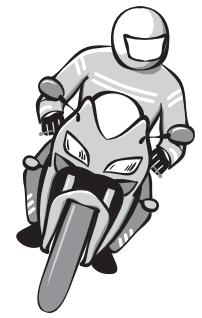
TURN

Lean the motorcycle into the turn by applying gentle, forward pressure to the handgrip in the direction of the turn. To turn right, push on the right handgrip. To turn left, push on the left handgrip. While this may sound backward, the technique—known as countersteering—really works. **A motorcycle must lean in order to turn. The pressure on the handgrip (countersteering) causes it to lean in the direction of the turn.**

Rider countersteers.



Front wheel momentarily out-tracks away from turn, causing motorcycle to begin leaning in turn direction.



Motorcycle stabilizes in turn, front wheel re-centers. For detailed information on why this works, consult the book Total Control, Second Edition.

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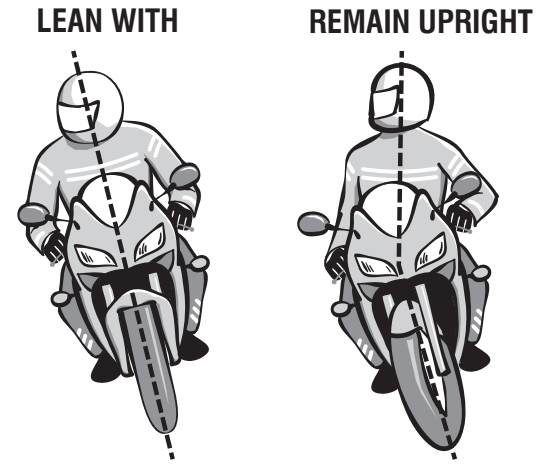
POSTURE IN TURNS

In most turns you and your motorcycle lean together. However, for slow, tight turns you may find it useful to counterweight, putting your weight on the outside footpeg, or even shifting your body toward the outside. This allows the motorcycle to lean while you remain upright to balance the motorcycle. Remember to turn your head and look where you want to go.



TIGHT TURNS

For tight turns, typically in a parking lot at speeds less than 15 mph, the cornering procedure is normally the same—speed, position, aim, turn. However, at slow speeds, you must turn the handlebars to steer the motorcycle after it has started to lean. Depending on the sharpness of the turn, you may want to use the friction zone to help control your speed and path. To help maintain balance in slow-speed turns, counterweight by placing your weight on the outside peg and keeping your body upright. Look back over your shoulder to control your path.

STRATEGY

Counterweight and turn your head to look back over your shoulder.

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Review Questions

1. What is ONE-C?
2. How do you use the friction zone?
3. Describe good riding posture.
4. What are the four steps to turning?
5. Why is the “aim” step important?
6. What does lifting or pressing on the shift lever accomplish?
7. Which brake provides more stopping power? How much does it provide?
8. How should you release the clutch when downshifting?

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Unit 5 | MENTAL MOTORCYCLING

Once you develop the physical skills of motorcycling, you're ready to hit the streets, right? Wrong. Handling a motorcycle is only one part of safe and successful riding. Now you need to take the next step and develop a set of street riding strategies that are the core of what is called "mental motorcycling." This is a constant game of "what if?" What if that car turns left? What if the bicyclist crosses in front of me? What if that's oil on the street, not water? As a street rider, your success and survival depend on how well you develop the fundamental skills of mental motorcycling.

VISIBILITY

One of the most important strategies motorcyclists must develop is to see and be seen in traffic. In multi-vehicle crashes involving motorcycles, the driver often doesn't see the rider until it's too late to avoid a collision. These factors contribute to that scenario:

- Drivers fail to actively scan for traffic or confirm that it is safe to enter an intersection.
- Riders fail to command attention and communicate their presence and intentions. Often a rider is hidden from view by other traffic.
- Riders fail to detect motorists or fail to anticipate that a motorist will violate their right-of-way.

Visibility is a crucial component of mental motorcycling. Try to always communicate your presence and intentions to other highway users. Ride with your headlight on during daytime for visibility. When changing lanes and passing, signal well in advance and use hand signals whenever possible to help attract attention. Being seen can reduce the risk of a crash. Even then, you must be ready to take evasive action at any time, especially if you doubt that you've been seen.

BEING SEEN

You have several ways to communicate your presence to other motorists:

CLOTHING

Brightly colored clothing and a light-colored helmet will help make you more visible to other road users. Also, retroreflective material on your helmet, clothing and motorcycle will help you stand out in traffic.

STRATEGY:

See and be seen in traffic.

Motorcycling is mostly mental. Responsible riders always think ahead to chart a safe path through traffic. This is mental motorcycling—the art of The Ride.

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Being Seen

HEADLIGHT

Ride with your headlight on at all times. In California, the same rules apply to high beam use during the day. Use high beam whenever you are not following or approaching another vehicle at night. Use your high beam when it is legal and safe to do so. When it is foggy, use the low beam. Be aware that flashing your high beam can be misinterpreted by other drivers as your giving up your right of way.

SIGNALS

Communicate your intentions. Use your turn signals to let others know your intentions. Don't forget to cancel your turn signal. Use hand signals along with electric signals to help alert traffic around you. Never assume that drivers see you or anticipate your moves. Clear communication is your responsibility.

BRAKE LIGHT

When stopping in traffic, flash your brake light to alert traffic approaching from the rear. The motorcycle's brake light can blend in with other lights, especially at night. A flashing light attracts more attention.

HORN

Drivers accustomed to relying on horns to alert others should be aware: motorcycle horns are not loud enough to do the job reliably, so don't count on them to make others aware of your presence.

SEEING OTHERS

Research shows that most motorcycle crashes develop from hazards in front of us. One key to successful street riding is in searching out these potential hazards and anticipating their actions and consequences. Finding others before they find you requires alertness and accurate perception.

SCANNING

The first step of mental motorcycling is assessment—finding the critical information needed for success and safety. That search is primarily accomplished through what you see. Therefore, you must develop scanning skills that provide accurate information.

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Scanning for potential hazards includes more than just looking in front of you. Always be aware of what is to either side and behind. Scanning is an aggressive, purposeful search for information. Pay attention to traffic signs and signals as well as roadway markings. They warn you of speed adjustments or intersections. They may warn of construction or traffic problems ahead. Periodically glance at your motorcycle's instruments to monitor your speed and check for warning lights, but remember: your priority is out in front of you. Don't let your eyes fix on any one object for more than a split second.

TARGET FIXATION

Target fixation happens when the eyes and brain are focused so intently on a particular object that awareness of other obstacles or hazards can diminish, and the vehicle you are attempting to control tends to veer toward that object. This is a common issue for motorcyclists because a motorcycle tends to go where the rider is looking.

If you become fixated on a target, you could collide with the object you are fixated on—in spite of your best intentions to avoid it. It can also cause you to miss early detection of other hazards. The best solution to avoid target fixation is to keep your eyes moving, and direct your eyes to look where you want to go (not at obstacles).

LINE-OF-SIGHT

Select a path of travel that will give you the best line-of-sight. This strategy keeps you on target, alert and aware of changing conditions. It also helps prevent overriding your sight distance. This occurs when you ride at a speed that does not allow time or distance to stop or swerve should a hazard enter your path or when the road takes an unexpected bend.

CHART A COURSE AS FAR AS YOU CAN SEE

Look ahead as far as you can to scan a 20-second path of travel. That means looking ahead to an area it will take you 20 seconds to reach. This gives you situational awareness—time to prepare for a hazard before it is in your immediate path.

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Line-of-Sight

AGGRESSIVELY SCAN A 10-SECOND IMMEDIATE PATH OF TRAVEL

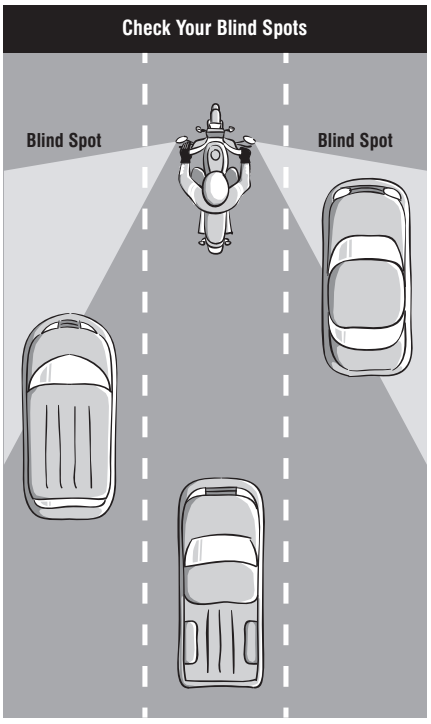
The area 10 seconds ahead is your immediate path of travel. Situations developing within this area require your immediate response. Scan ahead, to the roadsides and to your mirrors. Look for movement—any movement that could potentially intersect your path or create risk. Whether it's a vehicle, a pedestrian or an animal, things that move can be hazardous. Be especially careful as you approach intersections. This is where most multi-vehicle collisions occur.

CHECK TRAFFIC TO YOUR SIDES

Avoid lingering in another vehicle's blind spot. If you can't see the driver in their mirror, the driver can't see you. And if the driver can't see you, expect that vehicle to move into your lane at any time.

CHECK MIRRORS BUT RELY ON HEAD CHECKS

Mirrors are an important safety tool, but riders are encouraged not to rely on them exclusively to know what's taking place behind them. As with automobile mirrors, motorcycle mirrors have "blind spots," which requires riders to turn their heads to see what the mirrors may have missed. Use of mirrors and head checks is essential when changing lanes, merging, turning and stopping.

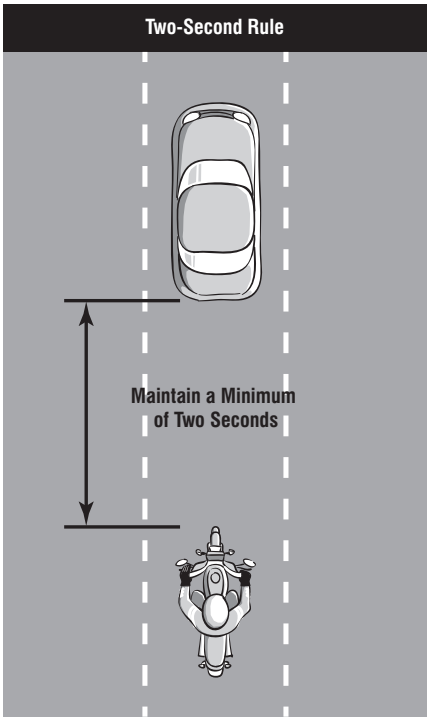


FOLLOWING DISTANCE

Two seconds is the minimum following distance at low speeds when conditions are ideal. Anything less than ideal—such as higher speeds, heavy traffic, reduced visibility, bad weather, unfamiliar environments, fatigue or reduced Rider Readiness—demands a minimum of four or more seconds of following distance. Here's how it's done:

1. *Pick out a fixed object ahead, like a sign, pavement marking or shadow.*
2. *As the vehicle ahead passes the object, count off: "one-one-thousand, two-one-thousand."*
3. *If you reach the fixed object before reaching two seconds, you are following too closely. Give yourself more space and try again.*

Remember, **two seconds is the minimum room to maneuver**. It is not enough distance to stop. The greater the following distance, the greater the margin of safety, especially when conditions are less than ideal.



STRATEGY:

Maintain a Minimum 2-Second following distance

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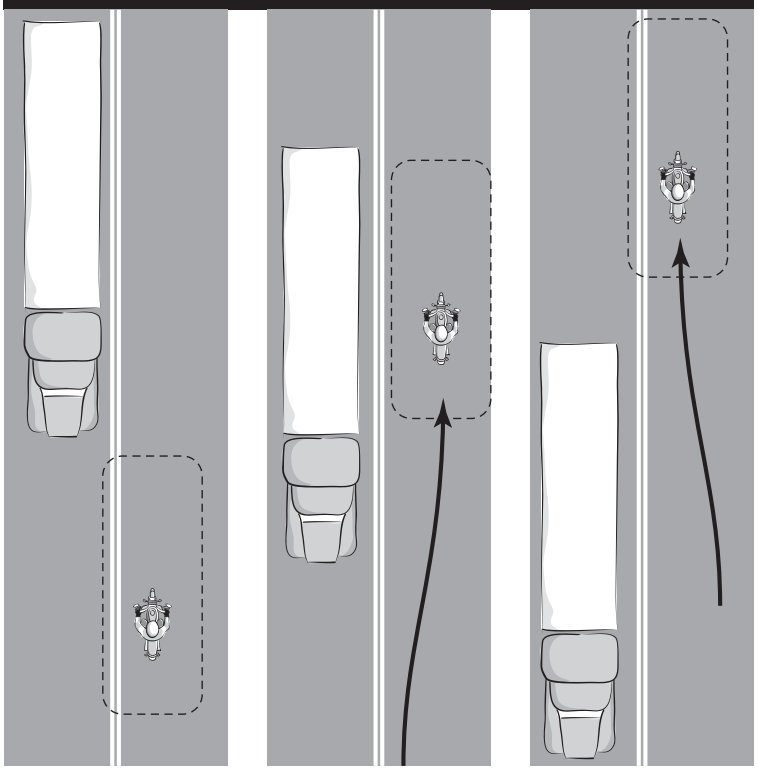
LANE PLACEMENT

It is important to choose a lane position appropriate for the conditions. Your lane position can help you to communicate with other traffic, see and avoid roadway hazards, create space between yourself and other vehicles and provide an escape route. Position yourself where other motorists are expecting to see traffic and where you have the greatest margin of safety. Be visible! Consider the following strategies when selecting a lane position.

> STRATEGY:
>
> Choose a lane position that provides optimum visibility, line-of-sight, a space cushion, and an escape route.

Maintain Space Cushion



SEE AND BE SEEN

Your lane position should provide you with the best position to see and be seen and for you to communicate your intentions to traffic ahead, behind and to the sides. If you are hidden behind a larger vehicle, traffic to the front can't see you—so expect an oncoming car to turn left in front of you just as the vehicle you are following clears the intersection. Don't hide in traffic. If you can't see the drivers around you, they can't see you.

> STRATEGY:
>
> Being seen is your responsibility.

> STRATEGY:
>
> Always maintain a space cushion and an escape route.

SPACE CUSHION

A space cushion is the area surrounding you in the traffic flow.
Allow adequate distance to the front, rear and sides. This principle holds true whether you are moving or at a stop in traffic.

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Lane Placement

ESCAPE ROUTE

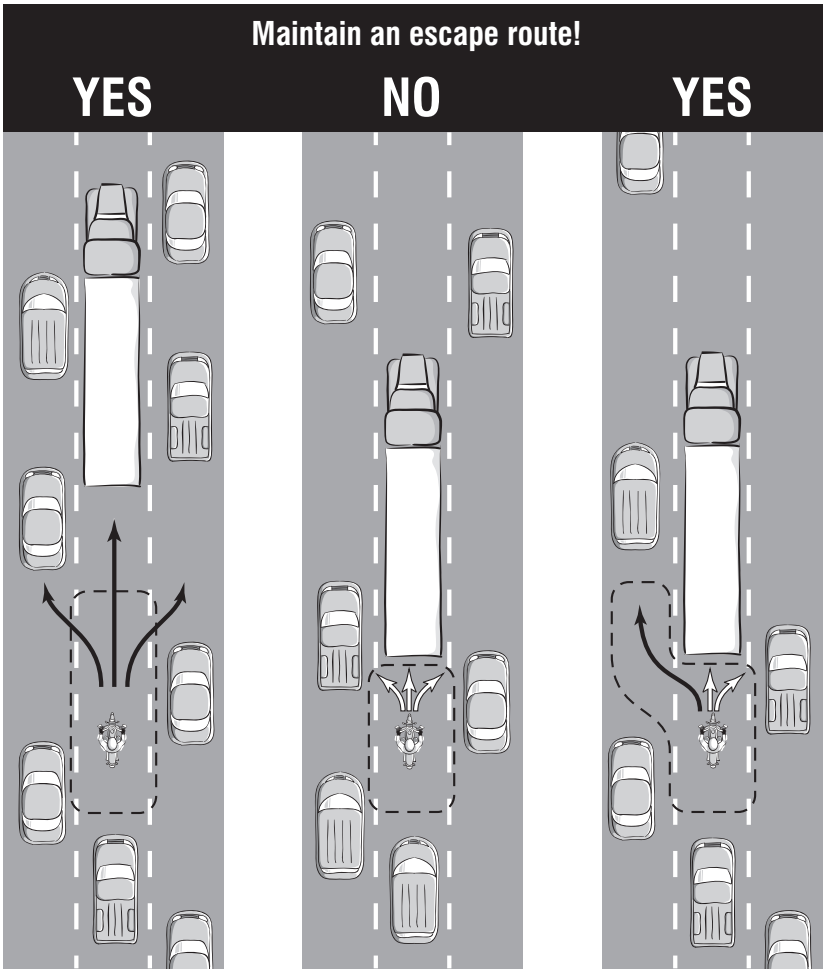
An escape route is an alternate path of travel that you can take if a hazard develops in your path. No matter the conditions, always maintain an escape route—your way out.

