

1990

4-H 348 The Nebraska Bicyclist's Guide

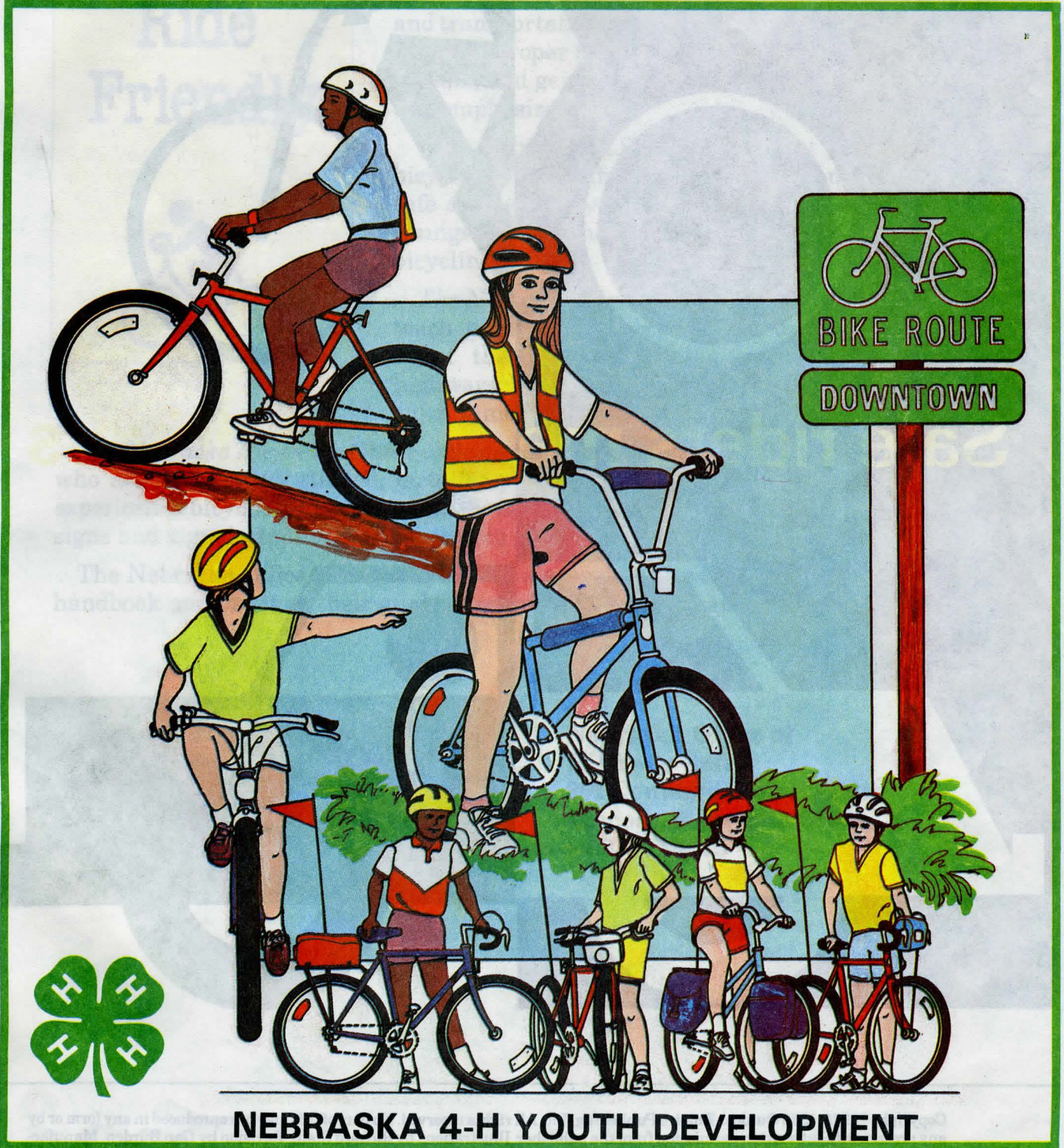
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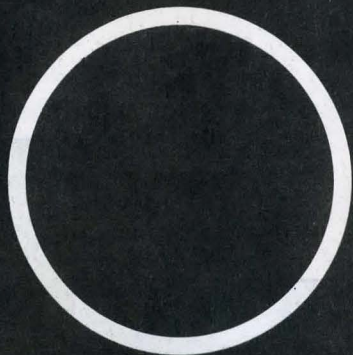
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THE NEBRASKA BICYCLIST'S GUIDE



NEBRASKA 4-H YOUTH DEVELOPMENT

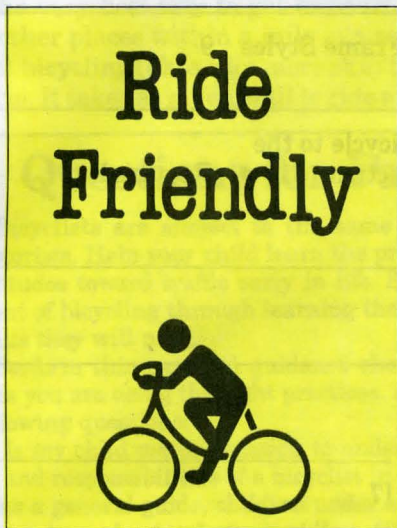
Bike safety is as important as automobile safety. The person who is a safe cyclist also will be a safe driver.



Safe riders make safe drivers



FOREWORD



With the large number of persons throughout the United States using bicycles for recreation, exercise, and transportation, the need to stress the importance of learning proper handling skills, traffic laws, signs and signals, and general bicycle safety practices cannot be overemphasized.

Our current traffic environment requires that bicyclists obey traffic laws and regulations, and practice safe conduct. Bicycle safety education is essential for youngsters and the growing number of adults who are bicycling.

The Nebraska Bicyclist's Guide has been prepared to teach good safety practices and to inform bicyclists about the laws for driving on public streets and highways. Whatever your reasons for bicycling, you will enjoy it more if you learn to ride safely.

The Nebraska Bicyclist's Guide provides an introduction in bicycling for those of you who are just getting started, facts for parents and technical information for more experienced bicyclists. It contains traffic laws, safety rules, recommendations, highway signs and signals applicable to operators of bicycles.

The Nebraska Office of Highway Safety sincerely hopes all bicyclists will read this handbook and use it as their guide to safer and more enjoyable bicycling.



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Welcome to Bicycling

Bicycling is popular for all ages. Almost all families now have bicycles. Perhaps you have already discovered that it gives you more energy, takes you fun places, and gets you out with your friends. Bicycles are also cheap to operate, and they give you daily exercise. It's the very best way to get to nearby stores, school, and other places within a mile or two of your house.

But bicycling takes a lot more skill than most people realize. It takes as much skill to ride a bicycle safely as

Questions for Parents

Bicyclists are subject to the same traffic laws as motorists. Help your child learn the proper habits and attitudes toward traffic early in life. Share the enjoyment of bicycling through learning the knowledge and skills they will need.

Perform this parental guidance check list to make sure you are using the right practices. Ask yourself the following questions:

Is my child mature enough to understand the rules and responsibilities of a bicyclist in traffic?

As a general guide, children under age seven are too young to understand street riding. Children seven to nine need parental supervision in their first eight to 12 months of street riding. Children 10-12 still need support, and should limit all riding to daylight hours. Ages 13 and older should avoid twilight and night riding, if possible. If available, get your child enrolled in a school or after school bicycle training class that offers a minimum of 10 hours of instruction. Similar courses are available for adults in some communities.

Am I willing to shop carefully for a well-made bicycle that is the correct size for my child? Never buy a bike to grow into.

Am I willing to help my child learn and enjoy a bicycle? We suggest a minimum of five hours riding with your son or daughter each month, for the first six to 12 months. The child will use you as his role model, so be precise and correct at all times. Continue this teaching when you drive.

Do we live in an area which is safe for children on bicycles? If not, are there bicycle paths or other nearby places where children may learn to bicycle safely?

Will I make sure that my child has an adequate knowledge of traffic, develops the right attitudes, and learns the proper handling skills?

Do I have the patience not only to teach my child traffic laws and safety rules, but to *enforce* them as well? You decide what is acceptable. At the minimum, your child should always start his trip at the street, mounting, then searching. This will reduce his chance of serious injury by 50 percent for ages eight and under.

Will my child keep the bicycle in good mechanical condition, and will I assist with bicycle maintenance and repairs which are beyond my child's skill?

You should consider purchasing a bicycle for your child only if your answers are all "yes."



it does to drive a car. And since bicyclists have a low profile in traffic, and are unprotected, they need even more defensive riding skills than a motorist. Also, too many adults are doing the wrong things. And if you are young and just beginning to ride, by trying to copy what some untrained adults are doing, you can get hurt. That's why we gave you this booklet.

The more skills you practice, the more you learn about how bikes and traffic work, and the more you prepare yourself, the more fun bicycling will be. You will be able to go more places, and ride more hours. You will be more self-reliant. And you will be more aware of how to share experiences and space.

If you haven't already, we think you will quickly learn bicycle handling skills. We will also teach you how to select a bike, how to adjust it for your body, and how to care for it, so that it always works. That is the easy part.

We also want to make sure you know how all of the traffic signs work. You should know all of the traffic laws, and how they apply to bicyclists. Our scientists and engineers have devoted a lot of time to work out ways for one vehicle operator to communicate quickly with another. Our laws and signs do this for us. It will take you years to learn traffic skills. You will never stop learning. You will use this information forever.

Helping Your Child

Once you have said yes to allowing your child to learn about traffic through bicycling, there are several

important decisions. First, your child will be hurt on a bicycle sometime. There are far too many things that can cause a fall or a collision. So, accept this. Your job as a parent is to assure that no serious harm will result. A helmet is highly recommended. Nearly 75 percent of all fatal or serious injuries to a bicyclist are from head injuries. And half the time your child falls, he will hit his head. Help make a helmet cool and acceptable. Just as with seatbelts, make helmet use "the thing to do." If most parents at your school insist on this, helmets will become quickly accepted.

Know the bicycle laws yourself. Help your child understand why it is important to ride with traffic always, never against. Go over the laws and skills in this book. Practice scanning activities and other skill development. Help your child understand why it is important to wear colorful, bright clothing, and to know when he is hidden.

Keep in mind residential sidewalks may be a legal place for children to ride in many towns, but they require special skill. Your child is often hidden from traffic when on a sidewalk, and people may pull or back across his path. Be realistic. Try riding on sidewalks yourself, so that you understand what to search for.

When your child is ready to ride on the streets in your neighborhood, insist that he always walk his bike to the street, mount the bike, then begin searching. Simply to ride out of the driveway, the way a lot of adults do it, cannot be safely performed by young children.

Legal Responsibility

According to Nebraska law, a bicyclist must obey all state and local driving laws.

Local Ordinances

In Nebraska, cities, towns and other local municipalities make laws for bicycle riding, registration and licensing. Some towns have bicycle laws (ordinances) and others do not. Some towns permit bicycling on sidewalks in certain areas, while others prohibit all sidewalk bicycling. Check with your local police for a copy of the local bicycle codes. A bicyclist is required to obey all local bicycle ordinances as well as the state motor vehicle laws.

In Nebraska, the local police must be notified of an accident involving a bicycle and motor vehicle if the accident results in personal injury or damage to the property of any person in excess of \$500.

Chapter 1

After reading this chapter, the bicyclist will be able to:

- compare different bicycle models.
- determine the best bicycle model for his or her needs.
- label major bicycle parts.

Which Bicycle To Choose?

Types of Bikes

The most common bicycles are cruisers, all terrain (mountain) bikes, lightweight, BMX (motocross), and freestyle. Each style handles differently. Some are great for street riding, some for comfort, others are better for longer distances. Choose your bike for the kind of travel you will do the most.

Cruisers. This is a low cost, middle weight, comfortable bike for distances of 15 miles and under. This bike handles rough streets well. It has a wide saddle, coaster brakes, and only one gear. It allows an upright view of traffic. It is one of the most popular bikes for adults today.

All Terrain (Mountain) Bikes. This bike is a cousin to the cruiser. It can be of moderate cost or very expensive. How well it performs depends on how much

Mountain bike



BMX



you invest. This bike has multiple speeds from five to 18 gears, and is important for rugged or hilly terrain. The brakes use powerful cantilevered or cam driven hand levers. You can use this bike for distances up to 45 miles, or more, if you are in good shape. It is the favorite for any off-road use. It is also the best bike you can buy for short commute trips. It also allows an upright view of traffic, and handles just about any road condition better than any other bike.