PROTECT YOUR LANE

Avoid sharing your lane with other vehicles. Lane sharing violates the principles of space cushioning and compromises your ability to maintain an escape route. Command attention and protect your space within the lane.

AVOID SURFACE HAZARDS

Surface hazards such as potholes, gravel and ruts can be avoided by employing the line-of-sight strategies addressed earlier. By protecting your lane, you maintain the necessary space cushion and escape route for avoiding surface hazards.



Review Questions

1. How can you improve your visibility to other traffic?
2. What is the 20-second visual lead?
3. What two words best describe scanning?
4. What is the recommended minimum following distance?
5. What should you consider when choosing a lane position?

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THE SIPDE PROCESS

Expert riders know what's going on around them and act early, responding to potential problems before they become life threatening. Become an expert rider by developing expert judgment. SIPDE is the acronym for a mental strategy used to make sound judgments and reduce risks in traffic. It stands for:

SIPDE

- **S** Scan
- **I** Identify
- **P** Predict
- **D** Decide
- **E** Execute

SCAN

Search aggressively ahead, behind and to the sides for potential hazards. What you don't detect can hurt you! Scan aggressively to recognize problems before they become critical. Other roadway users such as other vehicles, bicyclists, pedestrians and animals can pose hazards to motorcyclists. They may violate your right of way, limit sight distance, crash into you or simply be a distraction.

Keep your eyes moving in a purposeful search for information.

IDENTIFY

An aggressive search will allow you to identify hazards and potential conflicts early. Hazards fall into the following three categories:

1. Other vehicles—traffic sharing the road with you. Your reactions to other vehicles are critical.
2. Pedestrians and animals—they move unpredictably and, depending upon their size, can create an imposing hazard.
3. Fixed hazards—stationary objects near and alongside the roadway, surface hazards, signs and signals, guardrails, bridges, etc. They don't move, but failing to recognize them can be hazardous.

PREDICT

Once you've identified the hazard, the next step is to quickly predict what it will do. How critical is the situation? What are your options? What are the consequences? Will the hazards separate or is action required? Is collision likely? This is the "what if" phase of SIPDE that depends upon your knowledge, experience and skill. An aggressive search has presented you with critical information — be prepared to act on it!

DECIDE

The next step calls for decisions based upon your prediction. Complete the "what if" phase to estimate results. What are you going to do, and how are you going to do it?

The definition of "Expert Motorcyclists":
Riders who use their superior judgment
to avoid needing to use their superior skills.

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The SIPDE Process

In any situation you have three options:

1. Adjust speed—speed up, slow down or stop.
2. Adjust position—move left or right.
3. Communicate—sound your horn, flash your brake light or headlights, signal, etc.

Adjusting your speed as necessary gives yourself time and space to react. Never hurry into danger. Slowing down is often the best way to decrease risk, but there will be times when acceleration is a better choice. Adjusting your lane position, changing lanes or even turning away from a hazard are also valuable tactics. Slowing down and moving away from danger gives you time and space to maneuver while the situation unfolds. Scanning well ahead and using the SIPDE process will help you choose the best option.

EXECUTE

Act on your decision. This is the physical part of the SIPDE process. Now is the time to apply your skills:

- Adjust speed—roll on or off throttle, brake or downshift for greater acceleration.
- Adjust position—press left or right.
- Communicate—press the horn button, flash the lights, etc.

Your safety and success on the street requires effective use of SIPDE. Riders with excellent physical skills and poor SIPDE skills ride into trouble much more often than riders with poor physical skills and excellent SIPDE skills. Become an expert rider by applying good judgment and riding responsibly.

INTERSECTION SITUATIONS

Most multi-vehicle collisions occur at intersections. Often, the driver violates the motorcyclist's right of way. The driver's most common response is "I didn't see the motorcyclist." Active use of SIPDE and proper lane positioning will make you more visible and better prepared to deal with hazards at intersections.

Anywhere another vehicle can enter traffic is considered an intersection. This includes driveways, merge lanes, alleys and parking lots. Plan ahead before reaching an intersection. Be especially careful when your visibility is blocked. If you can't see an intersection, the drivers waiting at that intersection can't see you.

BE ALERT AND READY

Be alert and ready when approaching intersections. Maintain a space cushion and always have an escape route. Cover the clutch and brakes for a quicker response. Downshift if necessary so that you are ready to accelerate away from a hazard. Adjust your lane position to create space and increase visibility.

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HAZARDS TO THE FRONT AND FROM THE LEFT

Be alert and ready when approaching intersections. Maintain a space cushion and always have an escape route. Cover the clutch and brakes for a quicker response. Downshift if necessary so that you are ready to accelerate away from a hazard. Adjust your lane position to create space and increase visibility.

TRAFFIC TO THE REAR

Don't forget to check behind you. When stopped, waiting to turn or waiting for a light to change, check behind you and flash your brake light to command attention. Always keep your bike in first gear at stops. Set up to one side of the lane and give yourself at least two bike lengths from the vehicle in front, so you have room to maneuver in an emergency. Be ready to escape if the vehicle behind you fails to stop or yield.

"BUT THE DRIVER LOOKED RIGHT AT ME…"

Even after you apply all known street strategies, there is no guarantee that others will see you. Never count on eye contact to ensure that you have been seen. Too often, drivers look right at motorcyclists and still fail to see them. The only eyes that count are your own. If a car can enter your path, predict that it will. It's that simple!

NON-INTERSECTION SITUATIONS

In urban settings, the area between intersections holds plenty of hazards. Cars parked along the roadside can move without notice. Doors may open unexpectedly into traffic. Pedestrians can enter your path. Maintain your space cushion and expect these situations to occur.

When turning, changing lanes, passing or merging, signal in advance, have enough space for the maneuver, position yourself carefully and manage your speed wisely.

CHANGING LANES

The risk associated with changing lanes generally comes from failure to check your mirrors and blind spots. Here is the best way to change lanes:

- Plan your move.
- Move to the side of your lane to increase your line-of-sight.
- Signal first, and then check your mirror to the side you are moving.
- Make a quick over-the-shoulder head check to see what is in your blind spot.
- When you are certain it is safe, change lanes.
- Cancel your signal after completing the maneuver.

First priority is the traffic ahead, where most collisions occur. Many hazards approach from the left. Be ready to take evasive action if the driver waiting to turn left doesn't wait for you.

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Non-Intersection Situations

SMOG-C

- **S** Signal
- **M** Mirror
- **O** Over-the-shoulder
- **G** Go
- **C** Cancel signal

Apply the SMOG-C process when passing or changing lanes. It is a good habit to develop and should become second nature with time.

PASSING

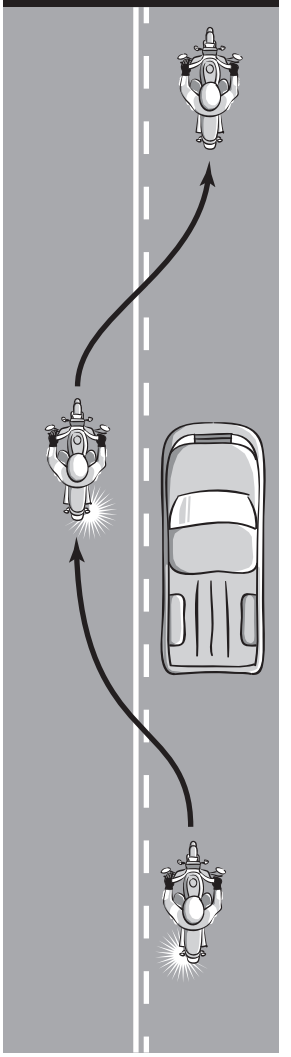
Passing other vehicles is like changing lanes, with one major exception: For a period of time you will be riding in the opposing lane. Apply SIPDE here. Ask yourself why the vehicle you are following is driving so slowly. Is the driver searching for a house address? Will they make a sudden left turn? Check for driveways or intersections. Check thoroughly for approaching traffic. Determine if you have the space to safely pass. If you aren't sure, wait.

Check for oncoming traffic. Signal and check your mirrors and blind spot. Make no move unless it is legal and safe to do so. When it is safe to pass, move into the left lane and accelerate. Don't linger out there. Avoid crowding the vehicle you're passing. This minimizes the time that you'll be in the driver's blind spot and provides space to avoid possible hazards in your lane.

Complete SMOG-C by signaling and completing a return to your lane. Don't forget to cancel your signal.

Remember that passes must be completed within posted speed limits and only where permitted.

Proper passing technique



STRATEGY:

Check your blind spot before passing or changing lanes.

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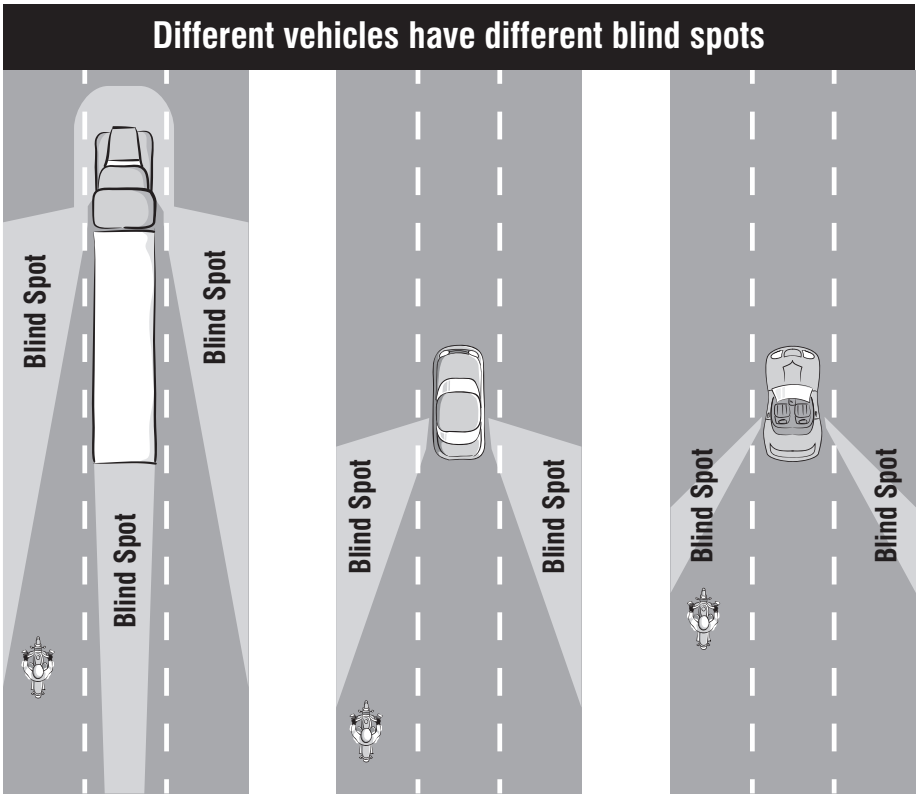
BLIND SPOTS

Avoid other vehicles' blind spots. Some drivers will turn their heads to check mirrors before changing lanes—that's your clue. Remember, if you can't see the driver in their mirror, the driver can't see you. Communicate!



TAILGATING

Drivers that tailgate may not be able to stop as quickly as you and their presence is distracting. Don't become emotionally engaged with a tailgating driver. The distraction can affect your safety (remember most hazards approach from the front). Some options for dealing with tailgaters include:

- Increase the space cushion in front of you in case you have to stop quickly.
- Make your traffic stops smooth and gradual. No surprises.
- Communicate with the tailgater by flashing your brake light.
- Hold your position and don't allow lane sharing.
- Turn or yield at the first opportunity to let the tailgater pass.
- Do NOT speed up—this often results in being tailgated at a higher speed.
- Do NOT throw anything at the vehicle to "teach them a lesson." The driver is most likely not tailgating you on purpose and throwing objects may start a fight that you are unlikely to win.

STRATEGY:

Avoid riding in other vehicles blind spots

NIGHT RIDING

Night riding carries special challenges; visibility is reduced and sight distance is much more limited than during daytime. You can greatly enhance your visibility and safety through use of bright, reflective and retro-reflective materials, including use of retro- reflective vests. Wear untinted eye protection that is free of scratches and smudges, reduce speed and increase the distance at which you follow other vehicles, signal your intentions early and flash the brake light when stopping or waiting at intersections—this helps keep you from blending in with other vehicles.

Remember: Your headlight only shines a certain number of feet in front of you.

This means that at higher speeds you have less time to respond to what you see. In conditions of darkness, slow down to avoid "overriding" your headlight. Use the headlights of other vehicles to see farther ahead and their taillights for clues about curves, bumps or maneuvers.

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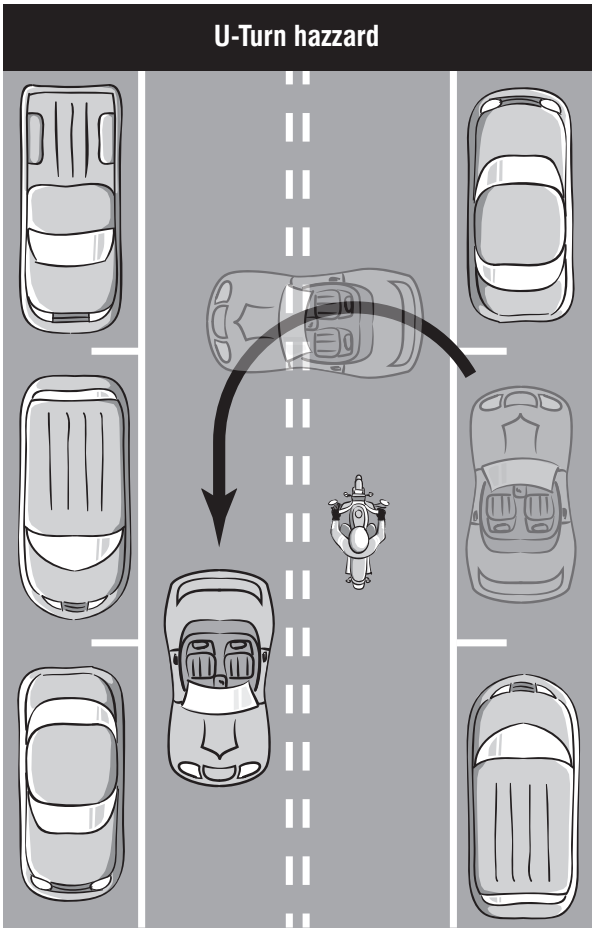
Non-Intersection Situations

Make yourself even more visible to others by using your high-beam headlights when allowed. High beams should be used wisely, taking care not to blind other road users.

U-TURNS

Cars making U-turns are extremely dangerous. They can cut you off by blocking the entire roadway, leaving you with no escape route. Since you can't tell what the driver will do, slow down and get the driver's attention. Sound your horn and flash your high beam, if needed. Proceed with caution.



Smart Rider Commitment #5:

_____ (initial) "I acknowledge that an expert rider is one who uses expert judgment to avoid having to use expert skills. I accept this fact and commit to becoming an expert rider by practicing SIPDE skills, keeping my eyes up and scanning 20 seconds ahead."

Review Questions

1. How does SIPDE help make you an expert rider?
2. Where do most multi-vehicle collisions occur?
3. What is a head check?
4. What can you do to reduce reaction time in hazardous situations?
5. How do you know if you are overriding your headlight?

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Unit 6 | CORNERING WITH CONFIDENCE

When asked to describe a perfect motorcycle road, most riders describe one with lots of curves. Unfortunately, the enjoyment of cornering snares many riders. Every year countless riders suffer self-inflicted injury from failure to negotiate curves—single vehicle crashes in which the rider is clearly at fault. In typical scenarios, riders either run off the road while cornering or drift into the opposing lane and collide head-on with approaching vehicles. Neither scenario is appealing and both are completely avoidable.

SKILLFUL CORNERING

The basic turning procedure—SPAT—applies to all curves. The key to this process is slowing before the turn. Enter the turn at a speed that permits safe cornering and allows constant throttle application through the curve. Complete all braking and downshifting before the turn. Begin your throttle roll-on as early as possible. This stabilizes the suspension, maximizes traction and makes the turn more confidence-inspiring.

SPAT

- **S** Speed
- **P** Position
- **A** Aim
- **T** Turn

Many crashes involve riders who enter turns too fast and are unable to complete the curve. This error applies to riders of all ages and riding styles. While excessive speed is usually listed on the crash report, the real cause of these crashes is failure to look far enough through the turn.

Essentially, these riders override their sight distance and roll on the throttle before they know where the road leads or what hazards it may contain. Another major factor in riders running wide in turns is the failure to effectively countersteer (push forward on the handgrip). An effective strategy is Speed, Position, Aim, Turn

SPEED

The first decision to make when approaching a curve is how fast you should be going. Scan ahead to gather as much information about a curve before you get there. Evaluate the tightness of the turn, slope of the road, surface conditions and whether or not you can see all the way through to the exit of the curve. Also consider if the hill is uphill or downhill and adjust speed accordingly. As you approach, apply both brakes to slow (and downshift, if appropriate) to an entry speed that allows you to smoothly apply the throttle throughout the turn. If you cannot determine the tightness of the turn, or see the exit before you enter, reduce your entry speed more and be prepared for the turn to tighten. Traffic may also affect your decision.

POSITION

After you have chosen your entry speed you should select a lane position prior to reaching the turn. The ideal lane position is to the outside of the curve. The lane position may be modified by your position in traffic, any surface hazards, or visibility. If you are unable to safely select an outside lane position, then your entry speed needs to be slower. Then, determine the body position needed. If it's a sharp turn or a fast turn move your body's centerline to the inside of the bike's centerline. If it's a standard turn a neutral body position will be appropriate. For slow, tight turns an outside body position is best.

AIM

Identify the point at which the curve begins in the road and then turn your head and target your path of travel. Point your face towards the "end" of the curve. Looking through the turn provides information such as how sharp the turn is, where the exit is, the slope (if any) and any surface hazards. This is all important information for safe turning. Your mind will calculate the required lean angle, speed and lane position, but ONLY if you feed it all the critical data first. Turn your head to face your target! Once you're in the turn use your peripheral vision to identify hazards, and continue pointing your face towards the exit throughout the curve.

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Skillful Cornering

TURN

After you have made all the decisions and made a plan for this curve, the last decision to make is how to make the bike turn. For slow, tight turns, point the front tire in the direction you would like to go. For road speed turns you will push forward on the grip in the direction you want to go. This will prompt the bike to lean and then roll through the curve. To make the turns, use a smooth, firm push on the handlebars while keeping your arms relaxed. If you find yourself making several turning adjustments that's a clue that you are not properly looking through the turn.

SPEED

After you have completed SPAT it immediately begins again. Begin rolling on the throttle smoothly and precisely before you lean into the curve, or just after you enter it. A steady throttle application maintained throughout the curve will help your turns be smooth and comfortable, and keep your motorcycle's suspension stabilized. It is not necessary to accelerate through your turns—a steady throttle is OK.

As you then go throughout the turn you will continuously check your speed, make adjustments as necessary. Then check your position, and ensure you are in the lane position you planned. Check your aim to be sure your face is still pointed towards the exit. Turn as necessary to ensure the bike is following your plan through the curve. If somehow there are hazards that appear in the curve that were not identified before the curve, continue to use the SPAT decision making process to manage the newly identified hazards.

WHAT'S YOUR LINE?

Smooth and skillful cornering requires selecting the best line or path through corners. The best line often does not match the curve of the road. A good line allows you to:

- Maximize visibility by positioning yourself in clear view of traffic ahead and behind.
- Maximize your line-of-sight by positioning toward the outside of the curve where you can see the farthest.
- Select a safe path to avoid approaching traffic and roadway debris.
- Minimize traction required and maximize cornering clearance.
- Do all of the above safely and skillfully, while remaining in your lane at all times.

CORNERING LINES—THE BASICS

For most turns, an outside-inside-outside line is recommended. This increases your line-of-sight and creates a turn that is less sharp, thereby limiting cornering forces and preserving your ground clearance. Here's how to do that:

- Outside—Enter the turn with your motorcycle in the "outside" portion of your lane (if it's a right-hand turn, you'll be in the left part of the lane; if it's a left-hand turn, you'll be in the right part of the lane). Stay in this lane position until the turn starts.
- Inside—As you lean into the turn, move from the outside part of your lane toward the inside part of the lane (toward the centerline in a left-hand turn; toward the fog line in a right-hand turn). Push more on the handgrip to increase your lean and move toward the inside.

Note: You want to maintain a space cushion and escape route, so don't ride ON the centerline or fog line—leave yourself some space. Remember that you will be leaning, so if your tires are ON the centerline, your head and body are hanging into the lane of oncoming traffic! Avoid this situation by moving toward the inside, but leave yourself some space between your tires and the centerline.

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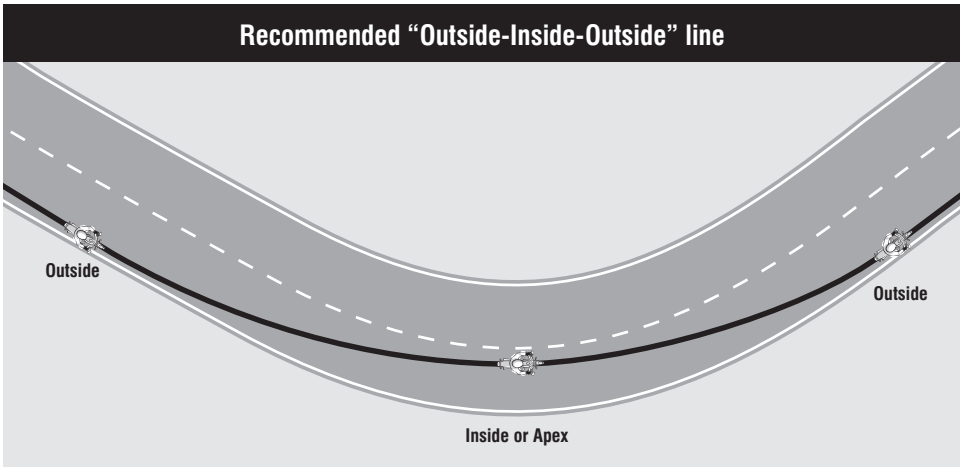


STRATEGY:

Use an Outside–Inside–Outside line

- Outside—After reaching the apex of your turn (the point at which you are the closest to the inside), allow the motorcycle to move back toward the outside portion of the lane. Press less on the handgrip to decrease your lean and move back toward the outside. This completes the outside-inside-outside path of travel.

CORNERING LINES—BEYOND THE BASICS

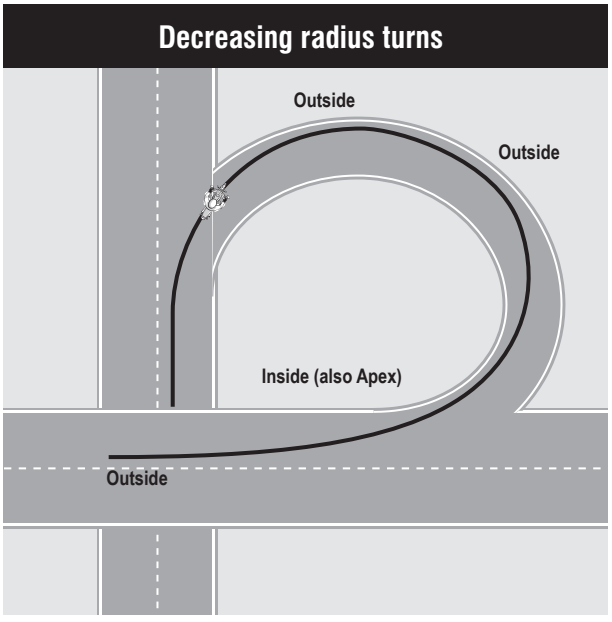
Once you've gotten some experience with outside-inside-outside and are comfortable adjusting your line in curves, you can start to go "beyond the basics." The following cornering tactics will not be done in class, but make a note to read up on them later. There is additional information about them in Appendix A (Cornering with Confidence— Expanded Content).

DECREASING RADIUS CURVES

For turns that get tighter or when you can't see through to the exit, maintain a modest entry speed and stay in the outside part of your lane until you can see all the way through the turn to the exit. Once you can see the exit and know exactly how tight the turn is, you can move toward the inside. This is known as a late apex line.

STRATEGY:

Use an outside line and hold your speed until the exit is visible..



LINKED CURVES

For curves that flow from one right into another, use the late apex line as described above. Strive to make the exit line of the first curve match the entry line for the next curve. This technique helps you minimize mid-turn corrections in speed or path.

STRATEGY:

Use a late apex to set up for the next turn

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POTENTIAL PROBLEMS—FEAR

Crash data indicates that running off the road in a corner is the most common scenario for fatal motorcycle crashes in California. This Handbook has already covered the importance of head turns and looking all the way to the exit, but there is another factor at work here—FEAR. When things start to go wrong in a corner, human nature is to experience fear. When riders lack the knowledge and skills for cornering and how to increase lean when needed, fear can take hold. Most riders have experienced some level of fear in a corner at one time or another. This fear can show up in your arms, your body and your brain.

FEAR IN CORNERS—ARMS

Proper riding posture includes arms relaxed and elbows bent. Pressing forward on the handgrip is what causes the motorcycle to lean and stay in the turn. Fear can lead to tension in the arms and shoulders causing the arms to lock straight and even press on both handgrips at the same time. When the arms lock straight, the shoulders often pull back. All of this has the effect of not effectively pressing on the handgrip. As a result, the motorcycle leans less and is likely to run wide in the corner or off the road.

STRATEGY:

Keep your arms and shoulders relaxed and your elbows bent. Practice pressing and leaning to increase your comfort level in corners.

FEAR IN CORNERS—BODY

Human nature is to move away from perceived danger—sometimes it's an automatic response. When leaned over in a corner, that perceived danger is often the ground. In a turn, moving away from the danger is leaning the body up. As a result of this improper body position, the motorcycle leans less and is likely to run wide in the corner or off the road.

STRATEGY:

Practice pressing and leaning to increase your comfort level in corners. Keep your motorcycle and your body well within your lane when cornering (seeing yourself close to oncoming traffic can trigger a fear response)

FEAR IN CORNERS—BRAIN

Have you ever heard someone say "I was so scared I couldn't think!" There is some truth there. Fear can induce panic, and when the body experiences panic, it goes into "fight or flight" mode. When this happens, the part of the brain that does the thinking and planning doesn't work as well. As a result, riders might react inappropriately (such as grabbing the brakes or leaning out of the turn) or not at all (doing nothing and running off the road).

STRATEGY:

Keep your mind thinking about what you CAN do to keep the motorcycle in the turn and on the road—you know what to do, so focus on doing it. Keep pressing on the handgrip and keep your head turned and your eyes looking where you want to go. Thinking "I'm going to crash!" or looking at the curb or a tree can lead you toward trouble.

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STRATEGIES FOR HANDLING OTHER POTENTIAL PROBLEMS

SIPDE is critical for safe cornering. Aggressive scanning—looking as far as possible through the curve—helps you assess how tight the curve is and at what speed it can be ridden safely. Here are some other suggestions:

- Limit your speed in turns. If you cannot see the exit, slow more before the turn.
- Ride within your personal ability and the limits of your motorcycle. Don't attempt to keep up with other, more experienced (or more foolish) riders.
- Discipline yourself to look as far through the turn as possible. Ride at a speed that gives you sight distance to stop or swerve.
- Always leave yourself an out if something unexpected obstructs your path, like gravel spills or debris.
- Listen to your body. If your heart is racing because you are scaring yourself, slow down!
- Don't stare at the roadside or at approaching vehicles. Remember, you go where you look! Turn your head to face through the turn.
- Avoid excessive lean angles. All motorcycles have ground clearance and traction limits. Dragging parts of your motorcycle can reduce traction and cause a crash.
- Anticipate surface hazards—reduce your speed and lean angle on slippery, loose surfaces.
- Avoid lane positions close to oncoming traffic and be aware of your lean angle. Don't corner with the motorcycle in your lane and your head in the opposing lane. Keep your entire body and motorcycle in your lane.

Smart Rider Commitment #6:

_____ (initial) "I acknowledge that motorcyclists running wide in turns is the most common fatal crash situation. I accept this fact and commit to practicing the SPEED, POSITION, AIM, TURN process for cornering, and in particular AIMING through the turn and PUSHING forward on the handgrip to cause the bike to lean/turn."

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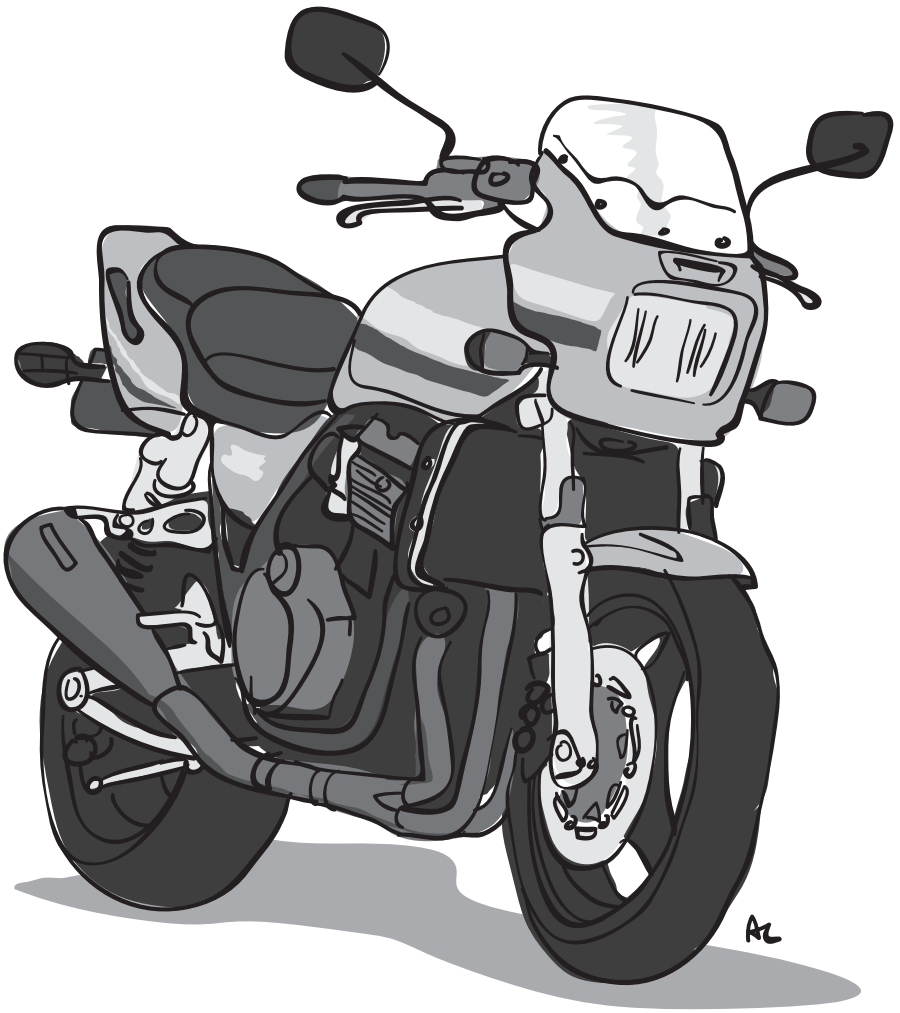
Review Questions

1. What are the leading causes of single-vehicle crashes?
2. At what point should you turn toward the apex?
3. How do you link turns smoothly?
4. When should you turn your head for cornering?



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Unit 7 | MAXIMUM BRAKING AND SWERVING

Stopping a motorcycle quickly and safely is a skill that takes time to develop and continual practice to keep sharp. Failure to apply the brakes properly is a leading cause of motorcycle crashes.

Research shows that riders typically under-brake at the front and over-brake at the rear, or panic at the controls, crashing to the pavement before ever reaching the hazard. This errant maneuver is commonly known as "laying the bike down." This is not a braking or obstacle avoidance maneuver—it's a crash. Once the motorcycle is down, all control is lost and the rider is just another flying object. Braking and control are available only when the motorcycle is on its wheels, not when it's on its side or tumbling.

LINKED BRAKING AND ABS

Modern motorcycles are equipped with excellent braking systems and can stop very quickly with a skilled rider at the controls. Some bikes are equipped with "linked or integrated brakes", which means the brakes are linked together in some way. For example, when you apply the rear brake, the system automatically applies some amount of the front brake. There are a variety of types, so find out what is on your motorcycle and how it works.

Many bikes are also now equipped with an anti-lock brake system (ABS), which prevents wheel lock-up in a maximum straight-line stop. Some models provide a combination of linked braking and ABS. Check your owner's manual or talk to your dealer for information about your motorcycle's braking system.

MAXIMUM STRAIGHT-LINE STOPS

Maximum straight-line braking is accomplished by fully applying front and rear brakes without locking either wheel. To do this:

- Squeeze the front brake smoothly, firmly and with increasing pressure. Do not grab the brake lever or use abrupt pressure.
- As the motorcycle's weight transfers forward, more traction becomes available at the front wheel, so the front brake can be applied harder after braking begins.
- Keep your knees against the tank and your eyes up, looking well ahead. This helps you stop the motorcycle in a straight line.
- Apply light-to-lighter pressure to the rear brake pedal to prevent a rear wheel skid. As weight transfers forward less traction is available at the rear. Use less rear brake pressure.

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Maximum Straight-Line Stops

ANTI-LOCK BRAKE SYSTEM (ABS)

The benefit of ABS cannot be overstated. This technology helps prevent wheel lock-up in straight-line stops. To use it, you still want to use the same proper technique. The advantage is that the ABS let's you get to and cross over the line of too much braking without a crash. This means that you can coach yourself to max braking by just getting to the point where the ABS activates or clicks once. Remember that ABS is only designed to apply full braking force in a straight line. It may not be effective when the motorcycle is leaning.

HANDLING SKIDS

The best way to handle a skid is to avoid causing one in the first place. But because everyone makes mistakes, here's how to correct the problem:

FRONT-WHEEL SKIDS

Under braking force, a motorcycle's weight transfers forward. More weight forward equals more traction available for Under braking force, a motorcycle's weight transfers forward. More weight forward equals more traction available for braking. However, too much braking force applied too quickly (before this weight transfer occurs) can result in front-wheel lock-up. This is known as "grabbing" the front brake. Front-wheel skids result in immediate loss of steering control. Failure to fully release the brake lever immediately or attempting to steer while the tire is skidding can result in a crash. Loss of control can occur from applying the front brake too much or too fast.