Lightweight. The lightweight bicycle is built for long-distance travel. The less the bicycle weighs and the more gears it has, the easier it is to ride without getting tired. This model has hard innertube tires that go fast (it can cruise at speeds of 12-25 mph) but can slip on gravel. It is not recommended for young bicyclists.

Some lightweight bicycles are designed only for racing. Others have designs that work best for touring. Both have hand brakes, and from five to 18 gears. For maximum efficiency these bikes have dropped handlebars, sleek saddles, and lightweight wheels. They do well for long distances including 80-120 miles a day. The lightweight is the most efficient of all bicycles. To enjoy them fully you need to stay in condition. People who only ride occasionally may find them uncomfortable, causing them to be bent over too much, especially in traffic. They are more responsive, but more delicate than other designs, and do not handle rough streets as well as other models.

Three- or Five-Speed Recreational. This style

has a gear control on the handlebars. It has upright handlebars and caliper brakes, besides a coaster brake on some three-speed models. Tires are the *clincher* innertube type (also known as *wired-ons*). Wheels are no smaller than 24 inches. This bicycle looks like a single-speed middleweight with narrower tires and a lighter frame.

Lightweight Derailleur. The lightweight derailleur weighs less than the three- or five-speed recreational model. It has front and rear caliper brakes, a narrow unpadded touring seat, and upright or dropped-down handlebars. To use dropped-down handlebars, you either bend forward to reduce wind resistance, or sit upright to see the traffic around you. This model may have clincher tires, or it may be equipped with more expensive *tubular* innertube tires (also known as *sew-ups*).

Derailleur refers to gears. There may be five, ten, fifteen (up to twenty-one) gears, depending on the number of chain wheels and sprockets. To shift gears, you work a lever near the handlebars which moves a guide that derails the chain from one sprocket to another. Gears are also called *speeds*.

BMX (Bicycle MotoCross). This is now the most popular bike for young children. This bike handles well both on the street and on dirt trails. Its rugged design handles most road conditions. The coaster brake is adequate for the low speeds on flat terrain. Some models also have a front hand brake that increases your braking performance. This is impor-

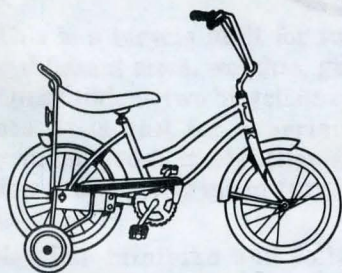
Triwheeler



Freestyle



Sidewalk



Tandem



tant as you get older and if you ride on hills. Consider optional safety equipment, including the top bar and handlebar padding.

Freestyle. Often more expensive than the BMX bike. Much higher performance is possible. This bike, too, can handle rough roads and trails. It has many

Open frame



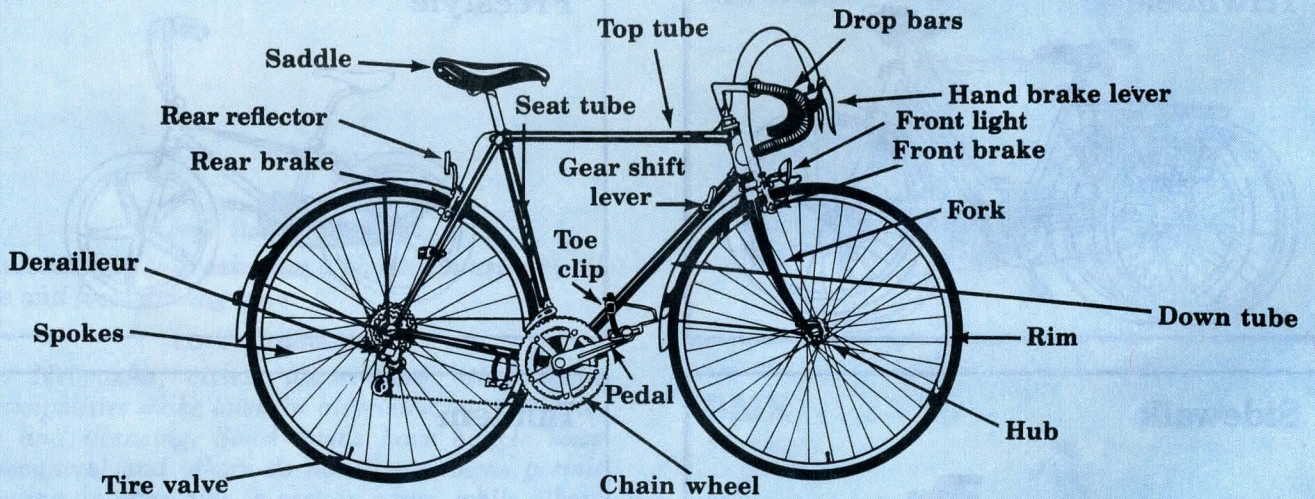
Diamond frame



Mixte frame



Parts of a Lightweight Multi-speed Bicycle



features that allow “trick riding,” and other gymnastic skills. Its stylized features create a slick image. More importantly, its high cost components can give a much better ride and handling. This bike should only be purchased after you have mastered basic riding skills, and have shown that you can take care of and maintain a bicycle properly.

High-Rise. The high-rise weighs 35 to 45 pounds and is similar to the motocross, but it is for neighborhood use only. It has small 20-inch wheels, high-rise handlebars, plus a coaster brake and a long “banana” seat. Some models also come with hand (caliper) brakes and gears. If your hands are small, it might be hard to work these brakes; also, front caliper brakes can pitch the rider forward if not used properly. Since high handlebars and a rear sitting position make it easy to fall off, the high-rise bicycle is not a good choice for beginners.

Sometimes the gear control is mounted on the top tube, and this can hurt you in a fall; a gear shift on the handlebars is better. Also, a high *sissy bar* post behind the seat is not recommended if it is over five inches above the seat. Riders tend to lean against it, causing the bicycle and the rider to flip backwards. If you buy a used high-rise model, remove the sissy bar.

Other Bikes. Other models can be used for special riding. Some bikes use a recumbent design, and some can be folded and stored in the back of a car, plane, or boat. Others are used only for track riding, and yet others have three wheels, for people who need extra balance.

Special Models

Sidewalk. This bicycle is for very young beginners. It looks like a small single-speed middleweight, usually with two rear training wheels for extra stability. It must have coaster brakes to be safe. Some models have an adjustable top tube that converts to boys’ or girls’ style. The better brands have wide innertube tires rather than solid rubber tires. This model should be used only on sidewalks and other safe areas — never on the street.

Adult Triwheeler. The large tricycle design is useful for shopping, when equipped with a wire carrying basket between the two rear wheels. It often has front caliper brakes in addition to the usual rear coaster brake.

Tandem. This is a bicycle built for two. You may choose among different sizes, weights, gears, brakes, and saddles. On a tandem, two bicyclists can travel for long distances. It is best for experienced riders, because they must pedal it together in the same rhythm. At slow speeds, steering or turning this bicycle is difficult.

Collapsible. The minibike and collapsible ten-speed models are for adults. Both types fold for easy

storage. The minibike has a small frame and wheels, with gears like a lightweight. The collapsible ten-speed is a full-size lightweight.

Custom Built

These models are costly because the frames are made of extra-strong, lightweight metal alloys. Also, each frame is built exactly for one owner’s body size and riding needs.

Track. This style has one fixed gear, no brakes, ultralight tubular tires, and a narrow, unpadded racing seat. Backpedaling slows its speed. A track bicycle is used only on smooth, high-speed racing tracks.

Road Racing. A custom-built touring bicycle is usually more expensive than a track bicycle. Higher cost is due to special derailleur gears and other parts needed for maximum riding efficiency. This bicycle has tubular tires and a narrow, unpadded racing seat. It is used for long-distance travel on many kinds of roads.

Frame Styles

Open. The open frame is designed to allow the rider to get on and off easily. It is not as strong as other frame styles, and tends to flex as you ride, especially with heavy loads on the rear. It is good for learning to ride and for light use.

Diamond. The diamond frame is the strongest type. The top tube provides a strong tie between front and rear, so the bicycle has less flex while moving.

Mixte. The mixte frame is almost as strong as the diamond frame. Frame sizes are limited in this style.

Chapter 2

After reading this chapter, the bicyclist will be able to:

- choose the proper bicycle frame size.
- adjust bicycle parts to fit the rider.
- tell which bicycle accessories are required by law.
- identify basic bicycle parts and their functions.

Buying Your Bicycle

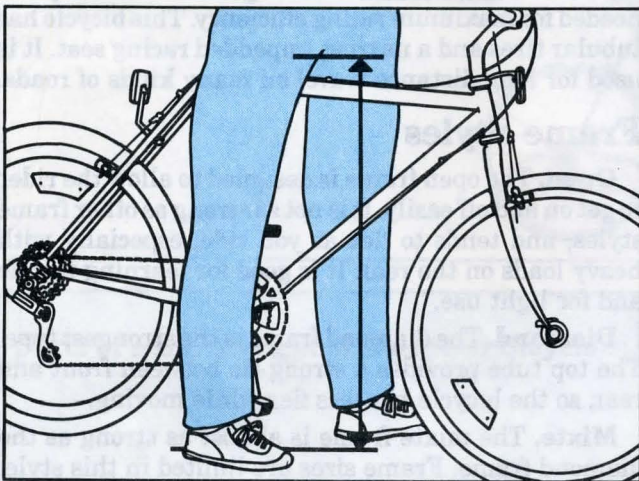
Where to Shop

When buying a bicycle, it is wise to shop at a local bicycle dealer. The owner knows how to put a bicycle together and will cover the warranty on repairs.

Eight Questions to Ask

How can you be sure that you have the best bicycle for your needs? First of all you must choose carefully. Review these points:

- Am I a beginner, or have I bicycled a lot?
- Do I bicycle over short or long distances?
- Will I give my bicycle gentle or rough use?
- Which special features would help me to use a bicycle for the purposes I have in mind?
- How much bicycle maintenance can I do?
- Where will I keep the bicycle?
- How much do I want to spend? Would a good used bicycle do the job?
- Is there a reliable bicycle dealer nearby?



There should be one inch of space between you and the top tube.

Fitting the Bicycle to the Rider

Probably the most important part of buying a bicycle is to make sure that it fits the rider. If a bicycle is too large, it will sway from side to side; a small rider may not be able to stop a large bicycle without falling over. On the other hand, if the bicycle is too small, the rider's knees will bump against the frame and the bicycle will be hard to steer. **Nobody should ever buy a too-large bicycle with the idea that the child will grow into it.**

How to Measure Frame Size

Proper Size. Bicycles are measured by frame size. The frame size is measured from the point where the seat tube enters the frame to the center of the crank hanger. To find the correct frame size, match your leg length to frame size as shown on the chart.

To match your leg length to frame size on the chart, first measure the length of your leg. Measure the length of your leg (the inseam distance to the floor). Finally, match your leg length to the correct bicycle frame size shown on the chart.

Bicycle Frame and Wheel Size Chart

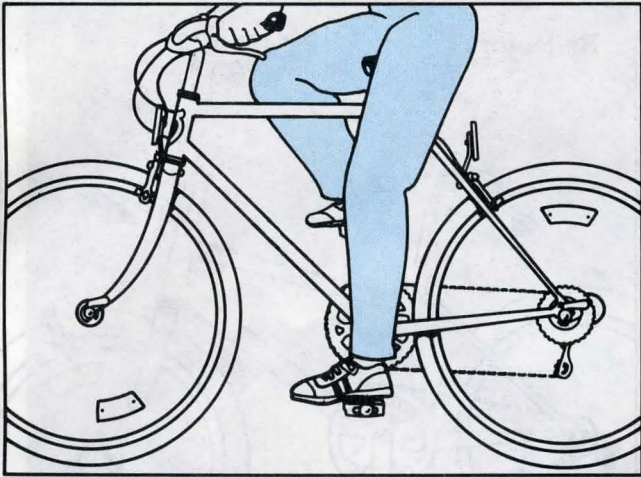
Age	Leg Length (inseam to floor)	Frame Size	Wheel Size	
2-4	Less than 22½ in. (57.15 cm)	depends on age	12-in. (30.48 cm)	
5-9	Less than 22½ in. (57.15 cm)	depends on age	16-in. (40.64 cm)	
	22½ in. (57.15 cm)		20-in. (50.80 cm)	
	26-28 in. (66.04-71.12 cm)		24-in. (60.96 cm)	
10 & over	28-29 in. (71.12-73.66 cm)	17-in. (43.18 cm)	26-in. (66.04 cm)	
	30-31 in. (76.20-78.74 cm.)	19-in. (48.26 cm)		
	33 in. (83.82 cm)	21-in. (53.34 cm)		
	34 in. (86.36 cm)	23-in. (58.42 cm)		
	31½ in. (80.01 cm)	19-in. (48.26 cm)		27-in. (68.58 cm)
	32½ in. (82.55 cm)	21-in. (53.34 cm)		
	33½ in. (85.09 cm)	22-in. (55.88 cm)		
	34½ in. (87.63 cm)	23-in. (58.42 cm)		
	35½ in. (90.17 cm)	24-in. (60.96 cm)		
	36½ in. (92.71 cm)	25-in. (63.50 cm)		

After choosing your frame size, use the following methods to double-check the bicycle's fit:

1. **Measuring the top tube length:** Lay your forearm along the top tube, with your elbow touching the seat tube. Your fingertips should just reach the handlebar stem. If you can't reach the handlebar stem in this position, you will have to bend too far forward to reach the caliper brake levers when riding. Distance between seat tube and handlebar stem increases with frame size. Measure a girl's bicycle where a top tube could be placed. If the top tube is not the correct length, you may have the wrong frame size, or need to adjust the seat, forward or back.
2. **Measuring the top tube clearance.** Take off your shoes and stand over the top tube of the frame, with both feet flat on the ground. You should be able to straddle the top tube with an inch to spare, so you can mount or dismount easily. If the top tube is too high or too low, you may have the wrong frame size which makes handling difficult.