If the front wheel locks, release the front brake immediately and completely. Reapply the brake smoothly and properly. Note: ABS is designed to prevent front wheel skids.

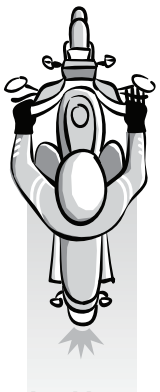
REAR-WHEEL SKIDS

Too often when riders are faced with an emergency situation, they over-brake and lock the rear wheel. A skidding rear tire is a dangerous condition that can result in a violent crash and serious injury or death.

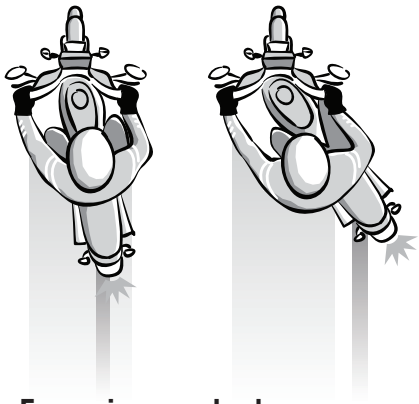
A rear-wheel lock-up is caused by too much rear brake pressure. As soon as the rear wheel locks, your ability to change direction is lost. To regain that control, the brake must be released. However, if the rear wheel has fishtailed out of alignment with the front, there is a risk of a high-side crash. This occurs when the wheels are out of alignment and a locked rear wheel is released. The motorcycle can violently and abruptly snap upright and tumble, throwing the rider into the air ahead of the motorcycle's path. Even slight misalignment can result in a high-side crash. The farther out of alignment the rear wheel becomes, the greater the risk of a high-side.

If the rear wheel locks, slowly and gently release the rear brake. This will allow the rear tire to gradually slide back in line. Note: ABS is designed to prevent rear wheel skids.

Practice quick stops often and don't lock either brake. Keep your skills sharp for the unexpected.



Proper braking means neither wheel is locked and the motorcycle is in alignment



Excessive rear brake pressure locks the rear wheel. Motorcycle is out of alignment and out of control.

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Unit 7 | MAXIMUM BRAKING AND SWERVING

STOPPING QUICKLY IN CURVES

Traction is the friction between the tires and the road surface. Like money, traction is a limited resource and you always need some in reserve. During straight-line braking, most of your motorcycle's traction is available for braking. In corners, some of the available traction holds the bike in the turn and is not available for braking. The greater the lean, the more traction is used for cornering. When stopping quickly in a turn, remember that the amount of traction available for braking is limited by the traction that is being used to grip the corner. Use the following techniques to stop quickly and safely in a corner:

STRAIGHTEN THEN BRAKE

- Straighten the motorcycle first by pressing the "outside" handgrip.
- Once the motorcycle is upright, apply maximum straight-line braking force.
- Square the handlebars before coming to a stop. This centers the steering and helps you achieve a balanced stop. Leaning motorcycles become very heavy at stops. Square the bars!

  Note: Circumstances may not permit you to straighten first and then brake. Using this method in right-hand turns with oncoming traffic or left-hand turns on roads with minimal or obstructed run-out (such as a guardrail or drop-off shoulder) could be dangerous. In these situations, the braking-in-a-lean technique is more appropriate.

BRAKING IN A LEAN

- If road or traffic conditions do not allow you to straighten your path of travel, use your brakes smoothly and gradually.
- As you straighten the motorcycle, more traction is available for braking. This is a delicate balance—the more upright the bike is, the more braking force is available. Gradually square the handle-bars and increase brake pressure until the motorcycle stops. This method may require more stopping distance but allows you to remain in your lane.
- Keep your eyes on your intended path, not on the obstacle.

SWERVING

Skilled motorcyclists can swerve away from danger in less space than it takes to stop. It is critical to develop good swerving skills and practice these skills to keep them sharp.

Always separate braking and swerving.

A swerve is two consecutive countersteers—one forward push on the grip to avoid the obstacle, held long enough to clear the obstacle, followed by a forward push on the opposite grip to regain a straight path after the obstacle is cleared. Smooth, firm and constant pressure is required to make the motorcycle lean quickly and precisely. Here's how a swerve is accomplished:

1. Look to your escape path and push forward firmly on the handgrip to initiate the swerve. Remember: push right, go right; push left, go left.
2. Hold the push until the motorcycle has cleared the hazard.
3. Push firmly on the opposite grip to straighten the motorcycle.

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4. Keep your body upright and allow the motorcycle to move independently. The motorcycle will react more quickly that way.
5. Keep your eyes on your escape path (not the obstacle!) and your knees against the tank.

Caution: Swerving consumes a lot of traction, leaving little in reserve for braking. Therefore, never attempt to brake during a swerve. Even slight braking force can induce an immediate and forceful crash. Hold a steady throttle while swerving. If braking is required, brake before or after swerving, never during!

Practice swerving often where it is safe to do so. Hone this skill until you make the correct moves automatically—every time.

Smart Rider Commitment #7:

_____ (initial) "I acknowledge that braking errors are very common in crash situations. I accept this fact and commit to regularly practicing quick stops, with an emphasis on smooth increasing pressure on the front brake and a light to lighter application of the rear brake."

REVIEW QUESTIONS

1. How is the front brake applied to stop quickly in a straight line?
2. How is the rear brake applied to stop quickly in a straight line?
3. What is the quickest way to stop in a curve?
4. When braking in a lean, what is important to remember?
5. What is countersteering?
6. What should you always avoid while swerving?

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Will Rogers once said:
"Good judgment comes from bad experience, and a lot of that comes from bad judgment."

This section examines the special situations that motorcyclists face and provides knowledge by which to make good judgments.

OBSTACLE SURMOUNTING

A good SIPDE process will do more to avoid obstacles than anything else. However, there are those occasions when obstacles such as potholes, speed bumps or highway debris cannot be avoided and must be surmounted. By following the steps below you can safely surmount many obstacles.

1. Consider whether it's possible to surmount the object, and forecast your path of travel. Will crossing or avoiding the obstacle place you in greater danger?
2. Approach the object as close to a 90-degree angle as possible.
3. Slow down as you approach, and rise off the seat, keeping your knees bent inward against the fuel tank.
4. Grip the handlebars firmly and look ahead.
5. Just prior to contact, slightly roll on the throttle. This extends the front suspension and shifts your weight back.
6. After contact, immediately roll off the throttle. This prevents the rear tire from spinning on the obstacle.
7. Remain standing throughout the maneuver.

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ROADWAY CONDITIONS

Changes in roadway conditions are part of the challenge of motorcycling. You have to be ready for anything. Use SIPDE to identify roadway problems early, giving you time to plan for success. Be especially vigilant for changes in color and texture—your clues that traction may change.

RAIN-SOAKED SURFACES

If conditions are unsafe, find a safe place to stop away from the roadway. Roadways are most slippery at the beginning of a rainstorm, especially in the center of the lane where oily residues tend to build up most. If the rain is just beginning, consider waiting a while before starting your ride.

Oil, dirt and other debris accumulate in and upon the road surface. Rain mixes with that composition and creates a slippery film, but with time this film washes away and traction improves. Avoid riding during the first part of a rainstorm when conditions are the most slippery. When riding in the rain or on wet surfaces, you'll need more distance to properly stop the motorcycle without losing traction. To accomplish this, slow down and be sure to make your space cushion larger by allowing more space between you and other vehicles both in front of and behind you. Here are some other tips for riding on rain-soaked surfaces:

Shiny surfaces can be slick. Some examples are:

- *Metal covers and plates*
- *Painted or plastic roadway markings*
- *Bridge gratings*
- *Railroad tracks and rubberized crossings*
- *Wet leaves*

1. Ride in the tracks of other vehicles, if conditions permit, to help avoid hydroplaning.
2. Reduce speed and lean angle in corners and on especially slippery surfaces. Conserve your traction.
3. Increase your following distance.
4. Avoid pooled water and highway ruts caused by excessive pavement wear. Motorcycles can lose traction due to hydroplaning (water build-up under the tread). Ride where traction is best.
5. Avoid riding during an electrical storm. Why take the chance?
6. Watch for shiny surfaces. They can be very slick. Examples are:
   - Metal covers and plates
   - Painted or plastic roadway markings
   - Bridge gratings
   - Railroad tracks and rubberized crossings
   - Wet leaves

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RAIN GROOVES

Rain grooves are cut into the pavement parallel to the path of travel. They channel water away from the surface but do not affect traction. However, rain grooves can cause the motorcycle to wiggle. Do not fight the wiggle; instead, keep a firm but relaxed grip on the handgrips. Maintain a steady speed and keep your eyes up.

BRIDGE GRATINGS

Bridge gratings are slippery steel grid surfaces that cause the motorcycle to weave or wander. This situation is not a hazard when handled properly. Slow down before reaching the grating, then maintain a steady speed. Keep your eyes up, looking where you want to go. Again, keep a firm but relaxed grip on the handgrips and avoid abrupt maneuvers. Ride evenly and smoothly.

LOOSE SURFACES AND DEBRIS

Paved surfaces may be littered with sand, gravel, cinders, rocks and leaves, as well as fuel, oil and coolant. Watch for telltale changes in road surface color or texture. Traction is compromised in these situations, so avoid abrupt acceleration or braking, and minimize lean. Ride straight across, keeping a steady throttle.

GRAVEL ROADS

Gravel roads decrease traction. Ride where the traction is best, usually in the ruts created by other vehicles. Don't change your direction or speed abruptly, and limit your lean angle. Keep your eyes up, looking where you want to go. Roads that have been "chip sealed" often have loose gravel and can be much like a gravel road.

CRACK SEALANT

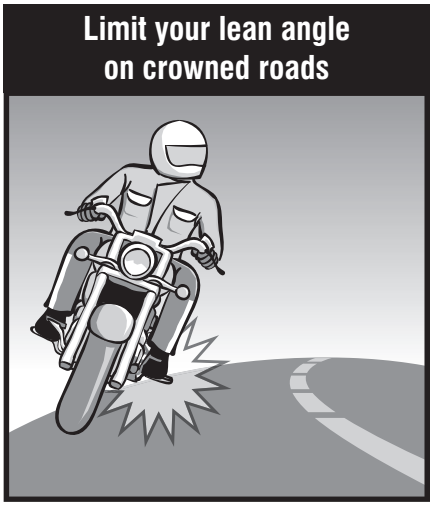
Cracks in highway road surfaces are usually sealed with a black, tar-like substance. In warm weather, this material becomes gummy and slick, causing motorcycles to slip and wiggle when leaning. Recognize this change in pavement color and avoid it if possible. If you can't avoid, reduce speed and minimize lean.

STEEL PLATES

Steel plates are often used to cover excavations. These plates are very slippery, especially when wet. Ride straight across them, avoiding abrupt maneuvers and lean angle.

CROWNED ROADS

Road surfaces are often crowned to improve water run-off. Use SIPDE for early warning that cornering clearance is reduced. Limit your lean angle when turning left.



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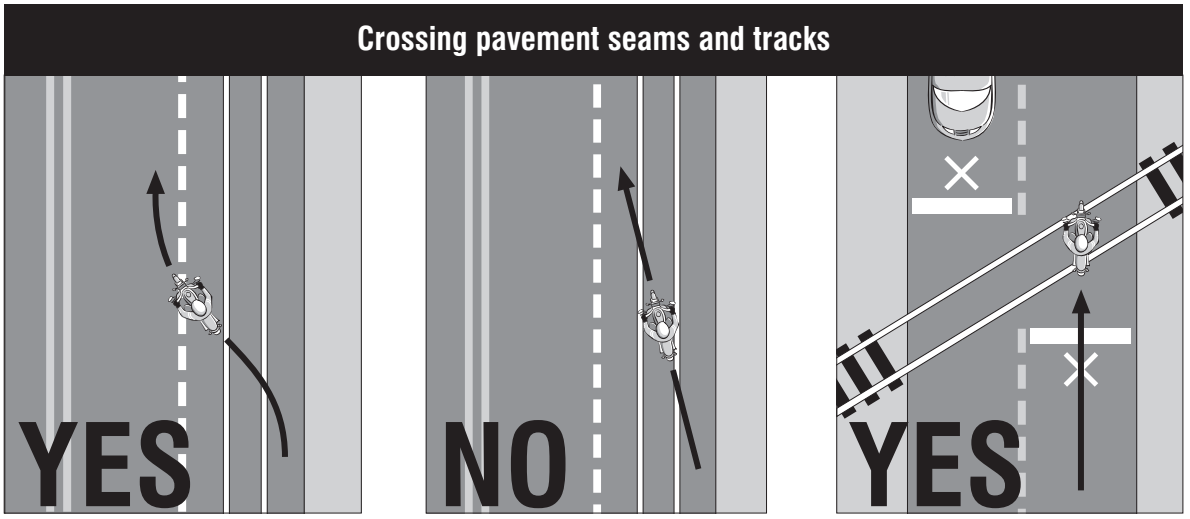
RAILROAD AND TROLLEY TRACKS, PAVEMENT SEAMS, CATTLE GUARDS

Railroad tracks usually pose no problem if you ride straight across them. If the tracks cross your path at a diagonal, try to approach them at a 45-degree angle, but be careful to stay in your lane. To cross trolley tracks, pavement seams and cattle guards that run parallel to your path of travel, swing away from the tracks or seams to square your approach to at least 45 degrees. Do not cross at a shallow angle. Otherwise the tracks or seams can catch your front tire and cause a crash.



POTHOLES, BUMPS AND CRACKS

Treat potholes, bumps and cracks as you would any other obstacle. If you can't go around them, cross at a 90-degree angle, maintain a steady speed and rise off the seat as you cross.

EXTREMELY SLIPPERY SURFACES

Ice, snow, mud and moss can make road surfaces extremely slippery. Even road markings can be slippery. Be alert to the possibility of these hazards, such as the onset of bad weather at higher elevations, areas prone to mudslides, and damp, shady patches of road that can have black ice, moss or algae.

The SIPDE process will keep you from being surprised by such hazards. If you must ride through them, use the throttle smoothly and carefully. Squeeze the clutch to eliminate the possibility of engine braking. Make no sudden or abrupt moves. Ride straight up and in the tracks of other vehicles. Be especially careful around other vehicles. The roads are slick for them, too. Remember, the key to handling poor traction situations is smooth control inputs.

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SPECIAL SITUATIONS

ANIMALS

Animals on and alongside the roadway can pose a serious hazard to motorcyclists. How you deal with them depends on road conditions and the animal's size.

SMALL ANIMALS

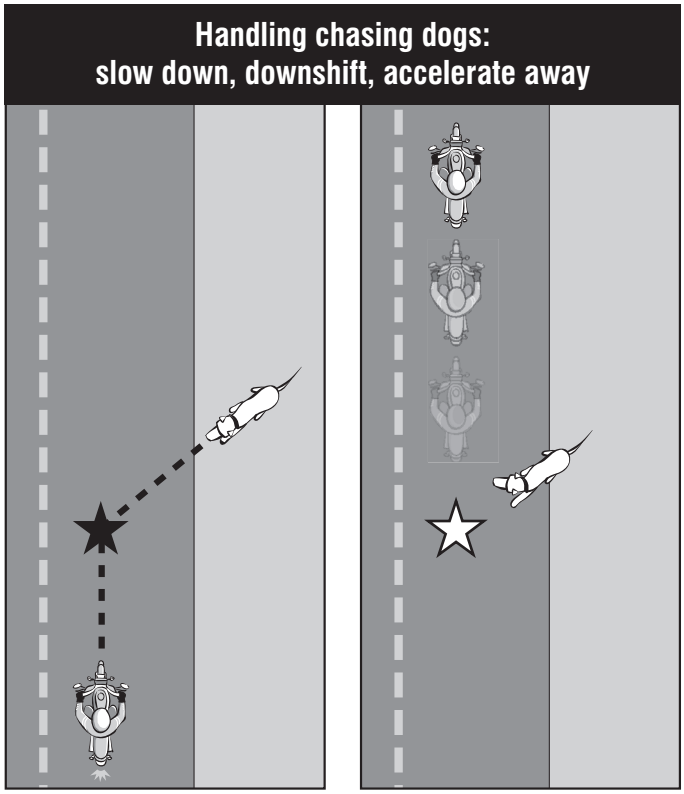
Animals like squirrels and rabbits may dart into your path. Don't increase your risk by attempting to avoid a collision. If it's unsafe for you to swerve or brake, prepare to surmount the obstacle.

ANIMALS THAT CHASE

Some dogs chase vehicles, and motorcycles are no exception. Dogs use SIPDE to pick a point of interception. Defeat that strategy by slowing, downshifting and then accelerating out of the dog's reach. Don't kick at the dog. Keep your eyes up.

ANIMALS THAT ROAM

Larger animals like deer and elk create a real hazard. They are unpredictable and hitting one is like colliding with a truck. Use SIPDE aggressively in areas where deer or elk may be present. Remember, these are herd animals. If you see one, expect more. If you come upon one of these animals, slow down as much as you can. The safest passing speed is walking speed. Expect such animals to dart into your path. Be prepared!



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Wind

An unexpected blast of wind can push a motorcycle right off the road. It's important to understand where gusts can occur and be prepared to counteract the wind with proper riding technique.

Trucks, motor homes and other large vehicles push a lot of air ahead and to the sides. Avoid the wind blast of these vehicles by moving away from them as they approach. When passing a large vehicle, stay far from its side to avoid the draft effect that may pull you toward it.

While riding, you might encounter steady winds or strong and irregular gusts. The strategy is the same: Lean into the wind by applying forward pressure on the handgrip. The stronger the side wind, the more forward pressure must be applied. Use SIPDE to identify places where the wind may be blocked, such as road cuts and freeway underpasses. As the wind is blocked, you'll need to lighten the pressure on the handgrip. Also use SIPDE to identify bridges and overpasses where you'll be exposed to the full force of the wind—in other words, be prepared. Adjust your lane position to allow for space to move side-to-side within your lane to compensate for wind gusts.

For strong and irregular blasts, be ready! Maximize the space cushion around you. Be prepared to take immediate action to counter the blast. If the wind becomes too erratic and dangerous, find a safe place to park until conditions improve.

PARKING

PARALLEL PARKING SPACES

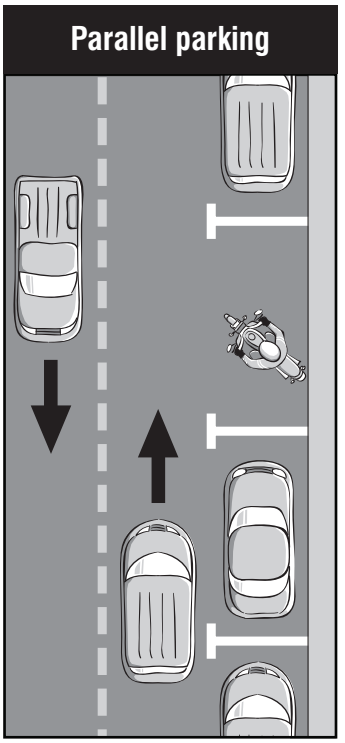
Back into the space at an adequate angle to keep the motorcycle out of the traffic flow. Place the rear tire against the curb. Ensure this maneuver is legal where you park.

PULL-IN SPACES

The space is yours. Center your motorcycle in the space to discourage space sharing.

SECURITY

Secure the motorcycle with the handlebars turned toward the sidestand. For greater stability and security, lock the forks. Leave the motorcycle in first gear to prevent rolling. Caution: When asphalt is hot, a motorcycle sidestand can sink into it. To prevent sinking, place a rigid object like a flattened soda can under the sidestand.



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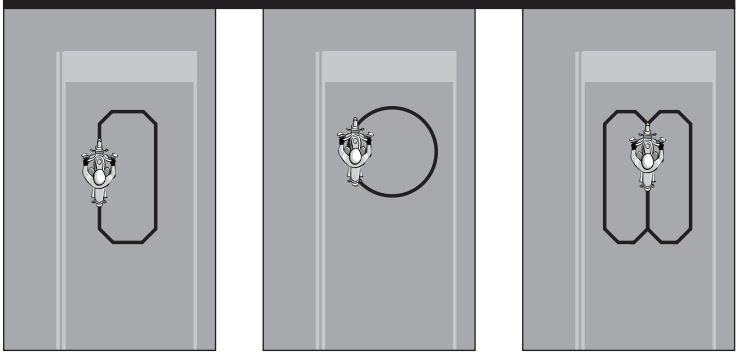
TRAFFIC-ACTUATED SIGNAL LIGHTS

Most traffic-actuated signals are triggered by vehicle magnetic mass, and because motorcycles don't have as much mass compared to cars, these sensors don't always detect them. Position your motorcycle directly over a sensor strip. Many traffic signals have yellow squares on the pavement to help you know where the sensors are located. If that doesn't work, contact the agency responsible for the intersection. Explain the situation and ask for the sensor to be adjusted.

Different types of magnetic pad signal sensors and proper location for best results



Review Questions

1. Where should you look when crossing obstacles?
2. What approach angle is recommended when crossing obstacles?
3. What indicates a potential change in roadway traction?
4. How should you ride across low-traction surfaces?
5. What should you do if you come upon deer alongside the roadway?
6. What should you do if you suspect your sidestand will sink into the parking surface?

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Unit 9 | IMPAIRMENTS TO SAFETY

Responsible riders are alert, aware, skilled and savvy because they know that motorcycling requires keen attention and constant readiness. Any physical or mental condition that reduces your attentiveness, fogs your judgment or interferes with your riding abilities constitutes a safety impairment. For a motorcyclist, riding when physically and/or mentally impaired, for any reason, is courting disaster.

While most riders understand that alcohol and drug use is hazardous, it's important to recognize that fatigue, hunger, exposure to the elements and everyday worries can also crowd your thinking and distract your attention from the ride.

Evaluating your personal state of readiness is the first step in reducing the risk of riding.

ALCOHOL AND MOTORCYCLING—A LETHAL MIX

Alcohol is a leading cause of death among motorcyclists. Currently in California 29% of the riders killed in motorcycle crashes have had alcohol involvement. Many of these riders' blood alcohol concentration (BAC) levels are below legal limits, but obviously their judgment and abilities were impaired. Impairment begins with the first drink. The question is, how much impairment are you willing to accept?

STRATEGY:

Recognize when you are impaired. How much impairment are you willing to accept?

EFFECTS OF ALCOHOL

Alcohol is a depressant—it slows your bodily functions. Because it is absorbed into the bloodstream quickly, effects begin to appear almost immediately in the form of errors in judgment, impaired vision, slowed reactions and reduced coordination.

The alcoholic contents of a can of beer, a glass of wine and a shot of whiskey are about the same.

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MEASURES OF IMPAIRMENT

Because it is illegal to operate any vehicle while under the influence of drugs or alcohol, the consequences of doing so can lead to serious fines, loss of your license and even jail time. If you're not familiar with the laws, penalties and fines associated with driving while intoxicated, take some time to familiarize yourself with them. Most city, county and state laws can be viewed online. Also take a moment to make yourself familiar with the law of "implied consent," which can provide for mandatory suspension of a driver's license should you refuse to take a sobriety test.

If you are intoxicated, no vehicle is safer to drive than any other. In addition to the risk of causing injury (or death) to yourself or others, consider the probable economic impact to you, your motorcycle and others around you if you attempt to operate your motorcycle (or any other vehicle) while under the influence of drugs or alcohol.

Here are a few indicators of alcohol impairment that law enforcement officers look for during standardized field sobriety tests:

Impaired Judgment

Impaired judgment is evidenced by a willingness to take risks. Impaired riders typically fail to recognize this behavior. They may think they ride better after a few drinks.

Divided Attention

Field sobriety tests measure a rider's ability to attend to several mental and physical tasks at the same time. The ability to divide attention is impaired in riders under the influence of alcohol and/or other drugs. As a result, they tend to focus on only a few aspects of riding and disregard others. For example, they may ignore a traffic signal and focus instead on speed control.

Impaired Vision

Nystagmus, or involuntary jerking of the small muscles of the eyes, is a readily noticeable sign of possible alcohol or drug impairment. The effect of nystagmus on a motorcyclist is critical, as these impaired muscles are the ones that control the rider's ability to focus and adjust to changing light conditions. Individuals experiencing nystagmus are unaware that their eyes are jerking and are unable to control it.

Blood Alcohol Concentration

Many factors must be considered when determining BAC, including physical size, gender, the amount of alcohol consumed and the number of hours spent drinking. In most states, a person with a BAC of .08% is considered legally intoxicated. Breath, blood and/or urine tests confirm BAC. Under California law you are considered to be driving under the influence if your BAC is .01% or more if you are under 21 years of age; .08% or more if you are 21 or older.

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Measures of Impairment

SIPDE UNDER SIEGE

NOTICE WHAT ALCOHOL AND/OR DRUG INFLUENCE DOES TO THE SIPDE PROCESS:

Scan Clear vision is impaired. Your ability to detect moving objects and to see clearly at night is impaired. Critical information may be missed. Your ability to divide attention between scanning and operating the motorcycle is affected.

Identify As impairment increases, more attention is diverted to operating the controls. Key visual clues are missed. Hazards aren't identified.

Predict Judgment and the ability to process information are impaired. Short-term memory is impaired.

Decide The ability to divide attention, analyze risk and make decisions is flawed.

Execute The ability to react properly and precisely is affected. Your reaction time, coordination and balance are compromised.

ADDING DRUGS MAKES IT WORSE

It's important to remember that many over-the-counter drugs like cough and allergy medicines can also impair your riding skills. They can be just as dangerous as alcohol and other drugs in reducing your ability to perceive and react to hazards. Even worse, combining alcohol with other drugs can often drastically increase the effect that they have on your mental and physical abilities.

Riding impaired has the effect of lowering a shade between your eyes and your brain. Critical information is missed, skills and judgment are dulled, but your confidence is high. Mixing other drugs, controlled substances or inhalants makes it worse—a deadly combination!

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THERE IS A CURE

Impairment begins with the first drink, so exercise good judgment before you drink. Learn from the mistakes of others and plan ahead:

STRATEGY:

Separate drinking and riding.

- Separate drinking and riding. If you intend to drink alcohol or even suspect that it will be served, don't ride. Make it your standard procedure to separate the use of drugs and alcohol from operating a motorcycle and stick with it every time you ride. If you're using drugs or alcohol, the only reasonable strategy is not to ride at all.
- Have an alternate plan for getting home in case you exceed your personal limits.
- Time is the major factor that will cleanse your system of drugs and alcohol. If you are impaired, do not ride your motorcycle again until you have allowed enough time for the drugs or alcohol to leave your system and you have regained your ability to ride safely. This may mean waiting overnight. Time will vary for the removal of other drugs from your system.

Smart Rider Commitment #8:

_____ (initial) "I acknowledge that many fatal motorcycle crashes involve riders who had been drinking. I accept this fact and commit to separate the use of alcohol (and other drugs) from riding a motorcycle. I commit to riding sober."

HELP YOUR FRIENDS

The last thing anyone wants is to see a friend crash. Intervene when you suspect one of your friends is too impaired to ride but has the intention of doing so anyway.

- Arrange a safe ride home.
- Secure the motorcycle. Riders are often unwilling to leave their motorcycle. Find a secure location for your friend's bike.
- Get others to help. The more support you have, the better your chances of success.
- Stop serving if you are the host.
- Use any excuse to keep your friend from getting on the motorcycle. Serve food or non-alcoholic drinks to pass the time. Let your friend sleep over at your place.
- If all else fails, hide the keys.

Do something! Just don't let your friend ride away!

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Help Your Friends

IMPAIRED RIDER IN YOUR GROUP

If another rider or passenger in your group appears impaired or intoxicated, it's important that you and others in your party intervene and convince them to refrain from riding for their own safety and the safety of the rest of the group. Riding with others who are impaired is risky business. Since the chances of a crash greatly increase when a rider is impaired, the risk to others around an impaired rider will greatly increase as well. Even for those who are not impaired, they may wind up as part of a serious—or even fatal—crash situation.

If others in your group are determined to ride impaired, it is in the best interest of your own safety not to ride with them. Group riding can be a lot of fun on a social level, but once drugs and alcohol enter the picture the fun is over if there's still riding to be done. You may find yourself in a situation where the best thing to do is leave the group and continue on alone. If that happens, you've made the best choice.

Smart Rider Commitment #9:

_____ (initial) "I acknowledge that an impaired rider in the group puts me at risk. I accept this fact and commit to avoiding riding with others who are impaired."

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OTHER IMPAIRMENTS

Alcohol and drugs are not the only things that impair your mental and physical abilities. There are numerous factors that can lead to fatigue and drowsiness or otherwise affect your ability to ride safely.

Weather is a common one. Wind, rain, cold, heat, dust storms and other weather conditions can all produce fatigue and cause a rider to become tired and lose focus. Long miles on the bike in a single day can cause fatigue and drowsiness as well.

Riding while tired or sleepy can also impair your ability to ride safely.

A hard day of work, or even a heavy meal, can affect your ability to stay focused. If you're feeling fatigued or drowsy, it's time to pull over and take a break until you regain your ability to ride safely. In cold, rainy or hot weather, it may be necessary to take breaks more often than usual to maintain your focus and manage your body's core temperature safely.

Fatigue/Drowsiness

Recognize your state of Rider Readiness. When you are tired, or if battling the elements has diminished your energy reserves and attention, take a break or stop for the day. Don't ride when your body and mind are so dulled that it is difficult to process information and respond to hazards.

Temperature Extremes

Exposure to prolonged and/or extreme heat or cold saps your energy and dulls your attention. Rain, gusting winds and other adverse conditions also increase stress and fatigue. Riding safely means enjoying the journey. Don't let pursuit of your destination prevent you from stopping whenever you need to rest and recover.

Overriding Your Abilities

Don't let ego and emotion impair your judgment and safety. The street is no place for competition, showing off or aggressive riding. If that type of riding interests you, head for the racetrack.

Aggression and Emotion

Having a bad day? If your emotions are highly charged in a negative way from a recent argument, it's not a good time to ride because your focus isn't where it needs to be to safely operate a vehicle. Wait until you've given yourself some time to calm down and regain your composure before you ride the bike again.

Overconfidence and "Underconfidence"

Having a great day? When you are feeling bold or overconfident, you may find yourself riding faster and more aggressively than you normally would. It may be time to re-adjust your speed so you can allow more time to react to the road ahead. Similarly, if you nervous, or feeling especially "un-confident," you may need to slow down to a speed that allows you to relax.

DISTURBING DISTRACTIONS

Riding a motorcycle requires your complete attention. Anger, stress, trouble and/or pain are just a few disturbing distractions. While you can't avoid these troubles in day-to-day activities, you must put them aside when you swing your leg over a motorcycle. Motorcycling is a wonderful antidote for the common day. Leave your troubles behind!

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Other Impairments

Communication Devices

The use of cell phones, intercoms, CB radios, GPS and other communications devices, group riding or even carrying a passenger while riding can lead to inattention and impair your ability to stay focused on the ride. Riders need to recognize that each of these factors can add to rider distraction, and make choices accordingly.

Ultimately, it's up to you, the rider, to make choices that will help you minimize factors that affect your performance and safety.

Aging and Health Problems

As people get older their reaction times get slower. It will take longer to identify when it's time to brake, avoid an obstacle or slow. Certain health problems such as arthritis, impaired vision and slower motor skills can also enter the picture as drivers age.

Temporary health problems can also affect rider performance. Approach riding the motorcycle only after you've evaluated your current state of readiness. You may need to ride slower to allow for more reaction time. A nagging injury, aches or pains can make your concentration suffer. If you're using intoxicating prescription drugs to treat your condition, refrain from riding all together.

Smart Rider Commitment #10:

_____ (initial) "I acknowledge that there are a wide variety of factors that can impair my ability to ride safely. I accept this fact and commit to minimizing factors that can negatively affect my riding ability and performance."

Review Questions

1. How do daily events affect Rider Readiness?
2. What are three examples of impairment?
3. What percentage of rider fatalities are alcohol related?
4. How does riding under the influence affect the SIPDE process?
5. What are some ways of intervening to prevent a friend from driving under the influence?

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Unit 10 | CARRYING PASSENGERS AND CARGO

CARRYING PASSENGERS

Adding passengers and cargo opens up a whole new dimension of your motorcycling experience, but remember that this will affect the motorcycle's handling. The bike will feel heavier at all speeds. Acceleration will be reduced and stopping distances will lengthen. Stability and cornering clearance may be affected in turns.

Here are some tips to make the trip safe and enjoyable when carrying passengers:

1. It's a good idea not to take passengers on your motorcycle until you have significant experience and are very comfortable managing the bike with just you. The added weight of a passenger will create an entirely new sense of balance that will have to be learned. And remember that the added weight of a passenger will require firmer braking than when riding alone.
2. Adjust the suspension and tire pressure according to the manufacturer's recommendations found in your owner's manual.
3. Never carry a passenger in front of you. This is dangerous and is illegal in many jurisdictions.
4. Your passenger must be able to reach the footrests and should be able to look over your shoulder.
5. Be sure your passenger is wearing proper protective gear and that shoe laces are tucked in.
6. Show your passenger how to mount so that he or she can avoid the hot exhaust pipes. Have the bike started and ready to go before the passenger mounts. Place both feet on the ground and grip the front brake. This stabilizes the motorcycle for the passenger to mount and dismount.

Smart Rider Commitment #11:

_____ (initial)"I acknowledge that when I carry a passenger, I am responsible for their safety and comfort. I accept this fact and commit to waiting to carry passengers until I have well-developed skills and significant experience as a solo rider."

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Passenger Rules for Safety and Security

CARRYING A PASSENGER

Brief your passenger before the first ride. Ask your passenger to follow these rules for safety and security:

- Notify the operator when you are ready to mount or dismount and wait for approval. This prevents surprise shifts of balance.
- Hold the operator's waist or hips. This braces the passenger for acceleration or braking. Keep both feet on the footrests at all times.
- Keep hands and feet away from moving and hot parts.
- Look over the rider's shoulder in the direction of the turn.
- Avoid sudden moves that might affect stability.
- If the rider rises off the seat, you should, too.
- Enjoy the ride!