Saddle Height. *Nebraska law requires that a bicyclist must be able to sit on a permanent seat while riding.* A saddle that is too high is very unsafe, but too-low a saddle can strain the legs. The correct seat height allows a rider the maximum pedaling power, but beginners sometimes put their seats lower than usual to make getting on and off easier.

To find the correct seat height, have someone hold the bicycle upright while you sit on the saddle in stocking feet, resting your heel on the pedal in its lowest position. Your leg should be straight, without



Correct seat height allows maximum pedaling power.

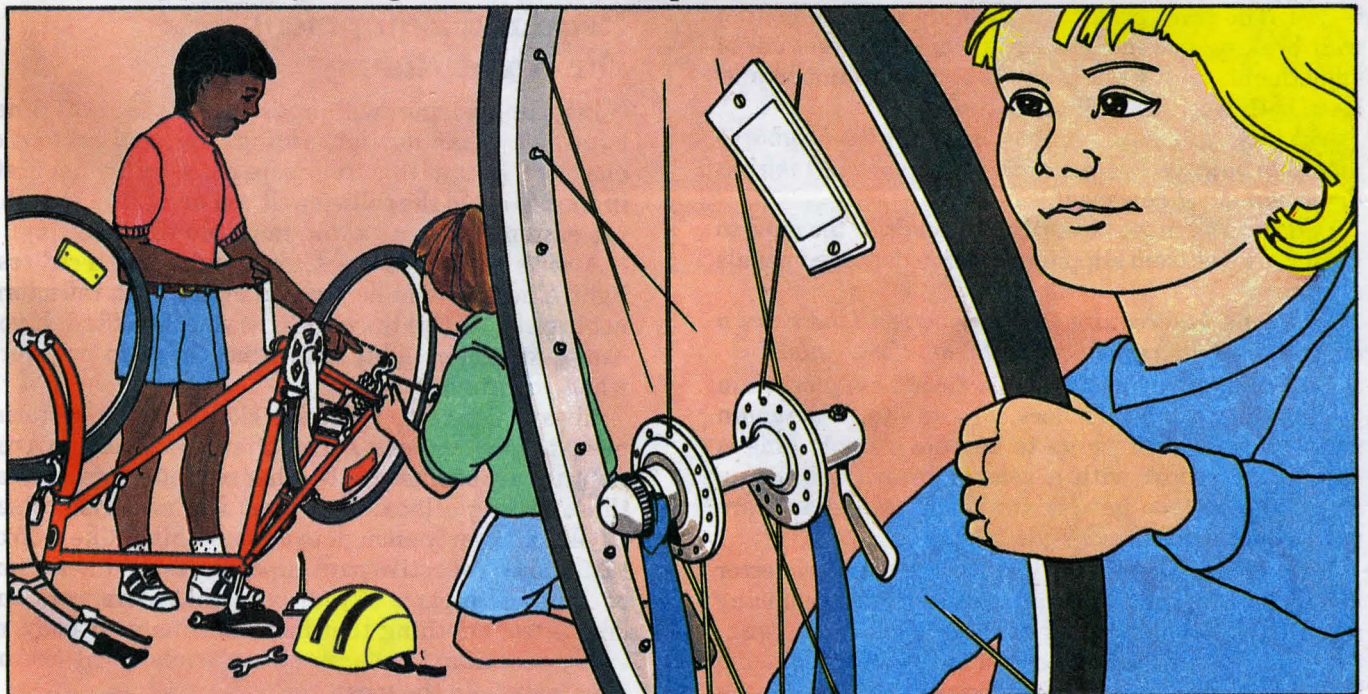
stretching the muscles. If you adjust the seat to fit you in this position, then your knee will be slightly bent when you push the pedal to the bottom of its stroke using the ball of your foot. This allows you the maximum pedaling power; it is the correct saddle height.

Another way to determine the correct height of the saddle is to adjust it so that you can sit on the seat with the balls of your feet resting lightly on the ground.

To move the saddle to the correct height, loosen the bolt in the bracket at the top of the seat tube. Most seatposts lack markings to show the maximum distance the post should be raised, so check to make sure that at least two inches of the seatpost remain inside the tube. Once you have determined the proper height, do yourself a favor, and lightly score the seat post with a file so that you never lose this measurement.

Besides checking the height, notice if the top surface

Always keep your bicycle in good mechanical shape.



of the saddle is level. If it either tilts forward or backward, you will be fighting to stay on the bike, or place too much pressure on your hands, arms, and neck. Keep it level.

Equipment Inspection

The U.S. Consumer Product Safety Commission publishes safety regulations for bicycles. Look over your bicycle carefully to make sure that it meets these standards, which are included here.

When you purchased your bike it met all the industry standards. To make sure it is still in good shape, and to tune your bike periodically, follow this guide at least once a year, and before any major ride.

Frame. Inspect the welding on the frame's joints to make sure it is smooth with no fractures in the metal. Frame tubes may still be fine if they are lightly dented, but any buckling, or severe dent can cause the bike to collapse. The front fork or rear stays are critical. Any breaks or fractures here should be repaired or replaced at once.

Consider adding top tube padding if you use your bike for off-road travel. It not only helps you carry the bike, but can soften the blow if you fall.

Wheels. Check to make sure that when you spin your wheels they do not wobble to and fro. Wobbles can result from two problems. If the axle assembly is loose, you need to tighten it. If the wheel has been damaged and is out of alignment, the spokes will need adjusting, or need to be replaced when broken or missing.

To check for loose axle assembly, grasp the top of the wheel, and push back and forth. If there is any movement, then tighten the axle cone nuts slightly. Once tightened, the wheel must still spin freely.

To check for wheel alignment, hold the bike slightly off the ground and spin the wheel slowly. If the wheel wobbles more than a quarter inch, it should be adjusted. Often this requires a mechanic. Once you become highly skilled you can do this yourself.

Finally, make sure there are no dents or bulges in the rim. This is especially important when you have hand brakes. Your brakes will not adjust properly unless your rims remain adjusted and undamaged.

Tires. Tires should have plenty of tread left. Leaving your bike in the sun and rain will ruin bike tires. Check to see if there is any cracking in the rubber. Keep your valve stem pointing straight, not angled against the rim. In some parts of the country, where there are lots of thorns, you can get special thornproof tubes. By taking these precautions you will not have as many flats.

Handlebars. Regular upright handlebars should be as wide as your shoulders. They should be level with your saddle. Tape or firm grips are essential. On all terrain bikes or for other rugged use, extra padding is recommended. Use handlebar pads if you plan to use your bike for BMX or all terrain riding. If your light-weight bike has downturned bars, never turn these up. If you want added comfort or a higher position when riding in traffic, consider purchasing standard bars.

Nebraska law require that at least one hand be on the handle bars at all times.

Brakes. Coaster brakes should work smoothly and without noise. The coaster brake arm should always be attached to the frame. Caliper brakes require more adjusting. When you squeeze them firmly there should still be one inch of clearance to the bars. Replace worn or damaged brake pads. You can often upgrade brake pads to some that are larger, and that perform better in wet weather. Make sure the cables are not worn or frayed. The front brake gives you up to 80 percent of your braking power, so never let this brake get out of adjustment. Your back brake is also quite important. Keep both working well at all times.

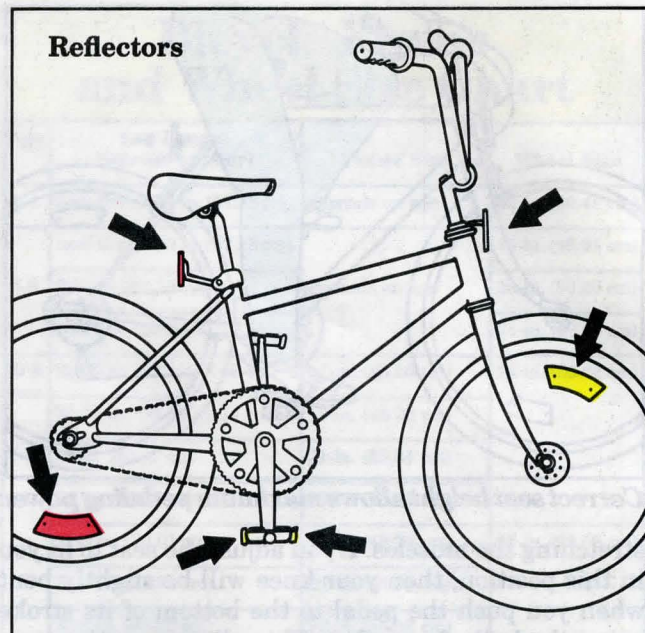
Nebraska law requires that bicycle brakes be able to take hold quickly and make the braked wheel(s) skid on dry, clean, level pavement.

Pedals. You must have rubber treads or toe clips to keep your feet from slipping. Replace damaged pedals at once.

Nebraska law require that any person who rides a bicycle shall not remove his feet from the pedals.

Chain. The drive chain should never have more than one half inch of play. If it does, it could slip off the chain ring, or cause your pants to become caught. This is especially critical with a coaster brake. Without a chain in place you have no brakes. Chain guards are useful on coaster brake style bikes.

Reflectors. Make sure you have a white reflector facing toward the front, and a red reflector facing toward the rear. Do not get these backwards, since motorists are trained to respond to the color red being to the rear, and white to the front of a vehicle. Check



periodically to make sure that these reflectors are angled properly. They are useless if they point upward, downward, or to either side.

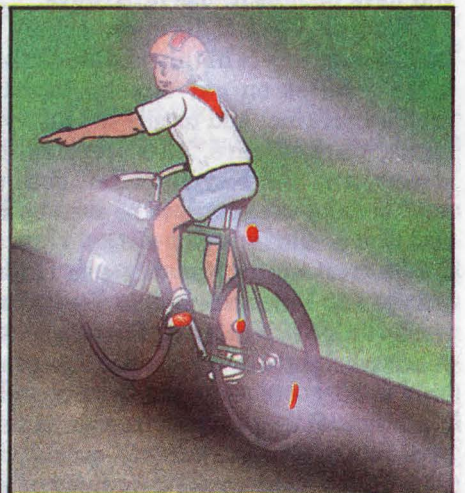
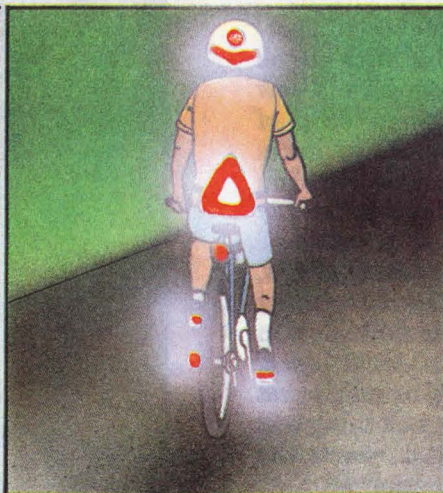
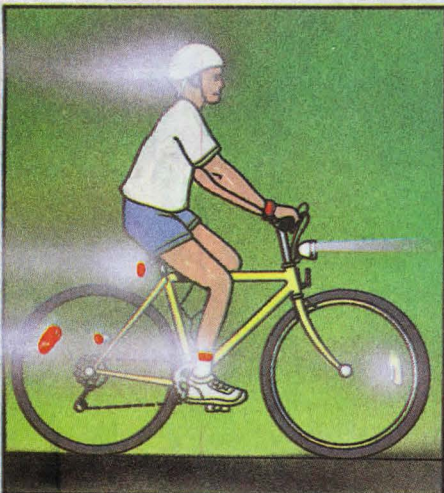
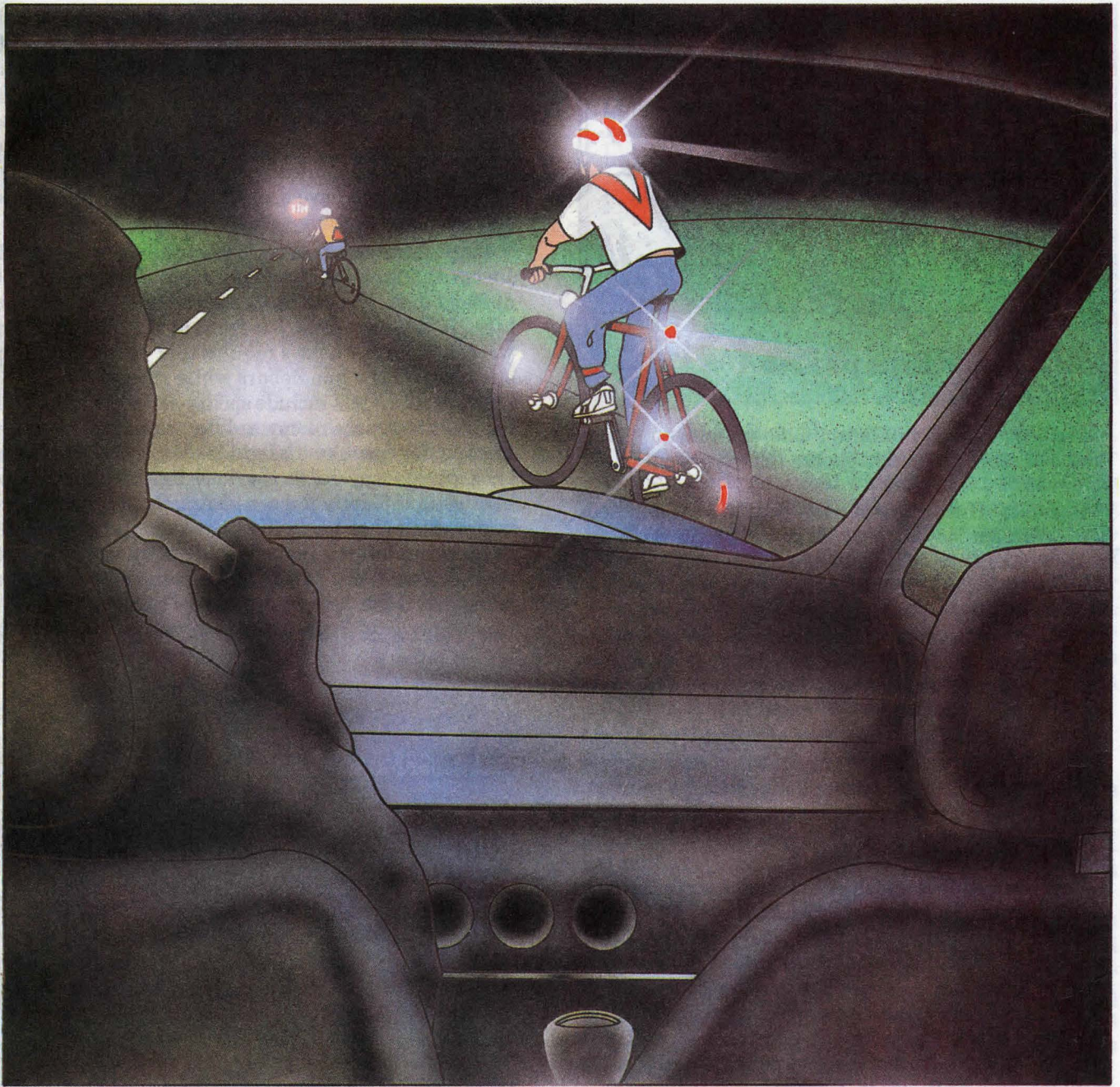
Pedal reflectors are quite important for night riding. Keep them clean, and replace any that break. Other reflectors are required in your spokes. They help illuminate you from the side. Use caution. Do not depend on these. Often they bounce light to a motorist's headlights far later than necessary. Finally, consider adding reflective tape to the back of your bike (seat tubes), the front side of your front forks, and to your crank arms. These tend to flash at the motorist and help illuminate and outline your bike for early detection.

Required Equipment For Night Riding

Bicycling during twilight or at night is 11-20 times more risky than daylight riding. Up to 80 percent of bicyclists hurt at this time were not seen by motorists in time to avoid the collision. If you must ride at night, use extreme care. At a minimum, do the following:

Always use both a front white light, and a red rear light. These should be used in addition to reflectors, not instead of. Use the best light you can afford. If you use a generator light, know that these do not work when you are not moving.

Always use retro-reflective clothing. The motorist needs to see your body. All too often, items such as a red reflector are confused with other red reflectors, such as those on a mailbox. You want the motorist to see "YOU" and early enough to do something, like stop or turn. Retro-reflective pant clips, gloves, or other items of clothing on parts of your body that move work the best. Also, anything that helps outline your body, or easily identifiable shapes or materials worn low on your body help the most.



Chapter 3

After reading this chapter, the bicyclist will be able to:

- describe the purpose of optional equipment.
- select the optional safety equipment needed for maximum bicycling protection.

Optional Safety Equipment

What Other Equipment Do You Need?

The law defines minimum safe equipment standards. For more protection choose the extra equipment you need.

Helmets. Until recently, few people wore helmets when riding a bicycle. Now all smart people do. Even at slow speeds, a bicyclist's head can strike a solid object. If you fall, your chances of hitting your head are 50/50. Even if you are already skilled, your chances are still 50/50. Without a helmet your head will be as severely damaged as if it were a melon dropped from a table. Be smart; always wear a helmet to avoid serious head injury in an accident.

When selecting a helmet, here are some tips. A good helmet has a strong outside layer, with crushable but rigid foam under it, and enough air space for comfort. To prevent skull fracture, choose a helmet which covers the back of your head fully, instead of one which comes only halfway to your neck. Make sure that the helmet fits and does not block vision or reduce hearing ability. Avoid any helmet that lacks the ANSI (American National Standards Institute) or SNELL test approval (SNELL Memorial Foundation). If you live in a hot climate, buy a helmet that has good ventilation. Some schools and bike clubs will let you try out an assortment before you buy. A good helmet will cost from \$25-\$85, and is worth every penny. Finally, after you have bought it, use it. Always.

Clothing. Next to head protection, the most important item to buy is highly visible clothing. With all the large vehicles on our streets, bicyclists have a low profile in traffic. Add to this the heavy "visual soup" of signs, parked cars, and storefronts on our main streets, and the bicyclist often goes undetected. You need to take extra care to be seen both during the day and if you ride at night.

The best colors for day are fluorescent yellow, orange, or lime green (fluorescent materials do not work at night). Next in visibility are standard colors in yellow, bright orange, white, or pink. Avoid black, brown, dark blues, greens, and pastels, or colors that blend into the environment. Camouflage clothing will save you in combat, but will quickly harm you in the streets. Be seen at all times. Some specialized high

visibility bicycle clothing is now made that is both attractive and functional. Wear it at all times you ride. (See Night Riding section in Chapter 2.)

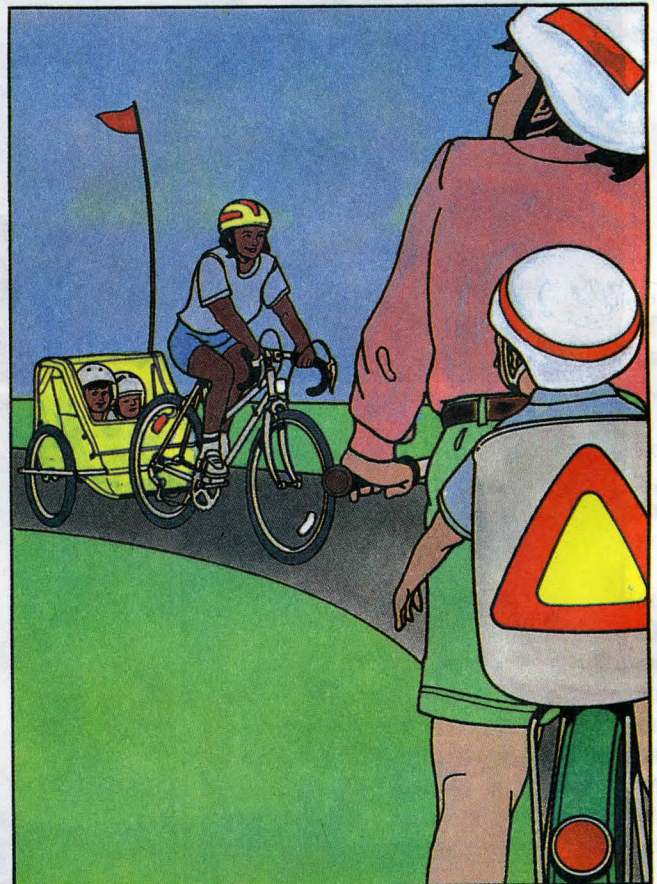
Safety Flag, Spacer Arm. Other items to add to quicken motorist detection of a bicyclist are such features as a pennant shaped flag on a tall flexible pole, or an 18 inch high visibility spacer that extends to the left of the bike. Both have been shown to result in greater detection and passing care by motorists.

Rear Carriers. Don't carry anything in your hands. Instead, transport loads on a rear carrier or saddlebags that can be attached to the rear portion of the bike. It is best to keep the front of the bike free from weight. Most state laws require that you keep at least one hand on the handlebars while riding.

Types of carriers include spring-action carriers, wire baskets, and more roomy saddle and pannier bags for touring. Day packs with light loads are acceptable, but back packs may raise the load too high and make balancing difficult. You can attach them to the bicycle with a rack that holds the pack over the rear wheel. Keep loose clothing tucked inside the pack away from spokes. Make sure that the load rests on the frame or axle, not on the fenders or tires.

Reflectorized Materials. Reflectorized tape on

Share the trail with other cyclists and trail users.



handlebars, frame, fenders, and clothing helps drivers to see you on a dark street. Wear light-colored clothing or a safety vest of dayglow orange fluorescent materials for day and reflective material for night.

Leg Light. You can buy a "T" light to strap on your left leg. This light shines at both ends, and shows your leg pumping the pedal — an eye-catching movement.

Pants Clips or Straps. Reflectorized pants clips which strap your pants close to your leg help keep clothing out of the chain, spokes, and pedals. They also help drivers to see you in the dark.

Horn or Bell. A bell should be heard at least 100 feet away from the bicycle. Don't forget that a loud shout is effective, too! Whistles and sirens are not legal!

Mirrors. A rearview mirror helps you to see the traffic behind without turning around. But choose your mirror carefully. A large mirror can hurt you in a fall against the handlebars. It can also reflect light into your eyes. A good mirror is the convex motorcycle type, set low on the handlebars, or a small mirror worn on your cap, glasses, or the back of your hand.

Caution: Do not substitute your mirror for an actual scan to the rear when moving left. Mirrors only give you part of the traffic picture.

Toe Clips (Toe Straps, Pedal Straps). With practice these allow you to pull up as well as press down on the pedals, giving added power to the wheels. They also prevent your feet from catching in the spokes or slipping off the pedals. Toe clips make backpedaling easier, too. Be sure to practice in an off-street setting before using these on the road.

Children's Seats. Keep in mind that anything over five inches above the saddle can be dangerous. If you do carry a child, use only the type of carrier which fastens to the rear frame of the bicycle, not just to the axle. Seats have been known to fall off with the child strapped in. The seat should have side rails, a restraining strap, foot rests, and leg shields which separate the child's feet from moving spokes. A seat pad adds comfort. Seats fastened to the front frame or handlebars are unstable and should be avoided. Avoid carrying a heavy child on a lightweight model for the same reason.

Carry a child on short rides only. Attach the child carrier to the bicycle of the strongest rider. Buy a helmet for the child and yourself at a bicycle or sporting goods store. Warn the child to keep hands away from the wheels. Include extra clothing for comfort in cold weather, and put terrycloth on the child's seat for comfort in hot weather. Always fasten the safety harness.