CARRYING LOADS

When carrying cargo, consider the weight, location and security.

WEIGHT

Check your owner's manual for the maximum load limits for your motorcycle. Do not exceed the total weight limitation. Saddlebags, tank bags, tail bags and luggage racks have individual weight limitations, too. Check for those weight limits in the owner's manual, the accessory literature or inside the accessory itself and don't exceed those limits. Check your owner's manual for recommendations on adjusting the suspension and tire pressure to accommodate the added weight.

LOCATION

Balance is important in riding, and equally important in loading a motorcycle. Keep the load low and concentrate it toward the center of the motorcycle. If you are using saddlebags, keep the weight equally distributed side-to-side. Try to place heavier items ahead of the rear axle. Use the luggage rack, tail bag or trunk for lightweight baggage. Too much weight mounted high and behind the rear axle can drastically affect steering and stability. Never use the front forks, fenders or handlebars for carrying loads as it can obstruct steering and cause instability. Make sure that tank bags don't interfere with the movement of the handlebars or access to the controls.

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SECURITY

Make sure the load can't shift while you're riding. Purchase accessory racks and luggage that are designed for your motorcycle. When attaching loads, use motorcycle cargo nets or web straps with multiple mounting points. Make sure each strap is secured across the load. Take care that nothing blocks the lights or interferes with the steering or suspension or restricts your view in the mirrors. Tuck in all loose ends and anything that could get caught in the wheels. Keep cargo away from the mufflers. Check the load every time you stop to make sure it hasn't come loose or shifted.

DIFFERENCES IN HANDLING

Whether it's cargo or passengers (or both), adding additional weight to your motorcycle will change the way your motorcycle handles in several ways.

The first is balance. You will require additional stamina to balance your bike during the ride, most particularly during times of slowing down, stopping and getting back up to speed.

Because of the added weight, you'll need more distance to slow or stop the motorcycle. And this demands a larger space cushion behind and ahead of you for braking so you can safely slow or bring the motorcycle to a stop without losing traction.

Additional weight on the motorcycle will cause the steering to feel "heavier." This means it will require more force to make the bike go where you want it to go, particularly at slow speeds and when coming to a stop.

Adjusting your tire pressure and suspension for added weight will allow your bike to handle better on all types of surfaces. Your bike will grip corners better and handle bumps more smoothly. Check your owner's manual for more information on making these adjustments.

Review Questions

1. When should you consider carrying a passenger?
2. How should the passenger be dressed?
3. What instructions do you give to your passenger and when?
4. Where do you find the maximum load capacity for your motorcycle?
5. What should you adjust if you are carrying loads?
6. Where should you carry heavier items?

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Unit 11 | GROUP RIDING

Riding with friends is an enjoyable way to share the journey. If you choose to ride with others, do so in a way that is safe for everyone. Follow these simple rules:

WAIT TO RIDE WITH THE GROUP

New riders often feel it will be best if they begin by riding with a group. But in reality, it's best to start out taking solo rides or just riding with one other rider who is more experienced. Group riding requires additional skills and it takes more mental energy to keep track of your placement in the group, spacing and location of others around you. Wait until you've built up your skills and confidence to safely operate your bike on solo rides before building the additional skills you'll need to ride safely within a group.

KEEP THE GROUP SMALL

Limit your group to four to six riders. If you have more riders, split into smaller groups. Riders at the rear of large groups can get separated from the main group by traffic or lights and feel an urgency to catch up. Eliminate this potential by limiting your group size.

SIGNAL EARLY AND OFTEN

Communication and planning are important factors in keeping a group together.

There are more than a dozen hand signals you can use to communicate during a group ride. For the safety of everyone, the group should know and use these signals. Before starting out, the leader should show the group the signals they will use to communicate. The leader should scan ahead for changes and signal early so that everyone has advance warning. Everyone should follow suit by signaling to the following riders. Consider the safety of the entire group when making lane changes or passing.

PUT BEGINNERS UP FRONT

Put newer riders right behind the leader. If you put new riders in the rear, they may feel pressured to exceed their abilities and comfort level in an effort to keep up. Encourage everyone to ride within their limits.

KNOW THE ROUTE

Everyone should know the route. Make multiple maps or route sheets in case the group gets separated.

DON'T LOSE THE TAIL

Be responsible for the rider directly behind you. When making a turn, passing through a signal or changing lanes, check to make sure that riders following are still with you. If not, slow down and wait. Also, the rider ahead should notice that you are missing and wait. This strategy helps keep the group together.

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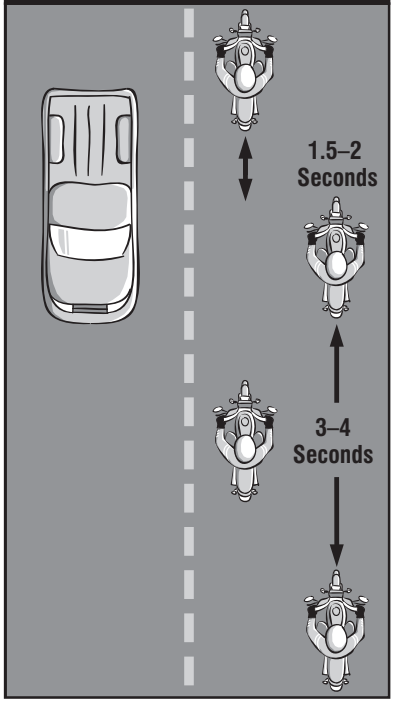
KEEP YOUR DISTANCE

When riding in a group, it's best to ride in a staggered formation with at least 1.5–2 seconds of space between each rider. The first rider should ride in the left portion of the lane, with the rider behind them riding in the right portion and so on. Large groups should break into smaller groups of no more than 4–6 riders with six to eight seconds between the smaller groups. This allows faster traffic to pass more safely.

Staggered formation and following distance



WHEN TO BREAK STAGGERED FORMATION

The lead rider should take responsibility for signaling changes in formation. Ride in single file and keep a safe 3–4 second following distance whenever you:

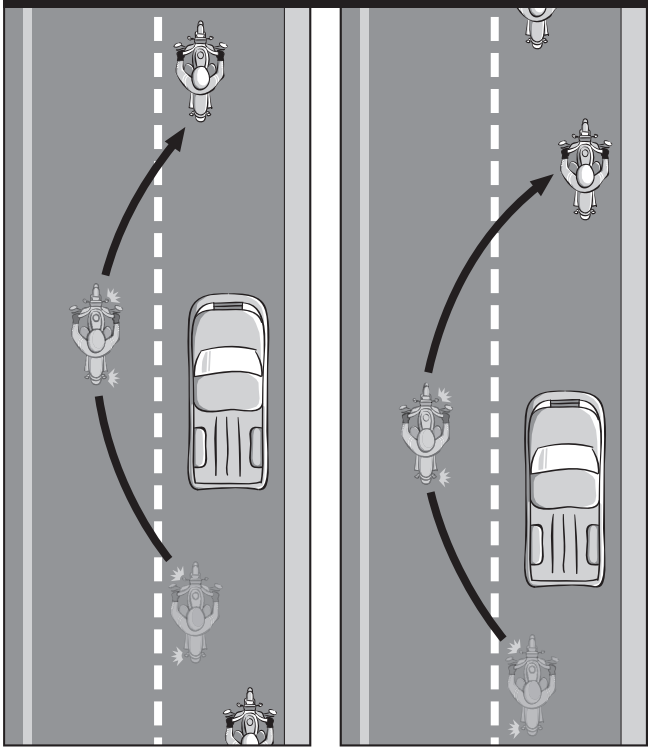
- Pass other vehicles
- Enter or exit a highway
- Approach a corner
- Encounter limited visibility

PASSING IN FORMATION

Riders in staggered formation should pass one at a time. Pass only when it is safe to do so.

- The lead passes when a safe opening exists. The lead pulls back into correct formation position to open up space for rider number two.
- The second rider moves from the right position to the left (lead) position and completes their pass, pulling into staggered formation behind the lead.
- The rest of the group follows this routine. Pass from the left position and return to the proper formation.
- The lead rider returns to cruising speed when the last rider has completed the pass.
- Always preserve a safe following distance. Never compromise safety by passing from a position that doesn't afford the best line-of-sight. Take your time.

Passing in formation



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Group Riding

Avoid riding side-by-side. Riding side-by-side leaves both riders with poor space cushions and very limited escape routes.

Continually check to be sure you're maintaining a safe margin of space between you and the rider in front of you. Also check your mirrors often to be sure the rider behind you is leaving plenty of room between you and them. If not, signal them to back off.

TARGET FIXATION AND GROUP-RIDING

Let's consider target fixation in the group riding scenario. In a group ride it is common for riders to target-fixate on the rider or riders directly in front of them. If you notice this happening to you, it's a sign you're not scanning enough elsewhere and you need to re-focus your attention and get back to scanning the entire area of your ride and 20 seconds ahead.

Scanning is critical for determining everything occurring around you (not just your fellow riders) during your group ride. Many group riding crashes occur because of inattention.

By placing a larger space cushion between you and other riders in your group, everyone will be able to scan the road better and will be less likely to get caught up in target fixation.

PEER PRESSURE AND GROUP RIDING

There may be times during a group ride when members of the group may make choices about speed, riding gear, alcohol, etc. that you are not comfortable with. History tells us that these choices can result in serious injuries and sometimes death. When you see such behavior and choices being made by others, resist the temptation to join in—make the choices that are right for YOU.

Smart Rider Commitment #12:

_____ (initial) "I acknowledge that group riding demands more skill and attention than riding solo. I accept this fact and commit to waiting to ride with a group until I have well developed skills and significant experience riding by myself or with just one other (and more experienced) rider."

Review Questions

1. How do you calculate the following distance in a staggered formation?
2. When should you move to single file?
3. Where in the formation should the least experienced rider be?

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Unit 12 | MECHANICAL PROBLEMS

Mechanical failures often result in emergencies. Quickly assessing the problem will help you respond properly.

TIRE FAILURE

Modern tubeless tires rarely blow out, but it does happen. As soon as you detect an unfamiliar handling characteristic, slow down. The bike will wobble and/or wander. If the flat is on the front, the steering will feel heavy. If on the back, the entire bike will weave and feel unstable. A typical rider response is to look down at the motorcycle as if to say, "What's up?" Instead, keep your eyes on the road and use these techniques:

1. Hold the grips firmly and ease off the throttle. Don't fight the wobble.
2. Avoid applying the brakes unless you have to. If you have to brake, use the brakes on the wheel with the good tire. Remember that linked or integrated braking systems may not allow this.
3. Avoid downshifting.
4. Squeeze the clutch and keep it in.
5. Shift your weight away from the affected area. If the front tire is flat, move back. If the rear is flat, move forward.
6. Keep your eyes up and find a safe place to pull over.

A common cause of tire failure is under-inflation. Check your tires frequently and keep them inflated to the manufacturer's specifications.

BROKEN CLUTCH CABLE

Some bikes have cables linking the clutch lever to the clutch and occasionally these cables break. Hydraulic clutches can also fail. If this occurs, the clutch will remain completely engaged. It is possible to shift without the clutch. Just match engine speed to road speed and complete the shift quickly. Ride to a place where assistance is available. Remember that once you stop, it is very difficult to get going again. When coming to a stop, try to find neutral. Shut off the motorcycle with the engine cut-off switch.

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Mechanical Problems

WOBBLE/WEAVE

A weave or wobble is your motorcycle's way of telling you something is wrong. A wobble is felt in the handlebars as a possibly strong and rapid shaking. A weave, on the other hand, is a slow oscillation in the rear of the motorcycle. In either case, you may have a serious problem. Slow down immediately and follow these tips:

- Keep a firm grip on the handlebars and don't fight the wobble.
- Eeeease off the throttle.
- Move your weight forward and as low as possible over the tank.
- Avoid applying the brakes unless you have to. Braking can amplify the wobble or weave.
- Do not accelerate to try and stop the wobble. This will only makes it worse.

Worn or improperly inflated tires, loose or worn bearings and/or too much weight in the wrong location can cause a wobble or weave. Identify the problem and take your motorcycle to a qualified technician for repairs.

Once you experience a wobble/weave, it can occur again at any time until you make the necessary repairs.

Review Questions

1. What is a primary cause of tire failure?
2. Where do you find information about proper tire pressure?
3. How can you shift without using the clutch?
4. If you experience a wobble, what should you do?

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Unit 13 | TOURING AND LONG-DISTANCE RIDING

The time-honored tradition of long-distance touring by motorcycle is almost as old as the invention of the motorcycle itself. What better way to move from place to place than on two wheels? But long-distance rides require additional mental and physical stamina, as well as additional preparation. Physical fatigue, mental fatigue and "highway hypnosis" can set in on a long ride—and the consequences can be very severe.

BUILD UP SLOWLY

Riding long distances is a dream for many new riders. But don't just jump right into riding 500 or 600 mile days. Begin with shorter trips and build yourself up to longer distances over the course of numerous rides. It's just like training for a marathon—you need to build up your strength, skills, experience and endurance to do it safely.

WEATHER CONDITIONS, COMFORT AND FATIGUE

The more you ride, the greater the chance that you will encounter bad weather. That may come in the form of rain, hail or possibly snow. Or it may come in the form of high winds or severe heat. Be sure you carry layers of clothing to keep warm when it's cold, dry when it's wet and cool when it's hot.

Riding long distances or through inclement conditions will cause you to tire sooner, so be sure to take breaks often. According to the AAA Foundation (www.AAAfoundation.org), staying awake for more than 20 hours can impair your driving skills as much as having a .08 blood alcohol concentration—and that is for driving a car. We do not encourage such long periods of riding—even for experienced riders. Thousand-mile days, 24 hour rides or "Iron Butt" rides are all activities that can easily lead to riding impaired.

BE PREPARED

When riding into remote areas, keep in mind there may be little or no cell phone coverage. Add to that the lack of emergency medical services and roadside assistance. When riding with a group, create a buddy plan in advance that ensures one or two riders are prepared to seek out help while the other members of the party stay behind. It's advisable that each member of the group carry several snacks in case there's no other food available for a period of time during an unplanned situation.

Always have someone in the group carry a medium-size first aid kit.

Most motorcycles have a shorter fuel range than a car. So fill up frequently and don't wait till you hit the reserve to start looking for the next gas station. There may not be one for a while.

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Touring and Long-Distance Riding

Before leaving for a long trip, inspect your tires for wear. If you suspect you may need new tires during the trip, call ahead to a shop to arrange replacement, or simply replace them before you leave. Be sure you take care of all major service needs before the long ride, or plan in advance to have them done at suitable shops along the way.

In addition to bringing layers of clothing, always be sure to pack rain gear. While it's good for keeping you dry during rainy times, it can also add a layer of warmth and help you maintain your body's core temperature when the weather turns cold.

When considering tools to carry for a long ride, choose tools you would need to perform maintenance and repair. Your owner's manual can advise you of what those tools are or you can consult your local dealer. You should also carry spare parts such as a headlight and tail light bulb and any parts that are known to fail often for your make and model of bike.

In addition, it's a good idea to have a tire repair kit and inflation device on board in the event that you or someone else in your party gets a flat tire. The inflation kit should be able to repair both tube and tubeless tires and your inflation device should be able to provide a steady flow of air long enough to bring the tire back to the manufacturer's specified air pressure levels.

YOU DESERVE A BREAK TODAY (OR SEVERAL)

Riding can be a lot of fun but it does drain your mental and physical energy (reducing your Rider Readiness). Taking frequent breaks will allow your mind and body to rest between stretches, making your ride more enjoyable. During breaks, be sure to eat and drink. You can also stretch and do light exercise to keep your joints fluid and functioning comfortably.

If you're the kind of rider who likes to put their bike away in the colder months, make the first rides of the new season short, and gradually build up to longer distances.

Smart Rider Commitment #13:

(initial) "I acknowledge that touring and long-distance riding demand physical endurance, mental stamina and preparation. I accept this fact and commit to building up slowly to longer distances and to being prepared for the challenges of long- distance riding."

Review Questions

1. What are some ways that long-distance riding can lead to riding impaired?
2. How can you be prepared for long-distance riding?

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Unit 14 |
RIDING IN THE COLD; RIDING IN THE HEAT

RIDING IN THE COLD—THE IMPORTANCE OF WARMTH*

As you've learned, being aware and alert for other vehicles and road conditions is important to helping you ride as safely as possible. Another important aspect of maintaining a high level of alertness is to be comfortable.

COLD = BAD

In cold weather, that means staying warm. A cold body is a distraction to your alertness, and it lowers your ability to respond. Cold slows your mental processes, and your muscles don't react as quickly, either. Staying warm helps keep you prepared to react, both mentally and physically.

WARMTH = GOOD

Much of today's motorcycle gear is well designed and will help keep you warm on cool days. The insulation and wind-blocking materials used in most motorcycle-specific gear will serve you well when things cool off. Don't forget that you'll be traveling through the air, so it's not just the temperature; the wind chill factor determines how much warmth you'll need.