Kickstand. A kickstand is used for parking the bicycle. If you must lay the bicycle down flat be certain that the chain side is up. Bicycles may also be placed against trees, poles, or other strong objects for support. Do not block sidewalks.

Chapter 4

After reading this chapter, the bicyclist will be able to:

- perform regular maintenance tasks on basic bicycle parts.
- tell which bicycle repairs should be done by a professional mechanic.
- adjust handlebars and saddle.
- evaluate the overall condition of a bicycle.
- store a bicycle properly.

How to Take Care Of Your Bicycle

A bicycle is vulnerable to weather, rough roads, dirt, and other elements that corrode and cause friction or damage. Check over your bike at least several times each year, before any long bike trips, or any time you will be doing higher speed riding. It's a good practice to inspect your bike visually at least once a month. If possible, take your bicycle to a repair shop once a year for a check up. Or, if you like mechanics, buy a book, then learn to make most repairs yourself. The more pride and knowledge you have about your bike, the more fun you will have, and the more confident you will be in taking longer trips.

Regular Maintenance

Cleaning, oiling, tightening, and inspecting parts can be done by a young bicyclist with a parent's help.

Frame. All nuts, bolts, and fasteners must be tight. Check for loose parts such as fenders which could jam the wheels.

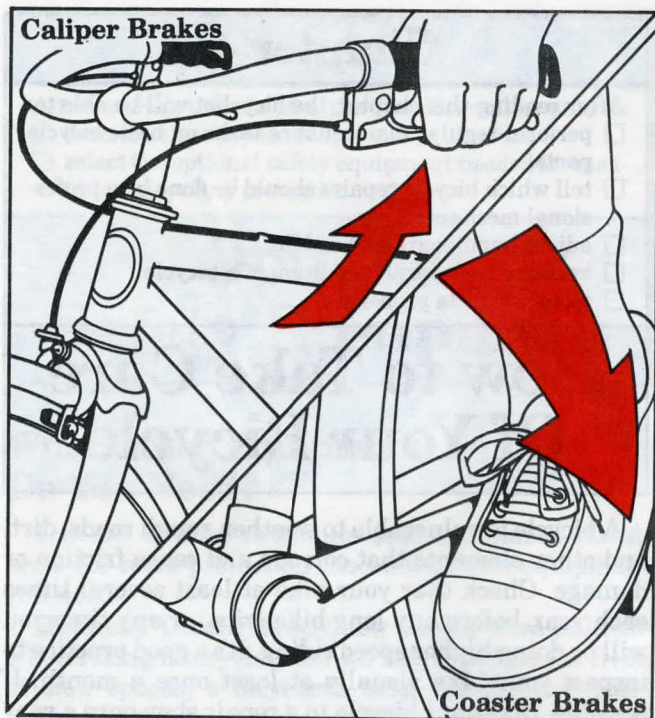
Rub the chrome or nickel-plated parts with a clean rag soaked in light machine oil to wipe off dirt and prevent rust. Clean the painted surfaces with a damp rag; then wipe dry. Put automobile cleaner and wax on the painted parts every three months. (Never polish wheel rims with wax, or brake pads will slip when you try to stop.)

Lights, Reflectors, Mirrors. Clean all lights, reflectors, and mirrors. Replace worn-out batteries and bulbs.

Pedals. The pedals should turn freely and not wiggle from side to side. Put light machine oil next to the crank arm.

Wheels and Spokes. Wheels must be lined up so that they turn evenly between the forks without wobbling. A wheel that rubs against the forks can jam and cause an accident. Bent or broken spokes can cause a wheel to wobble; spokes should be evenly tight so they hold the wheel in a perfect circle. To check for tightness, pluck the spokes like guitar strings, or let a pencil hit them as the wheel turns. They should sound the same all around.

If only one or two spokes are loose, you can tighten



the base of each. But if many spokes need repair, get an expert to do the work. Also, be sure wheel nuts are tight — so the wheels can't fall off.

Saddle. To adjust for correct seat height, raise or lower the seat by loosening the bolt in the bracket at the top of the seat tube; then retighten the bolt. Adjust the seat tilt by loosening the clamp under the seat; then retighten the clamp. Afterward, try hard to twist the saddle up and down, left and right. If it moves, retighten the bolt or clamp. Clean a leather saddle with saddle soap.

Handlebars. The handlebars should be tight, yet give a little when twisted hard, so they absorb the shock of a fall. But handlebars should never slip when you force down on them. If they do slip, tighten the adjusting nut where the stem meets the head tube; or tighten the stem binder bolt at the top of the handlebar stem.

Cement loose hand grips to the handlebars.

Tires. Check your bicycle manual or the print on the tire sides for the correct air pressure. Then pump the tires up to the right air pressure using a hand pump and a bicycle tire gauge. Use a powerful gas station air hose carefully because the tires might explode under the pressure.

Remember that low air pressure can wear out tires, wheel rims, and you. But over-inflation and thin rubber can cause a blowout if you hit a sharp object. Danger signs include cuts or cracks in the rubber, and thin thread. Keep oil and grease off the tires to prevent the rubber from rotting.

If you suspect an air leak, wipe a little soapy water on the tire and watch for bubbles of escaping air. If you detect air leaking from a valve stem, tighten it with a small wrench; some valve caps have a built-in wrench

for this purpose.

Brakes (Coaster and Caliper). *Coaster (foot) brakes* may never need repair if you take care of them. Every month put two or three drops of light machine oil in the nipple on the rear wheel hub. This lubricates the inside parts of the coaster brake and also the three- or five-speed gear system on lightweight recreational models.

A noisy coaster brake means trouble. The arm of the coaster brake must be firmly attached to the frame, or all braking power will be lost. These are problems for an expert mechanic.

Caliper (hand) brakes work best when the bicycle rims are clean and rust-free. Dirty rims wear down brake pads and cause the pads to slip when braking. Caliper brake pads should clear the wheel rim by one-eighth inch. Ask how to replace worn pads at a bicycle shop.

Lightly oil pivot bolts on the caliper brake arms once a month. Tighten brake bolts and nuts, and tie or tape brake cables to the frame so brake pads can't jam the wheels if brake bolts loosen.

Chain. Keep the chain clean. Oil it lightly or lubricate it with chain spray; too much oil will attract dirt. Check the chain often for broken links. On a single- or three-speed bicycle, the chain should have only one-fourth to one-half-inch slack, to prevent it from dragging and falling off. (Pedals, coaster brake, and gears cannot work if the chain falls off.)

Chains stretch with wear and need tightening. Ask an expert to fix a loose or damaged chain. If the chain links jump or twist while passing over the chainwheel, you will have to replace the chain.

Gears. Speed selector cables stretch with use. Gears will almost shift themselves if the cables are loose, but they will be hard to shift if the cables are tight. For longer cable wear, place the gearshift lever in the slack (high gear or far forward) position when the bicycle is not in use.

A bicycle shop should adjust speed selector cables, as well as any other parts of the gear system that stick or slip. Use spray lubricant on gear levers and derailleur.

Bearings. Bearings must be cleaned and greased at least once a year to prevent the bicycle's joints from becoming stiff (dirty and rusty). Have a bicycle shop clean and grease the steering tube (headset), the front and rear wheel hubs, the crank hanger (bottom bracket connected to the pedals), and the pedals themselves. Some pedals are sealed and cannot be serviced, but other pedals can be taken apart to clean and grease them.

Storage

Store your bicycle indoors. Moisture may cause rust, and sunlight can make tires crack. To store for a long time, hang your bicycle on hooks from the frame, or hang the bicycle on a hook which holds the wheel rim. Taking the weight off the tires gives longer tire wear.

Chapter 5

- After reading this chapter, the bicyclist will be able to:
- indicate the best type of bicycle locking equipment.
 - display the most secure method for locking a bicycle.
 - keep proper records on the bicycle.

How to Protect Your Bicycle from Theft

Some Tips to Keep Your Bike

If your bicycle is stolen, you have a one-in-ten chance of recovering it. Here are some tips on how to keep your bicycle where it belongs: in your possession.

- First, register your bike with the police. Sometimes you can do this at the bike shop. Most police departments and some bike shops will also help you add your social security number to the underside of your bottom bracket. This helps you recover your bike.
- Second, buy the best lock you can afford. If you have a \$250 bicycle and a \$10 lock, guess how much your bike is worth? A \$25-35 lock will keep the value of your bike for a long time.
- Third, when shopping always lock your bike where you and lots of the public can see it. A large utility pole in front of the store you are in will work. If you do not lock your bike, it belongs to someone else.
- Next, never leave your bike locked on the front porch, the side yard, or somewhere else where a thief can see it. The best place at home is in a locked garage, a secure hallway, or somewhere else out of sight.
- Finally, you need your entire bike. When you lock it, run a cable through the frame, back and front wheel, and lock it to something solid. And never, never lock it to a railing or some other location where you could trip someone or block their movement.

Locks

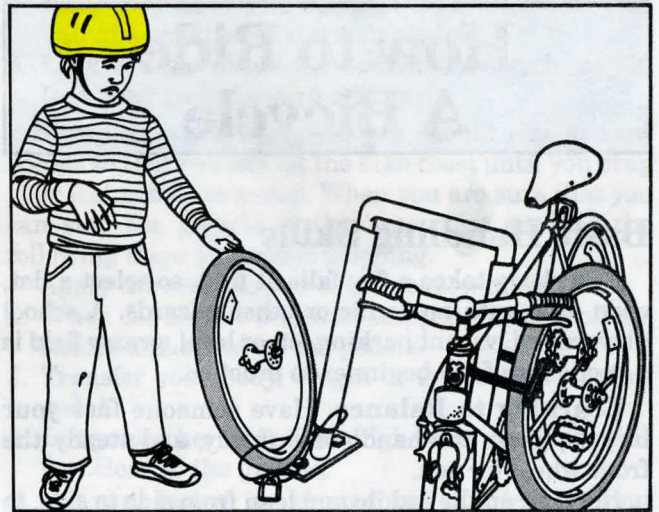
Each year thousands of bicycles are stolen. You will need to use a good lock in order to keep any bicycle. Never leave your bicycle unlocked in a front yard or open garage. When you leave your bicycle, attach it to a fixed object. Also, make sure that your bicycle can be seen easily. Hiding your bicycle behind bushes never hides it from thieves; it just gives them more cover while they break the lock.

One locking method is to use a good lock and a three-eighth-inch steel chain. Many chains are covered with plastic to protect the bicycle's finish. To lock your bicycle, feed the chain through both the front and rear wheels as well as the frame, and put the chain around a fixed object. Then lock the ends of the chain together. (A good fixed object is a telephone pole, bicycle rack, or

metal stairway railing.) Other locking procedures and equipment are also available.

If your bicycle has *quick-release wheels*, you may remove the front wheel and lock it along with the rear wheel and frame. Or carry the front wheel with you to avoid having it stolen.

Never use a flimsy combination lock or a light chain. And remember, if you lock only the front wheel, that may be the only part left when you return!

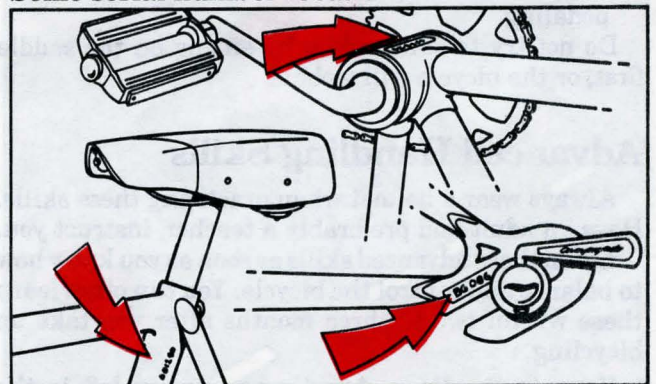


Identification

Take the following steps for extra protection:

1. Locate the serial number on the bicycle. It is usually stamped on the bottom of the crank hanger, on the seat tube, or on the outside of the left chain stay.
2. Record the serial number and keep it in a safe place together with the sales receipt and a photograph of the bicycle.
3. Engrave your parent's or your own driver's license number on the frame, so it cannot be rubbed off by a thief. Most law enforcement agencies will loan you a small electronic engraver for this purpose.
4. If your bicycle is stolen, report it to the police immediately. Visit your local police station to check any stolen bicycles that have been turned in.
5. If your area has a bicycle registration program, be sure to use it.

Some serial number locations



Chapter 6

After reading this chapter, the bicyclist will be able to:

- balance and pedal a bicycle with assistance.
- describe basic riding techniques of braking, shifting gears, skidding, avoiding obstacles, and making curves and turns.
- demonstrate basic bicycling practice skills.
- exhibit the six features of good riding form.

How to Ride A Bicycle

Basic Handling Skills

Everybody takes a few falls at first, so select a flat, open area with no traffic or other hazards. A school playground, vacant parking lot, or level, grassy field is a good place for a beginner to practice.

Learning to Balance. Have someone face your bicycle, grasp the handlebars firmly, and steady the front wheel for you.

Next, sit on the saddle and lean from side to side, to get a sense of balance.

Learning to Pedal. Have someone hold the back of the saddle and run behind your bicycle as you pedal slowly. When you can pedal smoothly without wobbling, the other person should quietly let go of the bicycle.

Starting to Ride by Yourself. After you have learned how to balance and pedal, follow these steps to get started without someone holding the bicycle:

1. Lean the bicycle toward you.
2. Swing one leg over the top tube.
3. Look behind and to both sides to make sure the way is clear.
4. Place the right pedal in the "up" position and put your right foot on it. (Use the left pedal if you are left-handed.)
5. Press down on the high pedal, pushing off the ground with the ball of your other foot.
6. Lift yourself back and onto the saddle.
7. Put your other foot on the other pedal and continue pedaling.

Do not try to start riding by sitting on the saddle first, or the bicycle will wobble.

Advanced Handling Skills

Always wear a helmet when practicing these skills. Have an adult and preferably a teacher, instruct you.

Learn these advanced skills as soon as you know how to balance and control the bicycle. You can often learn these within two to three months after you take up bicycling.

Scan to the Rear. Any time you move left in the

roadway you must first search to the rear for any traffic. Since you may need to do this several times every block, you must learn this skill well. Practice these skills in an abandoned parking lot or large open school yard first.

First, have someone hold your bike at the handlebars or the seat, while you sit on the bike and look over your shoulder. You should feel comfortable doing this while stationary.

Next, at low to moderate speeds, and while riding straight, look over your shoulder long enough to identify someone behind you. Call out if their hand is "up" or "not up" to confirm that you can look long enough to search.

Continue to practice this skill on a daily basis until you know you can ride straight every time.

Rock Dodge. Place a sponge or other light object on the ground. A school yard or open field in a park may be the best location for this. Now, approach the sponge, and at the last instant, quickly move your wheel enough to go around the object, and straighten up. If you do this right, your rear wheel will hit the sponge. The idea is to gain confidence that your front wheel can miss an object, and allow you to stay upright if you see a pothole, or some object at the last instant. This keeps you from swerving into traffic.

Scan to the rear before moving left.



Roadway Entry. When you are old enough to ride in the street, have a parent work with you to practice the following.

Walk your bike to the street. Rotate your pedal to the up power takeoff position. Then look for traffic to your left, then right, then left. If there is no traffic to be seen, ride out into the street. Bring your bike back up the sidewalk, or walk it back along the edge of the street, and repeat this exercise. You should never practice this without a parent confirming if it is safe to go.

Parents: Young children have an especially tough time developing this skill. They cannot always judge closure speed and acceptable gaps at a young age. Help them learn. It is best to set a rule not to enter the street if a car is coming from either direction, even if a full block away. We recommend you begin this training between ages seven and eight, but never allow the child to use the street until you feel he is ready, and then only with supervision.

You can start a version of this activity earlier, using the same searching skill to learn the proper way to cross a street. The child should know to "keep on looking" as he begins his actual crossing.

Six Points for Riding in Good Form

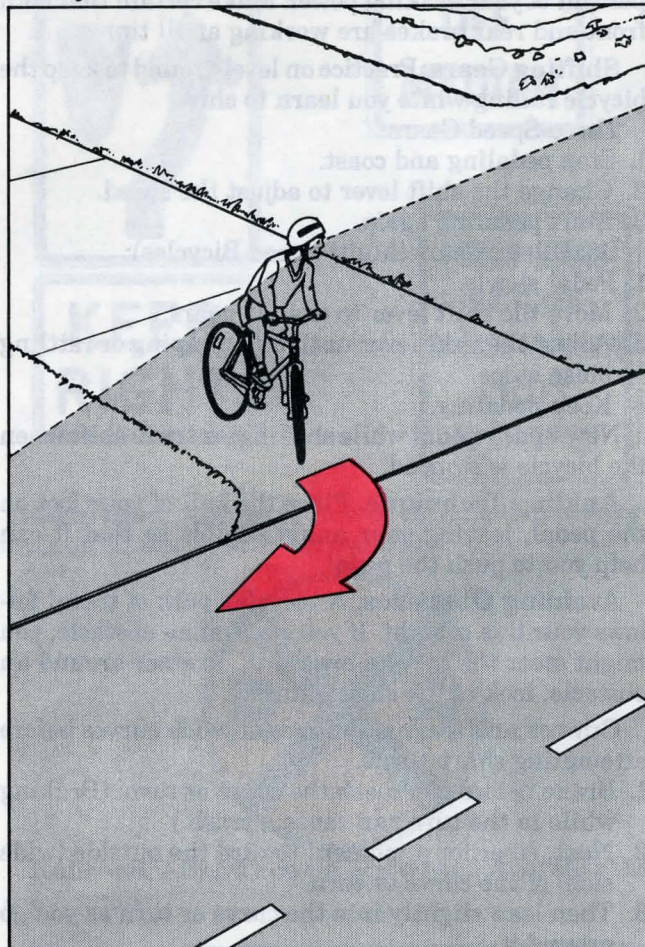
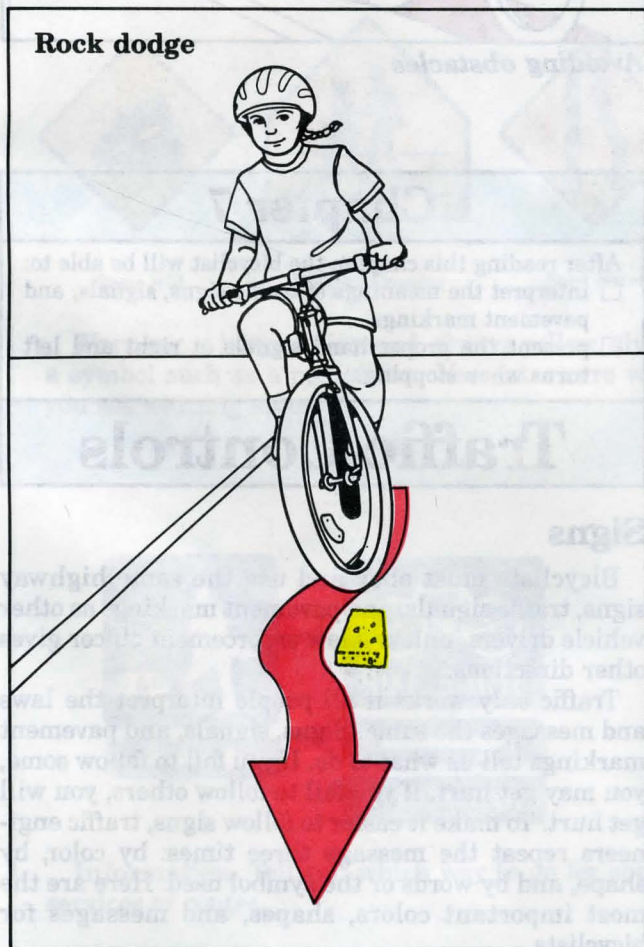
1. Always ride with the ball of the foot on the pedal.

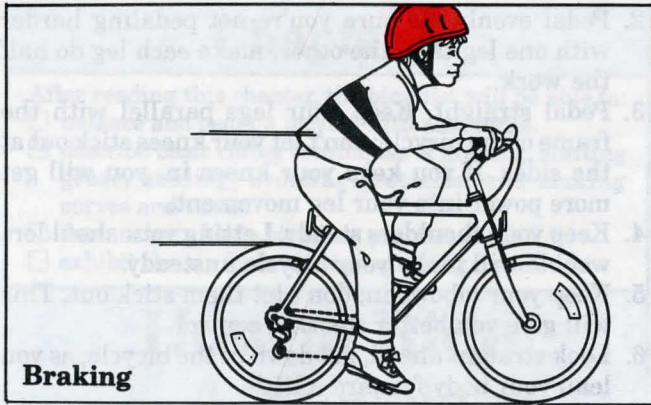
2. Pedal evenly. Be sure you're not pedaling harder with one leg than the other; make each leg do half the work.
3. Pedal straight. Keep your legs parallel with the frame of the bicycle; don't let your knees stick out at the sides. If you keep your knees in, you will get more power into your leg movement.
4. Keep your shoulders steady. Letting your shoulders wobble will make your bicycle unsteady.
5. Keep your elbows in; don't let them stick out. This will give you better steering control.
6. Look straight ahead, not down at the bicycle, as you lean your body forward a little.

Stopping. As a beginner, you should ride at slow speeds so that you can let the bike coast until you drag your feet gently to a stop. When you are sure that you can stop the bicycle in this way, next practice the following steps for proper stopping:

1. Apply the rear coaster brake to slow down.
2. When the bicycle is almost stopped, raise up off the saddle and stand on the pedals.
3. Transfer your body weight to the foot on the low pedal.
4. Lift your other foot off the high pedal and lower this foot close to the ground.
5. Put your foot on the ground and stop, leaving your

Always search for oncoming traffic.





other foot on the low pedal.

Do not try to stop while you are sitting on the saddle, or the bicycle will fall to one side.

Braking. To use a rear coaster brake, push backward and down on the foot pedal.

If you have a multi-speed bicycle with front and rear hand brakes, apply both brakes at the same time. If the rear wheel starts to skid, release the front brake a little to stop skidding. Never release the rear brake completely when the front brake is on, or you will sail over the handlebars and crash, even at very slow speeds. Your front brake provides you with nearly 70 percent of your braking power. Make certain that both front and rear brakes are working at all times.

Shifting Gears. Practice on level ground to keep the bicycle rolling while you learn to shift.

Three-Speed Gears:

1. Stop pedaling and coast.
2. Change the shift lever to adjust the speed.
3. Start pedaling again.

Derailleur Gears (Multi-Speed Bicycles):

1. Pedal slowly.
2. Move the shift lever to change gears.
3. Adjust the shift lever until any scraping or rattling noise stops.
4. Keep pedaling.

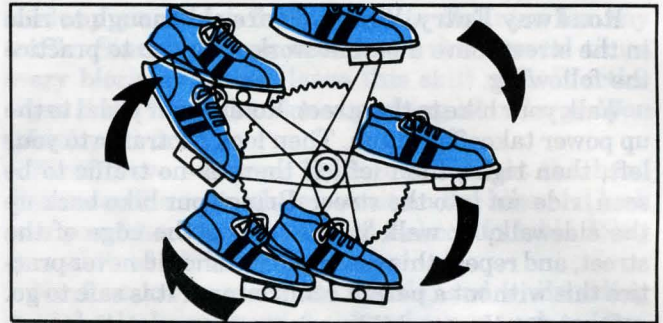
Never back-pedal while shifting, or try to shift when the bicycle is stopped.

Ankling Technique. Place the ball of your foot on the pedal, leaving your ankle flexible so that it can help you to push the pedal.

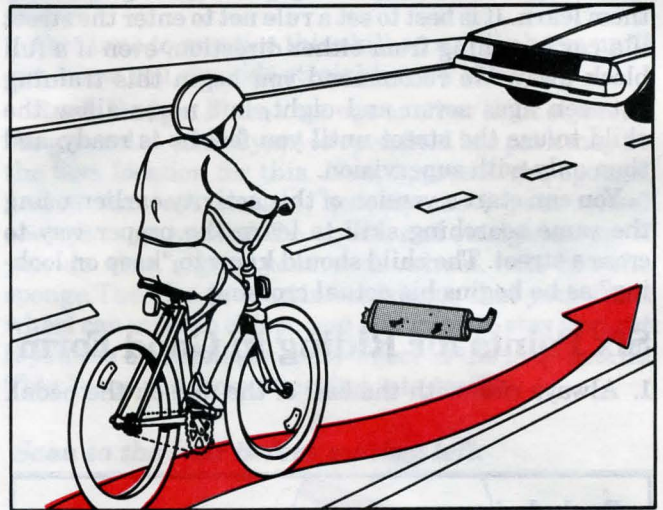
Avoiding Obstacles. A bicycle's path of travel follows your line of sight. If you stare at an obstacle, you might steer the bicycle toward it. To steer around an obstacle, look at the clear pathway.

Curves and Turns. Practice on wide curves before attempting sharp turns.