HEAT = BETTER

When the wind chill gets below 55 degrees, you may want to add the advantage of heated clothing. Several manufacturers offer heated jacket and pant liners that are designed to fit under your motorcycle gear. Powered by a single wire from the motorcycle's battery, these interconnected systems deliver warm, soothing heat to your body. With heated gloves, socks and insoles also available, you can stay warm all the way down to your toes.

OUTERWEAR, TOO

For those who ride in the cold frequently, or who perhaps commute to and from work in the chill, there is actual riding gear available (outer jackets and pants) that has the heat built in. This gear is designed to go over your street clothes, which makes it ideal for commuters or those who will be socializing with friends upon arrival.

BE WARM AND WISE

Don't let shivering shake your confidence. Enjoy your motorcycle even on days you thought you wouldn't. Gear up. Heat up. And ride better prepared to meet the demands of the road.

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Riding in the Cold; Riding in the Heat

RIDING IN THE HEAT—THE IMPORTANCE OF STAYING COOL (AND HYDRATED!)

When the temperature goes up, riders take gear off in an attempt to stay cool. Perhaps they believe that more airflow and less clothing is the best way to deal with the heat. It's not that simple—read on!

HOW DOES THE BODY COOL ITSELF?

Let's get back to basics here: the human body cools by sweating. When the moisture on the skin evaporates, it takes some of the body's heat with it, thus cooling the body. Some airflow can help with this evaporation (and it feels cooler, too).

BUT WHAT ABOUT PROTECTION?

In an effort to maximize airflow, many riders give up protection. A high-quality, armored jacket won't do the rider any good in a crash if it is folded up in the saddle bag. Tank-tops and t-shirts offer no protection against the asphalt.

BUT WHAT ABOUT OVERHEATING?

In an effort to maximize protection, some riders might wear gear that gives them the crash protection they need, but is not "weather appropriate." The risks of overheating and heat-related emergencies can range from heat cramps to heat exhaustion to heat stroke. Heat-related emergencies[7] can result in:

- Fatigue
- Muscle cramps
- Headache
- Dizziness/lightheadedness
- Weakness
- Nausea
- And eventually seizures or even loss of consciousness

BUT WHAT ABOUT DEHYDRATION?

When riding with little or no gear, the wind is blowing across the skin and instantly dries up the sweat as it tries to cool you. The body tries to sweat more, the wind dries it up more—you get the idea. You become dehydrated much faster this way than if you had some protection between your skin and the wind. If you have ever experienced dehydration while exercising or playing sports, you know how devastating it can be to your performance.

[7] According to Medline Plus, a service of the US National Library of Medicine, National Institutes of Health; www.nlm.nih.gov

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Dehydration[8] slows your mental and physical abilities, impairs your smooth and coordinated operation of the motorcycle, and can result in:

- Extreme fatigue
- Muscle cramps
- Headaches
- Nausea
- Tingling of the limbs
- Dim vision
- Confusion
- And eventually seizures or even loss of consciousness

PROTECTION FROM THE HEAT AND FROM THE ASPHALT

So, how do you stay cool AND stay protected? Here are a few simple options. "Cooling vests" are designed to be worn under your riding jacket. There are a variety of makes, models, styles and price ranges. Just search online for "motorcycle cooling vest" and you'll find many to choose from.

Another way to go is to make your own "motorcycle swamp-cooler." Take a long sleeve t-shirt, soak it in water, then put it on (or put it on and then soak it—either way is good). Put your vented or mesh riding jacket on over the t-shirt. As you ride, the wet t-shirt and the moving air work together to keep you cool. When the t-shirt dries out, pull over and re-wet it. You can get a good quality vented or mesh riding jacket in the $75–$200 range. Try it—you'll be amazed at how staying covered can keep you cooler than riding without protection.

BE COOL AND WISE

Don't let heat and dehydration impair your riding ability. Ride protected from the heat AND the asphalt even in temperatures that you thought would make you choose one over the other. Gear up. Stay cool.

Review Questions

1. How does cold/hypothermia impair you?
2. How does heat/dehydration impair you?
3. How can you stay cool, hydrated and protected?

[8]According to www.symptomsofdehydration.com

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Appendix A | CORNERING WITH CONFIDENCE —EXPANDED CONTENT

An outside-inside-outside strategy is a good place to start and will serve you well in most situations. In reality, a center-center-center line can get you through a curve just fine as long as you manage your speed. There are many riding schools and many books that spend a lot of time on cornering lines and go into great detail. This Rider's Guide will explore a few fairly common scenarios (decreasing radius curves and linked curves) and suggest a strategy for managing them.

DECREASING RADIUS CURVES AND LINKED CURVES

A decreasing radius turn is simply a turn that gets tighter. These turns can be challenging for riders who are unprepared because, to stay on the road, the rider has to increase their lean in the middle of the turn. If the rider begins the turn at the maximum lean angle they can handle, they run into trouble when the curve of the roadway demands more lean. Linked curves are those where one curve leads directly into another curve (and perhaps several in a row). The strategy is the same for both.

ON THE APPROACH

If you can't see through to the exit of the turn, enter as if it was a decreasing radius turn, linked turn, or there is some obstacle in the road just out of sight. This way, you will be prepared to respond. Put your motorcycle in the "outside" part of the lane. This helps you see the exit of the turn sooner rather than later.

WAIT FOR IT

Hold your lane position as you enter the turn. Many riders have a tendency to "dive in" toward the inside too early. This can cause problems later in the turn, so discipline yourself to hold your lane position until you can see all the way through to the exit. Once you can see the exit, then move toward the inside. As mentioned in Unit 6, this is known as a late apex line.

WHAT'S NEXT?

From the apex of the turn (the inside), you have the exit of the turn and the road ahead in sight. What lane position do you want to be in for the road ahead? Are there pot holes to avoid? Is there another turn ahead? If so, is it a right-hand turn or a left-hand turn? Consider the road ahead and determine what lane position you want. Now, go from the apex to that lane position as you exit the turn. This might result in an outside-inside-outside line, or it might result in an outside-inside-inside line, or it might even result in an outside-inside-middle line. In each of those cases, what you have is an outside-inside-what's next? line.

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Appendix A | CORNERING WITH CONFIDENCE —EXPANDED CONTENT

BODY POSITION

Our general recommendation regarding body position in a curve for street riding is to low-lean with the motorcycle. Body position has a direct impact on motorcycle lean angle and tight turns ground clearance. This can become very important in corners—especially for riders on motorcycles with limited ground clearance (primarily cruisers and touring bikes).

Here is how it works:

LEANING WITH THE MOTORCYCLE

This keeps you in the best position to remain relaxed, operate all of the motorcycle's controls, and doesn't require unnecessary motorcycle lean.

LEANING OUT

This technique is frequently used for low-speed, tight turns (see Unit 4, page 30). Moving your body weight toward the outside of a turn (leaning left for a tight right turn; leaning right for tight left turn) helps with balance and allows the motorcycle to lean more without becoming unstable. By leaning more, ground clearance is reduced. In a slow- speed, tight turn, this ground clearance issue is not a problem. However, in a normal speed turn on the road, it can be a serious problem. When cornering at speed or when they get nervous, many riders unintentionally lean out and end up dragging parts or even running wide or off the road.

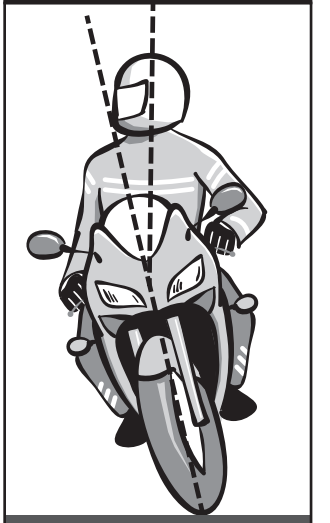
Pay attention to your body position, stay relaxed and avoid leaning out when cornering.

LEANING IN

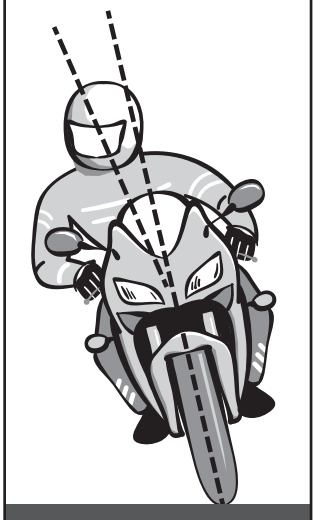
When you see pictures or videos of motorcycle racers hanging off their bikes with their knees on the ground, that is an example of the "leaning in" technique taken to the extreme. Why do they do it? It provides increased ground clearance and traction so they can go faster (they are racing, after all).

Even riders who aren't racing can learn a thing or two from the concept. For street riding there is not a reason to go to the extreme that racers go to. However, leaning slightly and not increasing speed increases traction and ground clearance in case there are any unexpected hazards. The leaning in technique is recommended if you find yourself dragging footpegs or floorboards in a corner or otherwise running out of ground clearance. Leaning your upper body slightly to the inside can give you the extra ground clearance and traction you need to get through the turn.

Lean OUT for low-speed, tight turns



Lean IN for high-speed, sharp turns



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Appendix B | GLOSSARY

Anti-lock Brakes: Braking systems that prevent skids during straight-line braking.

Apex: Point in a rider's path of travel closest to the inside edge of a curve.

BAC: Blood alcohol concentration. Percentage of alcohol in a person's blood.

Blind Spot: Areas behind and beside a vehicle not visible in the mirrors.

Conspicuity: The quality of being conspicuous; highly visible, easily seen.

Convex Mirror: Mirror having a surface that curves outward. They show more area but objects appear farther away than they actually are.

Collision: A crash or conflict.

Crash: To fall or collide with something; to undergo sudden damage or destruction on impact.

Counterweight: Shifting weight to the outside of the turn. Used to provide better balance in low-speed turns.

Countersteer: Initiate lean by applying forward pressure to the hand grip in the direction of the turn: press right, go right; press left, go left. The front wheel out-tracks initially as lean is initiated, then re-centers and points into the turn.

Crowned Road: A road that is higher in the middle to promote drainage.

Divided Attention: Concentration on both mental and physical tasks at the same time or any simultaneous multiple tasks.

DOT: Department of Transportation.

DWI/DUI: Driving while impaired (DWI); driving under the influence (DUI). These terms refer to any and all offenses involving the operation of vehicles while under the influence of alcohol and/or other drugs.

Engine Braking: Slowing by using engine compression; shifting down and easing out the clutch or rolling off the throttle.

Entry Speed: Speed at the entry to a turn. A proper entry speed allows you to maintain a steady speed or accelerate gently throughout the entire turn.

Escape Route: An alternative route to avoid hazards in your immediate path of travel.

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Appendix B | GLOSSARY

Exceeding Sight Distance: Riding at a speed that does not allow time to recognize and avoid hazards in your path.

Field Sobriety Tests: Roadside tests used by law enforcement to determine impairment.

Friction Zone: Area of clutch lever travel where the clutch begins to engage and transfer power from the engine to the rear wheel. Used in getting underway, downshifting and in slow-speed maneuvers.

Gauntlet: The flared cuff of a glove that is designed to prevent wind from going up the sleeve.

Heat Exhaustion: A condition caused by exposure to heat, resulting in the depletion of body fluids that causes weakness, dizziness, nausea and often collapse.

High-Side Crash: Crash in which the motorcycle snaps violently upright and throws the rider in front of the tumbling motorcycle. Often the result of releasing the rear brake when a skidding rear tire is not in alignment with the front.

Hydroplane: Water buildup under tread. Hydroplaning causes tires to lift from the roadway surface. Can cause loss of control.

Hypothermia: A clinical state of sub-normal body temperature when the body is unable to generate sufficient heat to efficiently maintain functions. Warning signs include uncontrollable shivering, memory loss, disorientation, incoherence, slurred speech, drowsiness and exhaustion.

Integrated Braking System: Braking system that applies partial front braking when rear brake is applied.

Impairment: Diminished judgment and ability.

Lay It Down: See low-side crash.

Linked Braking System: System that engages both front and rear brakes when either is applied.

Low-Side Crash: Crash where the rider makes contact with the ground behind the sliding motorcycle.

Nystagmus: Involuntary jerking of the eyes.

ONE-C: Pre-start routine— Fuel valve/key ON, Transmission in NEUTRAL, Switch ENGINE to run or on, engage CLUTCH and use CHOKE as needed.

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GLOSSARY

Overriding the Headlight: Riding at a speed that does not allow you to avoid hazards or stop within the path illuminated by the headlight.

Overriding Sight Distance: Riding at a speed that does not allow time or distance to stop or swerve if something unexpected enters your path or the roadway takes an unexpected bend.

Retro-reflective: Material that reflects light back to the light source.

Rider Readiness: Being completely prepared for riding. This includes being mentally prepared and attentive, physically rested and unimpaired, having your motorcycle in good condition, wearing appropriate riding gear and being aware of and prepared for upcoming weather, roadway and traffic conditions.

Sight Distance: How far ahead a rider can see at any given moment.

SIPDE: Acronym to describe defensive riding strategy: Scan, Identify, Predict, Decide, Execute.

Space Cushion: Zone of space surrounding rider. Maintained to provide space and time to react to hazards.

Square the Handlebars: Getting the steering centered and the motorcycle upright and traveling in a straight path. Helps to preserve balance at stops.

Target Fixation: When the eyes and brain are focused so intently on a particular object that awareness of other obstacles or hazards is diminished and the rider tends to veer toward that object.

Tailgating: Following too closely.

Traction: Friction between the tires and the roadway.

Trail Braking: An advanced traction management technique for cornering. The brakes are applied before the corner and then "trailed off" gradually through the early portion of the curve. Not practiced in this course.

Visual Directional Control: Guiding your motorcycle by turning your head and focusing your eyes on the desired path. It's the principle that you tend to go where you look.

Visual Lead: Space allowed to identify and manage risks. Scanning 20 seconds ahead provides the visual lead.

Wind Chill: The apparent temperature felt by the body due to the combination of temperature and wind speed.

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Appendix C | CALIFORNIA RULES AND REGULATIONS FOR MOTORCYCLES AND SCOOTERS

DO YOU NEED A MOTORCYCLE ENDORSEMENT?

If you operate any motorized vehicle on public roadways, California law requires you to have a valid driver's license and acceptable proof of liability insurance. If you operate a motorcycle on public roadways, you will also need to add a motorcycle endorsement to your California driver's license.

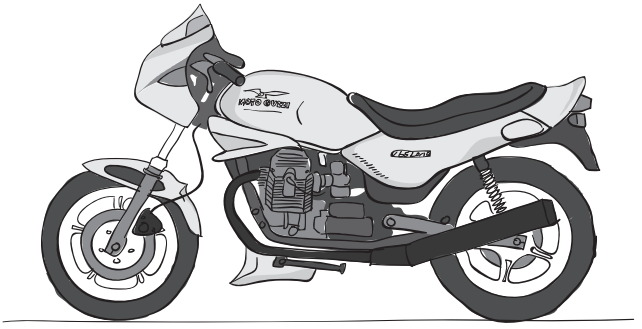
DEFINITIONS

It is important to understand if the vehicle you operate is a motorcycle or motor-driven cycle that requires you to have a motorcycle endorsement on your driver's license.

MOTORCYCLE/SCOOTERS:

Any motor vehicle having a seat or saddle for the use of the rider and designed to travel on not more than three (3) wheels If it's a motorcycle in contact with the ground.

If it's a motorcycle you need a Motorcycle Endorsement



MOTOR-DRIVEN CYCLE

A motor-driven cycle is a motorcycle with a 149 cc or less engine size.

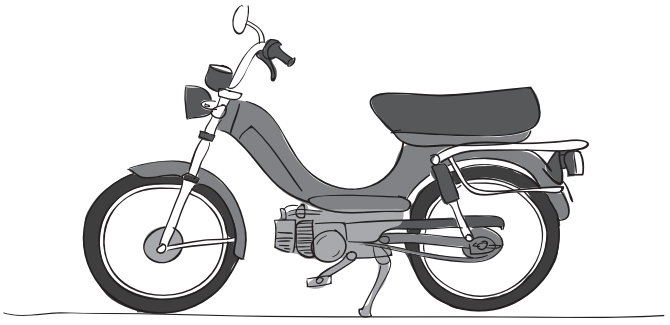
NOTE: You may not operate a motor-driven cycle on a freeway if signs are posted to prohibit motor-driven cycle operation.

MOTORIZED BICYCLES (MOPEDS):

A limited-speed motor-driven cycle having both motorized and pedal propulsion that is not capable of propelling the vehicle at a speed in excess of thirty (30) miles per hour on level ground, whether two (2) or three (3) wheels are in contact with the ground during operation. If an internal combustion engine is used, the displacement shall not exceed fifty (50) cubic centimeters and the moped shall have a power drive system that functions directly or automatically without clutching or shifting by the operator after the drive system is engaged.

Or if powered solely by electrical energy, it has two (2) wheels or three (3) wheels with no pedals, an automatic transmission, and a motor that produces less than two (2) gross brake horsepower, and is not capable of propelling the vehicle at a speed in excess of thirty (30) miles per hour on level ground.

If it's a moped you do not need a Motorcycle Endorsement



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HOW DO YOU GET A MOTORCYCLE ENDORSEMENT?