1. Brake before you reach the curve or turn. (Braking while in the turn can cause a crash.)
2. Next, steer for a moment toward the outside (wide side) of the curve or turn.
3. Then lean slightly into the curve or turn as you go around it.



Ankling technique



Avoiding obstacles

Chapter 7

After reading this chapter, the bicyclist will be able to:

- interpret the meanings of traffic signs, signals, and pavement markings.
- present the proper hand signals at right and left turns when stopping.

Traffic Controls

Signs

Bicyclists must obey and use the same highway signs, traffic signals, and pavement markings as other vehicle drivers, unless a law enforcement officer gives other directions.

Traffic only works if all people interpret the laws and messages the same. Signs, signals, and pavement markings tell us what to do. If you fail to follow some, you may get hurt. If you fail to follow others, you will get hurt. To make it easier to follow signs, traffic engineers repeat the message three times: by color, by shape, and by words or the symbol used. Here are the most important colors, shapes, and messages for bicyclists.



Stop/Yield. Always red or yellow, always a hexagon or triangle, always "Stop" or "Yield" printed. Stop signs should also be located with pavement markings called a "stop line." Find the stop line in this illustration.



BIKE XING



PED XING



SIGNAL AHEAD



Steep Hill



School Crossing



Road Narrows

Warning. Always a diamond, always yellow, always a symbol such as a pedestrian. Use extra care when you see warning signs.



Information. Tell you which way to go for special services or routes.



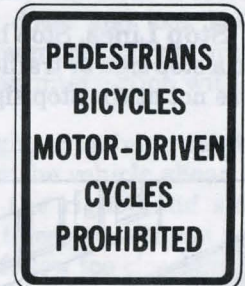
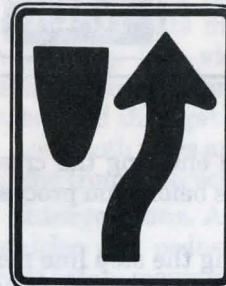
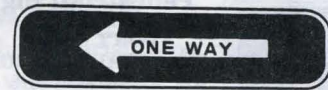
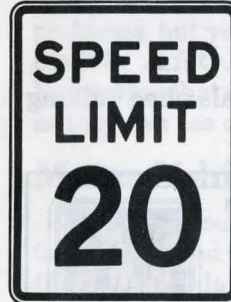
NO RIGHT TURN



NO U TURN



NO BICYCLES









Regulation. Always square or rectangular, always black on white, or with red overprint.



Railroad. Always a circle, always yellow, always the same symbol.


Traffic Signals

You must obey traffic signals when riding your bicycle.

Traffic Signals			
STEADY RED Stop.		FLASHING RED Stop, then proceed.	
STEADY YELLOW Warning. (Bicyclist should treat it as a stop).		FLASHING YELLOW Slow down, move with caution.	
STEADY GREEN Proceed.		GREEN ARROW Turn as indicated.	

Pedestrian Signals

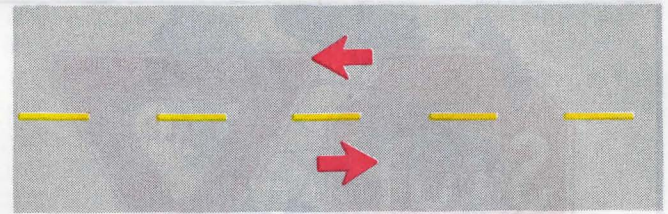
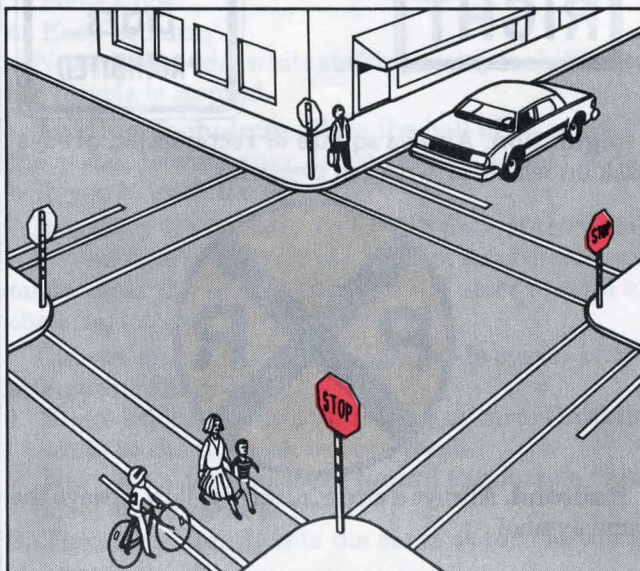
You must also obey pedestrian signals when walking alongside your bicycle.

Pedestrian Signals		
	DON'T WALK- STEADY ORANGE Do not leave curb.	
	WALK. Begin search. Look left and right, and left again. Leave the curb when safe.	

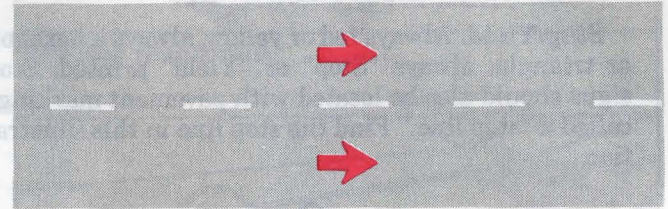
Pavement Markings

Crosswalk Lines. Stop before entering the crosswalk, to allow pedestrians to cross before you proceed.

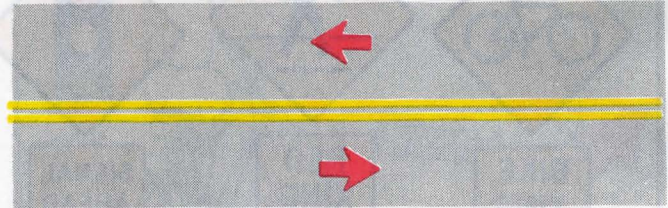
Stop Lines. Stop before crossing the stop line next to a stop sign or traffic signal. In some cases, stop lines are not at the stop sign, but before it.



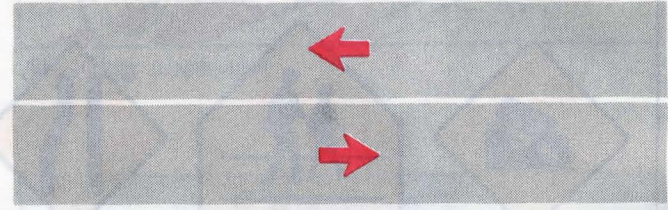
Single Broken Yellow Line
 (Road Center Line: Passing Allowed)



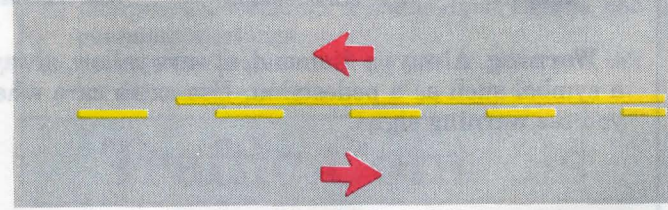
Single Broken White Line
 (dividing line between one-way lanes)



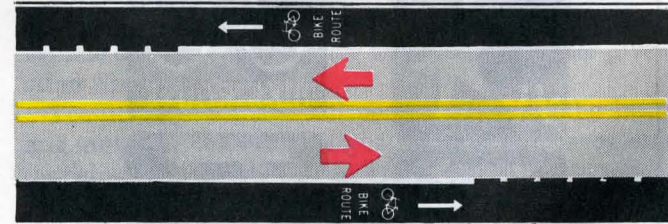
Double Solid Yellow Line
 (Road Center Line: No-Passing Zone)



Single Solid White Line
 (line marking the side of the road)



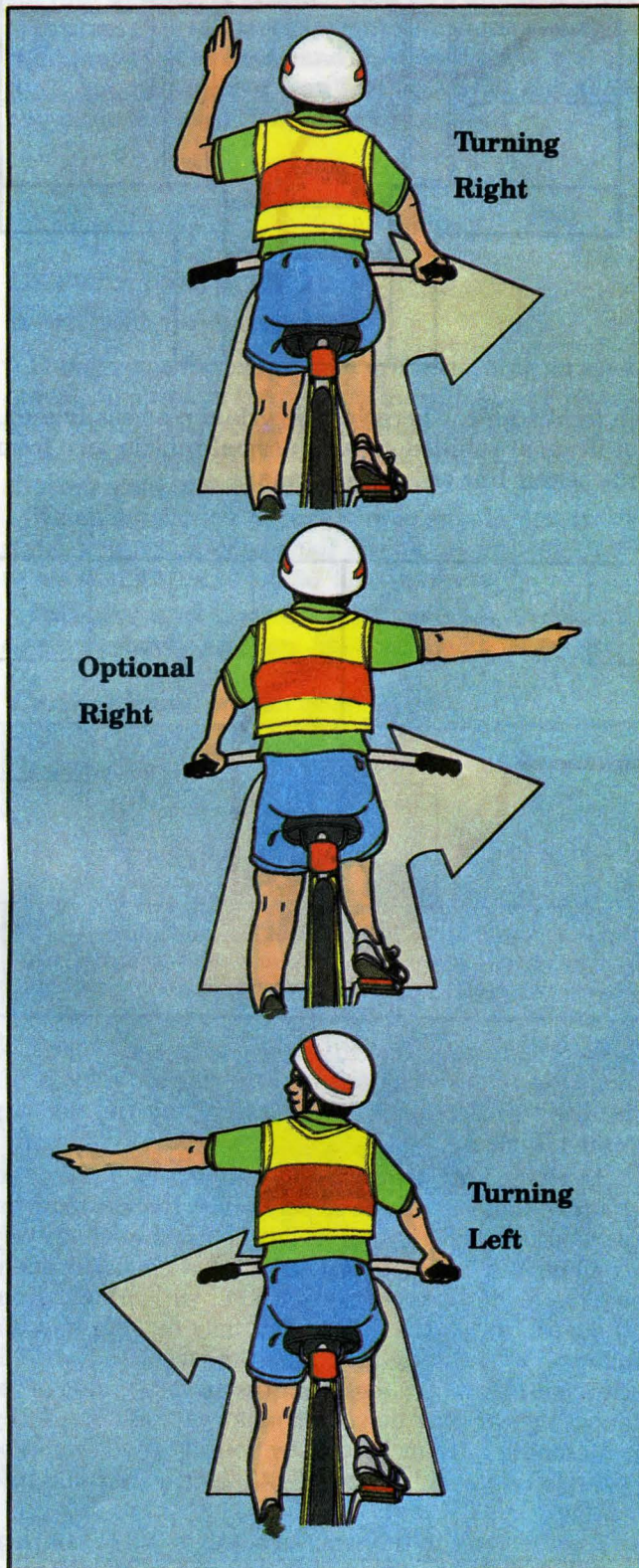
Single Broken/Single Solid Yellow Lines
 (Road Center Line: passing not allowed when solid line is in your lane)



Bicycle Lanes or Pathways
 (located on roadway between solid white lines; cars may enter for right turns and bicycles may exit for left turns in dashed areas)

Hand Signals

Signals must be given whenever making turns, changing lanes, or stopping. The correct hand signals are shown here. When stopping, place one foot on the ground.



Chapter 8

After reading this chapter, the bicyclist will be able to:

- identify common traffic patterns.
- recognize and predict road hazards.
- define risky situations related to bicycling.
- react to hazards so accidents can be avoided.

How to Avoid Hazards

Obedying traffic laws will help you to avoid most problems, but your skill and judgment are the keys to bicycle safety. Look for hazards at all times. Remember that motorists cannot see a bicycle as easily as they can see other vehicles.

Motor Vehicle Traffic Patterns

Whenever you move into traffic, you must watch out for yourself and for the motorist. Most car drivers scan the road for large vehicles, not for small objects. Assume that drivers will not see you. Don't move into traffic until you make eye contact with the other driver(s).

Entering the Roadway. Look before entering a street. Motorists may not have time to react if you simply pop into view from the side of the road. If entering from the sidewalk, walk your bicycle onto the street and then get on to ride.

Look both ways and slow your speed before entering traffic from a bicycle lane.

Intersections. At intersections, stay clear of motor vehicles and pedestrians. Slow down and look both ways before moving forward. Remember that you must have a full green light to enter an intersection with a traffic light.