- You must pass a written knowledge test and a motorcycle skills test or obtain a Certificate of Completion of Motorcycle Training (DL 389)
- If you are under 21, you must also successfully complete a motorcycle rider training course.
- See the California Motorcycle Handbook for more information.

OPERATOR ENDORSEMENTS

California issues the following license classes for two-wheel vehicle operation:

Class M1—You may operate any two-wheel motorcycle, motor-driven cycle or motorized scooter and all vehicles listed under Class M2.

Class M2—You may operate any motorized bicycle, moped or a bicycle with an attached motor or motorized scooter.

NOTE: Class C licensees may operate a motorcycle with a side car attached or a three-wheel motorcycle.

You must pass a written and a skills test before receiving a motorcycle endorsement. Successful completion of an approved motorcycle rider training course may waive the requirement for the riding skills test, if completed within the year prior to adding the endorsement to your license.

Applicants under 21 years of age are required to complete motorcycle safety training and obtain a Certificate of Completion (DL 389) and have had instructional permit for at least 6 months offered by the California Motorcyclist Safety Program to become eligible for a motorcycle endorsement.

NOTE: Minors age 15½–17 must bring proof of completion of both driver education and driver training or be currently licensed.

MOTORCYCLE INSTRUCTION PERMIT

A motorcycle instruction permit is available to anyone who completes a DMV application form (DL44 or DL44C). This permit is valid for 12 months and allows motorcycle or scooter operators to practice riding under the following restrictions: Daylight riding only; no freeway riding; no passengers. You must take and pass a written knowledge test before applying for an instruction permit

Applicants under 21 years of age are required to complete a motorcycle safety training before receiving a motorcycle instruction permit.

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Appendix C | CALIFORNIA RULES AND REGULATIONS FOR MOTORCYCLES AND SCOOTERS

MOTORCYCLE TESTS

Licensing tests are the best measures of knowledge and skills necessary to safely operate your motorcycle or moped in traffic. Here are the basic testing and licensing requirements for a motorcycle endorsement:

1. Pass a multiple choice motorcycle operator knowledge test based on the information in the California Motorcycle Handbook.
2. Pass a skills test. You will demonstrate your ability to perform basic maneuvers during an off-street skills test. You maybe able to obtain a Certificate of Completion (DL 389) to waive the skills test at DMV by taking a motorcycle safety course.
3. Add the motorcycle endorsement to your valid California driver's license. Licensing fees are subject to legislative change, so you may check the driver manuals or DMV's website for a current schedule of fees.

California will accept a motorcycle license endorsement from other states, however, California does not accept motorcycle safety course completion cards from other states.

For additional information, you may visit: http://www.dmv.ca.gov

MANDATORY INSURANCE

All motorized vehicles operated on California roadways, whether registered or not, must carry liability insurance providing the following minimum coverage:

- $15,000 for injury or death of one person;
- $30,000 for injury or death of two or more people; and
- $5,000 for property damage.

Insurance companies in California are required by law (California Vehicle Code (CVC) §16058) to electronically report private-use vehicle insurance information to the Department of Motor Vehicles (DMV). Insurance companies are exempt from electronically reporting insurance information for vehicles covered by commercial or business insurance policies.

If you, as an operator, are involved in a collision which causes more than $750 in property damage to one person, including yourself, is injured, no matter how slightly, you (or your insurance agent, broker, or legal representative) must report the collision to DMV or your license maybe suspended. The CHP or police will not make this report.

HELMET LAW

California law requires all riders and passengers to wear a protective helmet while riding on or operating a motorcycle or scooter. Helmets must have a label certifying that they meet U.S. Department of Transportation (DOT) standards.

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CALIFORNIA RULES AND REGULATIONS

DRIVING UNDER THE INFLUENCE LAWS AND PENALTIES

Under California law you are considered to be driving under the influence if your blood-alcohol concentration (BAC) is .08% or more if you are 21 or older. An alcohol concentration of .20% or more carries even stiffer penalties. Your license will be suspended for one year with absolutely no driving privileges of any kind for refusing to take the alcohol concentration test if it is your first offense. A second refusal within ten years brings even stiffer penalties.

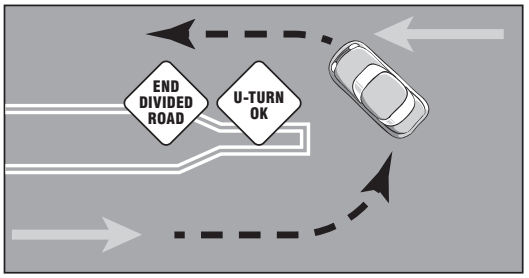
Under 21—Zero Tolerance for Alcohol Use. If you are under 21 years of age, you must submit to a hand-held breath test, Preliminary Alcohol Screening (PAS), or one of the other chemical tests. If your BAC measures 0.01% or higher on the PAS, you may be suspended for one year.

If you're convicted of a DUI, the criminal penalties are:

- For a first conviction: Up to 6 months in jail; up to a $1,000 fine; and mandatory driver's license suspension of 180 days and be required to complete a DUI program, file a California Insurance Proof Certificate (SR 22), and pay all fees before your driver license can be reinstated. The length of the program may vary. If you are under 21, your driving privilege will be revoked for one year and will be required to complete the educational portion of a licensed DUI program.
- For a second conviction within ten years: Mandatory jail sentence from 10 days to one year (5 days to 30 days if you are under 21); up to a $2,000 fine; a mandatory driver's license suspension of one year (up to two years if you are under 21); and shall only drive a vehicle equipped with an ignition interlock system after the license suspension period.

2 SETS OF SOLID DOUBLE YELLOW LINES (DOUBLE DOUBLE YELLOW LINES)

Two sets of solid double yellow lines spaced 2 feet or more apart are considered a barrier. Do not drive on or over this barrier or make a left turn or a U-turn across it except at designated openings (see diagram).



EAR PROTECTION

Ear plugs are allowed, however a person wearing personal hearing protectors in the form on earplugs or molds that are specifically designed to attenuate injurious noise levels must be able the hear a siren or horn from an emergency vehicle or a horn from another motor vehicle.

Helmet speakers are allowed, however only a single earphone.

Review Questions

1. What is the minimum vehicle insurance coverage in California?
2. What do the double double yellow lines mean?
3. What is the difference between a Class M1 and M2 endorsement?

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Appendix C | CALIFORNIA RULES AND REGULATIONS FOR MOTORCYCLES AND SCOOTERS

HIGH-OCCUPANCY TOLL (HOT) LANES

In California, high-occupancy toll (HOT) lanes and tolls highways are fee-paid roadways that are used in heavily traveled areas to relieve traffic congestion.

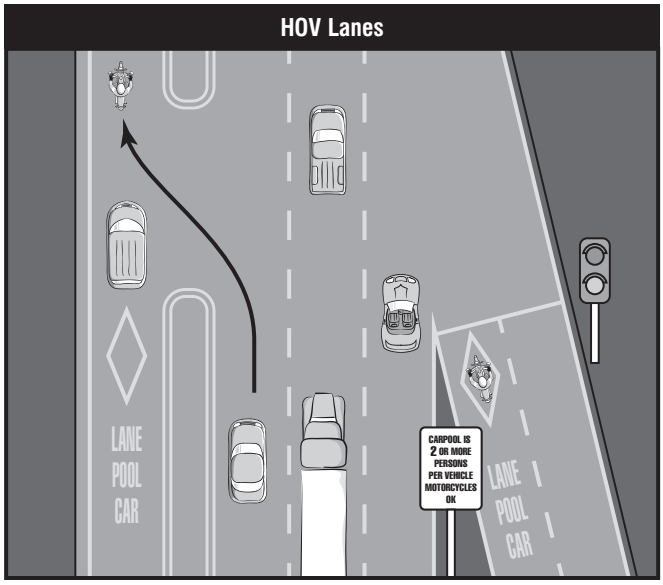
Commuters traveling on toll highways or using HOT lanes may purchase transponders, which track their vehicle's usage of these roadways. Transponders allow drivers to pay tolls fees through electronic billing. When using a transponder or other electronic payment device while driving on a toll highway, HOT lane or toll bridge, motorcyclist are allowed to place the payment device in 5 locations (on the motorcycle or carried by the driver), as long as the toll reader can detach the device.

The locations are:

- In the motorcyclist's pocket.
- Inside a cycle net draped across the gas tank of the motorcycle.
- On the license plate device, if the toll operator provides such a device.
- In a storage compartment on the motorcycle
- On the windshield of the motorcycle.

CARPOOL/HIGH-OCCUPANCY VEHICLE (HOV) LANES

A carpool lane is a special freeway lane used only for carpools, buses, motorcycles or decaled low-emission vehicles. The pavement in this lane is marked with a diamond symbol ◊ and the words "Carpool Lane." These lanes are also know as high-occupancy vehicle (HOV) lanes. Do not cross over double parallel lines to enter or exit any carpool lane except at designated entry or exit places. Motorcyclists are allowed to use the Carpool/HOV lanes, unless otherwise posted.



MOTORCYCLES TOWING TRAILERS

Motorcycles towing trailers:

- Must not exceed 55 mph.
- Must remain in the right lane unless it is a four (4) lane highway, then the two (2) lanes, except when passing.
- Are not allowed in carpool lanes.

For more information see the Recreational Vehicles and Trailers Handbook available online at www.dmv.ca.gov or you may obtain a copy at your local DMV office.

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LANE SPLITTING

Lane splitting is legal in California. The term lane splitting, sometimes known as lane sharing, filtering or white-lining refers to the process a motorcyclist riding between lanes of stopped or slower-moving traffic or moving between lanes to the front of traffic stopped at the traffic light. Lane splitting should not be performed by inexperienced riders. When choosing to lane split, skilled motorcycle riders should consider the following:

- Traffic flow—Travel at speed that is no more than 10mph faster than other traffic; danger increases at higher speed differentials. Lane splitting is not advised when traffic flow is at 30mph or faster; danger increases as overall speed increases.
- Traffic lanes—Lane splitting is encouraged to be done between the #1 and #2 lanes; typically, it is safer to lane split in these lanes than between other lanes.
- Environment—The total environment should be considered including the width of the lanes, size of surrounding vehicles, the roadway, weather and lighting conditions.
- Hazards—Riders should anticipate possible movements by other road users and be alert at all times.

NOTE: These general guidelines assume a high level riding competency and experience and do not guarantee to keep you safe. Every rider has the ultimate responsibility for his or her own decisions making and safety. Riders must be conscious of reducing crash risk at all times.

EVADING A PEACE OFFICER

Any person who willfully flees or attempts to evade a peace officer performing his or her duties is guilty of a misdemeanor punishable by imprisonment in a county jail for not more than one year California Vehicle Code (CVC) §2800.1). If a person is convicted of causing serious bodily injury during the course of a police pursuit California Vehicle Code (CVC) § 2800.3(a), he or she is subject to:

- Imprisonment in a state prison for three, five or seven years or in a county jail for not more than one year.
- A fine of not less than $2,000 nor more than $10,000.
- Both, a fine and imprisonment.

If a person is convicted of killing anyone during the course of a police pursuit California Vehicle Code (CVC) §2800.3(b), he or she is subject to imprisonment in a state prison for four, six, or ten years.

Review Questions

1. What is the maximum speed when towing?
2. Are motorcycles allowed to be in the carpool/HOV lanes?
3. Lane splitting should be done in what lane numbers?
4. What are the 5 locations where the electronic toll transponder can be placed?

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Appendix D | SMART RIDER COMMITMENTS

SMART RIDER COMMITMENT #1:

_____ (initial) "I acknowledge that part of being a responsible rider is knowing and following the 'rules of the road.' I accept this fact and commit to learning and complying with state laws, rules, regulations and equipment requirements."

SMART RIDER COMMITMENT #2:

_____ (initial) "I acknowledge that riding a motorcycle in a complex traffic and roadway environment is an activity involving risk and danger. I accept this fact and commit to managing those risks."

SMART RIDER COMMITMENT #3:

_____ (initial) "I acknowledge that when riding a motorcycle, the only thing between me and the elements (hot, cold, rain, hail, bugs, asphalt, other vehicles, etc.) is the gear I am wearing. I accept this fact and commit to getting and wearing riding gear that is right for me as well as any passengers I may carry."

SMART RIDER COMMITMENT #4:

_____ (initial) "I acknowledge that a motorcycle requires more frequent inspection and maintenance than a car. I accept this fact and commit to learning how and when to perform a pre-ride check on my motorcycle."

SMART RIDER COMMITMENT #5:

_____ (initial) "I acknowledge that an expert rider is one who uses expert judgment to avoid having to use expert skills. I accept this fact and commit to becoming an expert rider by practicing SIPDE skills, keeping my eyes up and scanning 20 seconds ahead."

SMART RIDER COMMITMENT #6:

_____ (initial) "I acknowledge that motorcyclists running wide in turns is the most common fatal crash situation. I accept this fact and commit to practicing the SPEED-POSITION-AIM-TURN process for cornering, and in particular AIMING through the turn and PUSHING forward on the handgrip to cause the bike to lean/turn."

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SMART RIDER COMMITMENTS

SMART RIDER COMMITMENT #7:

_____ (initial) "I acknowledge that braking errors are very common in crash situations. I accept this fact and commit to regularly practicing quick stops, with an emphasis on smooth increasing pressure on the front brake and a light to lighter application of the rear brake."

SMART RIDER COMMITMENT #8:

_____ (initial) "I acknowledge that many fatal motorcycle crashes involve riders who had been drinking. I accept this fact and commit to separate the use of alcohol (and other drugs) from riding a motorcycle. I commit to riding sober."

SMART RIDER COMMITMENT #9:

_____ (initial) "I acknowledge that an impaired rider in the group puts me at risk. I accept this fact and commit to avoiding riding with others who are impaired."

SMART RIDER COMMITMENT #10:

_____ (initial) "I acknowledge that there are a wide variety of factors that can impair my ability to ride safely. I accept this fact and commit to minimizing factors that can negatively affect my riding ability and performance."

SMART RIDER COMMITMENT #11:

_____ (initial) "I acknowledge that when I carry a passenger, I am responsible for their safety and comfort. I accept this fact and commit to waiting to carry passengers until I have well developed skills and significant experience as a solo rider."

SMART RIDER COMMITMENT #12:

_____ (initial) "I acknowledge that group riding demands more skill and attention than riding solo. I accept this fact and commit to waiting to ride with a group until I have well developed skills and significant experience riding by myself or with just one other (and more experienced) rider."

SMART RIDER COMMITMENT #13:

_____ (initial) "I acknowledge that touring and long-distance riding demand physical endurance, mental stamina and preparation. I accept this fact and commit to building up slowly to longer distances and to being prepared for the challenges of long-distance riding."

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Appendix E | RANGE RULES AND HAND SIGNALS

Range rules are designed to maintain safety for all riders and therefore apply to everyone. They are used in conjunction with all riding exercises, no exceptions. Range rules are as follows:

- Don't practice without the instructor's permission.
- Stay with each exercise as it's being practiced.
- Wear all protective gear when seated on the motorcycle.
- Cover the clutch lever with four fingers at all times—this enables you to immediately disengage power from the rear wheel, if necessary.
- Keep your throttle hand in a wrist-down position with four fingers around the throttle/handgrip.
- Do not "cover" the front brake while moving forward. Keep all four fingers wrapped around the throttle.
- Always check around you—front, sides and behind—before moving.
- Don't crowd other riders—leave plenty of space between you and them.
- Do not pass other riders/motorcycles.
- Always use the engine cut-off switch to stop the engine, and then turn off the ignition.
- If you have a problem, move out of the way and signal your instructor.
- If you hear a referee-style whistle, stop smoothly and immediately and wait for further directions.
- If you don't understand an exercise, ask the instructor for clarification.
- Notify your instructor if you are too uncomfortable to ride safely.

Please familiarize yourself with the range hand signals on the next page.

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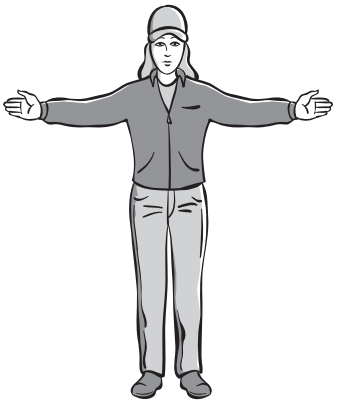
RANGE RULES AND HAND SIGNALS

The course instructors will use these hand signals to communicate with you while you are riding on the range.

Start engine

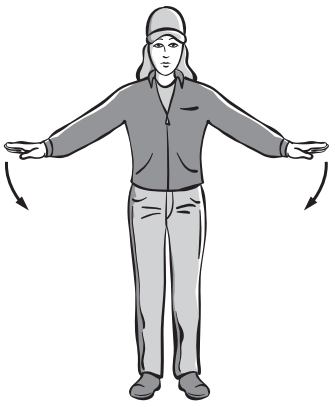
Stop engine

Find neutral



Stop

Speed up

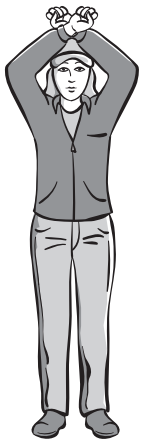


Slow down

Cover clutch

Un-cover front brake

Eyes up



Return to staging

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Notes

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