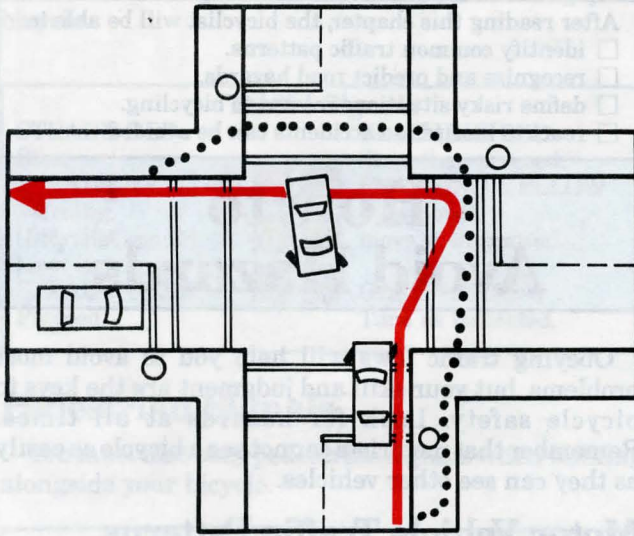
Whether you are turning right or going straight through an intersection, wait for the vehicle ahead of you. Never pass a vehicle on the right-hand side because it's hard for the driver to see you. If you are behind a big car or truck, don't follow too closely.

There are two methods for making a left turn at an intersection. In heavy traffic, or if you are a new bicyclist, walk your bicycle through the crosswalks as a pedestrian. But in light traffic where your bicycle can be seen easily, and if you are skilled, make a normal vehicle turn from the right side of the center line or left-turn lane.

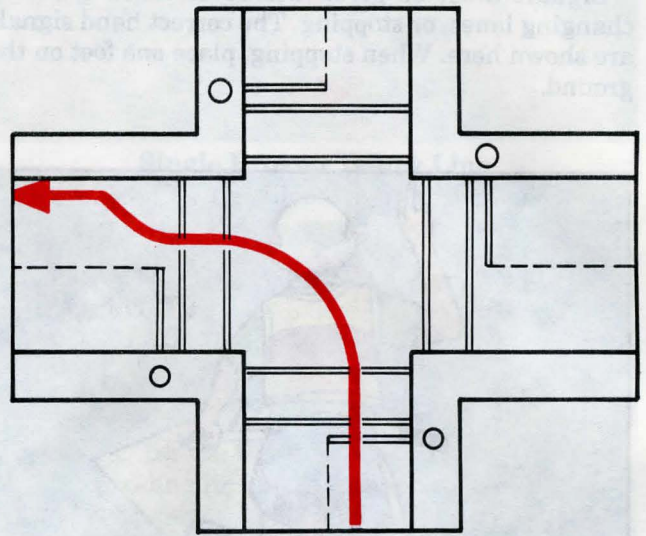
Direction of Traffic. Always ride with the traffic, not against it. When you ride along with the traffic, motorists can see you far enough ahead to steer out of your way. It is hard for motorists to avoid bicyclists who suddenly appear in front of them going the wrong way.

Riding on the Right. When riding on a street, at less than the normal speed of traffic, ride as closely as you can to the right hand side of the road, or on the

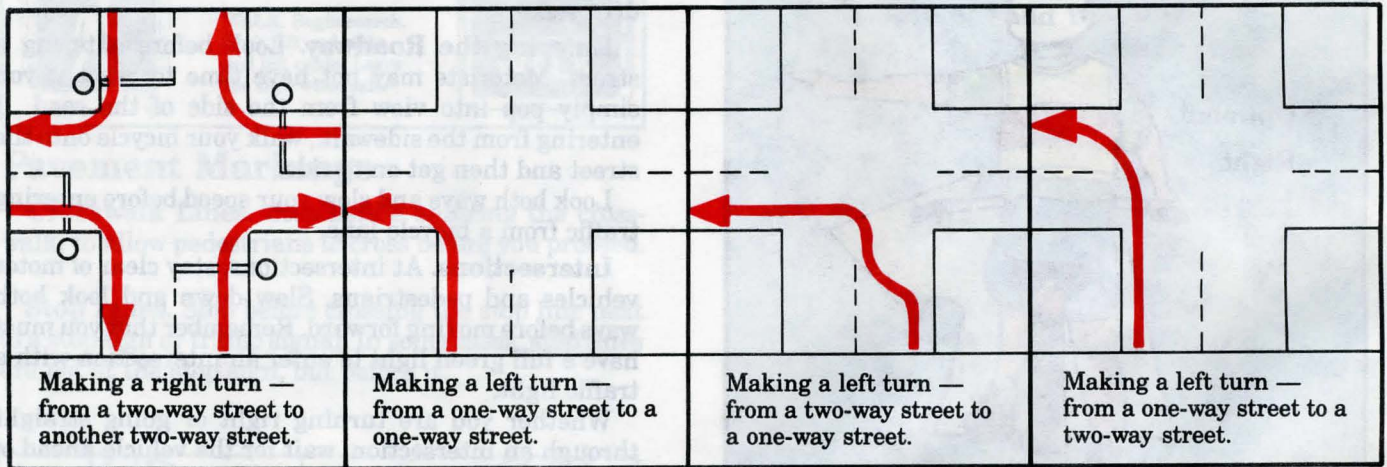
Turning at Intersections



In heavy traffic, or if you are a new bicyclist, walk your bicycle through the crosswalks as a pedestrian.



In light traffic, where your bicycle can be easily seen, or if you are skilled, make a normal vehicle turn from the center line or left-turn lane.



highway shoulder. On a one-way street you may ride to the left curb side.

Making Turns. Signal at least 100 feet before you turn, using correct hand and arm signals. Before turning, check traffic in all directions and keep to the rear. As you signal, be sure to make eye contact with the driver(s) nearby; don't turn until you are sure that they see you. As you make the turn, keep both hands on the handlebars.

Following Distance ("Two-Second Adjust"). Use the "Two-Second Adjust" to follow a safe distance behind another vehicle. When the vehicle in front of you passes a fixed object (tree, sign, house), begin counting, "One-thousand-one, one-thousand-two." If you pass that object before you finish counting, then you are following too closely.

Nebraska law prohibits following too closely or hitching a ride by hanging onto the side of a vehicle. Air brakes will stop large trucks faster than you can stop your bicycle.

Parked and Double-Parked Cars. Plan your route so that you ride on streets where there is room for parked cars and bicycles. Ride at least three feet away from parked cars so that you don't have to dodge opening car doors. To predict when a car will pull out from the curb, watch the driver. You may be able to see a driver's head through the rear window or in the vehicle's side mirror. If it looks like the driver is going to get out of the car, slow down and make yourself visible by sounding a horn or bell, or by yelling. If you move to your left to avoid an accident, don't swing out into traffic.

Another way to tell when a car door will open is to watch for these signs: cars stopped with running

motors, back-up lights on, brake lights on, and turn signals flashing. Select streets with bike lanes where you don't have to worry about parked cars.

Railroad Crossings. At railroad crossings slow down and stop a safe distance from the tracks if a train is coming. Wait for the train to pass, and don't move onto the tracks until they are clear — or you could dart out into the path of another train on a different track.

To cross railroad tracks, point your front wheel at a right angle to the tracks and cross each track, one at a time. You will need to scan first for traffic, signal left and move left as shown in the illustration.

Unsafe Road and Weather Conditions

Dangerous Road Surfaces. When riding on sand, gravel, oil spots, bridges, paint markings, and leaves, steer a straight line. Never brake or turn sharply. Even when leaves appear dry on top, they may be wet and slippery underneath.

Watch out for low branches over streets, low traffic signs, unmarked wheelchair ramps, brown posts (hard to see at night), and raised lane markers.

Potholes and Grates. Avoid potholes, curbs, and steps whenever you can. Hitting a pothole or sharp

road edge can damage wheel rims, spokes, and forks, and it also could cause an accident.

Tires may fall through sewer and storm drainage covers and grates. A sudden drop of the front wheel will send you over the handlebars, so avoid covers and grates with slots running in the same direction as you are traveling.

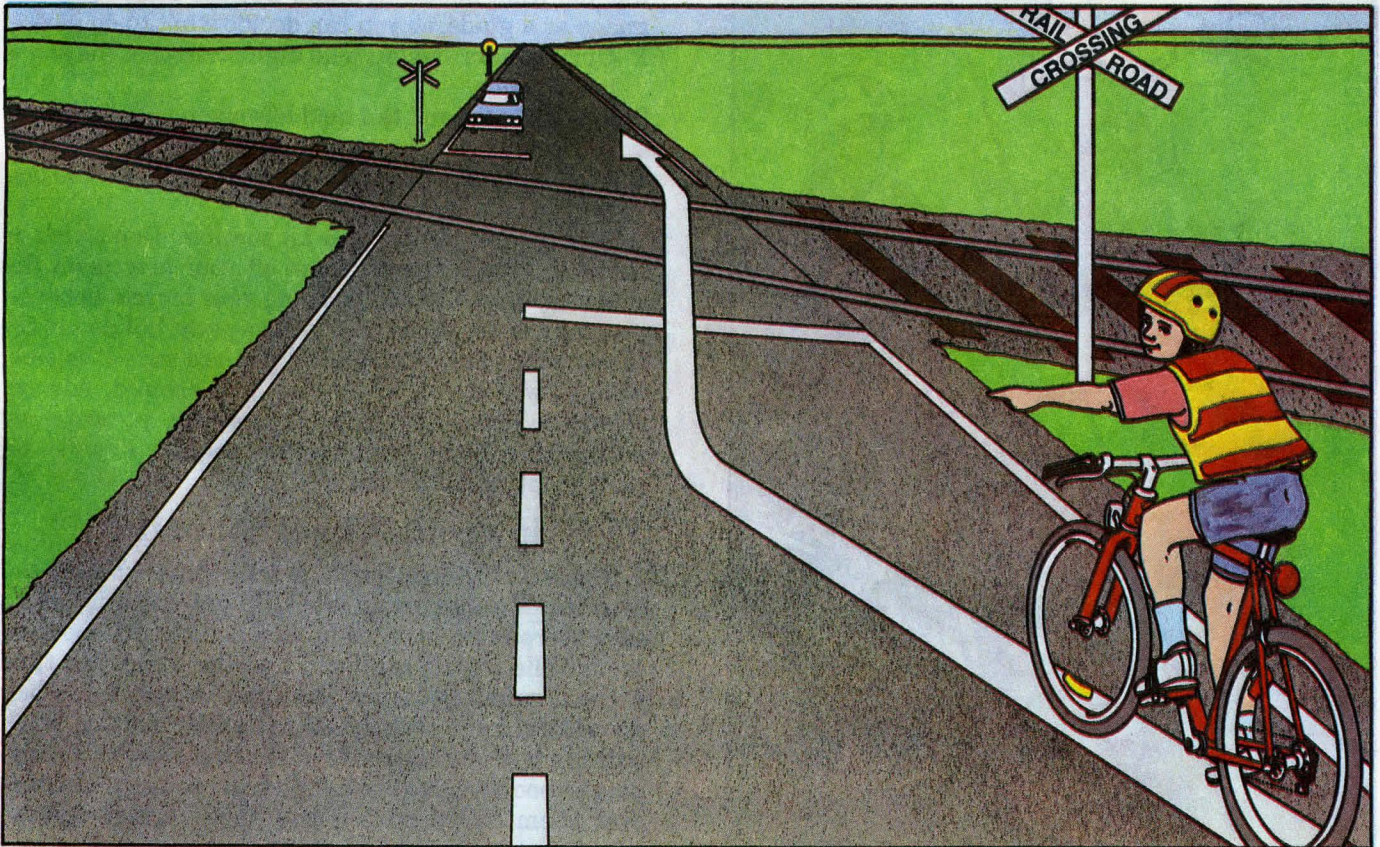
Wet Weather. Be careful when riding in wet weather. When brakes are wet, they require a longer distance to stop, because wheels slip on the wet road surface. Watch out for wet leaves, especially on turns.

Night (Darkness). If you must ride your bicycle at night, be careful. Be sure to use the safety equipment required by state law for night riding (special headlamp, rear red reflector, and extra lights), adding reflective tape to your clothing and helmet. Use extra lights with stronger beams for better road visibility, and wear reflective clothing so you can more easily be seen.

Don't expect anyone to see you; ride defensively. Slow down to allow yourself extra time to react, and ride only on familiar streets to avoid unusual hazards. Remember that bicyclists and motorists without proper lights and reflectors may be out there, too, so be alert!

Curves. Always ride single file through a curve. Watch ahead for any motorist that may be trying to take a curve at too high of a speed. Around steeply banked curves, enter at a safe speed and keep your inside pedal up.

Cross railroad tracks at an angle.



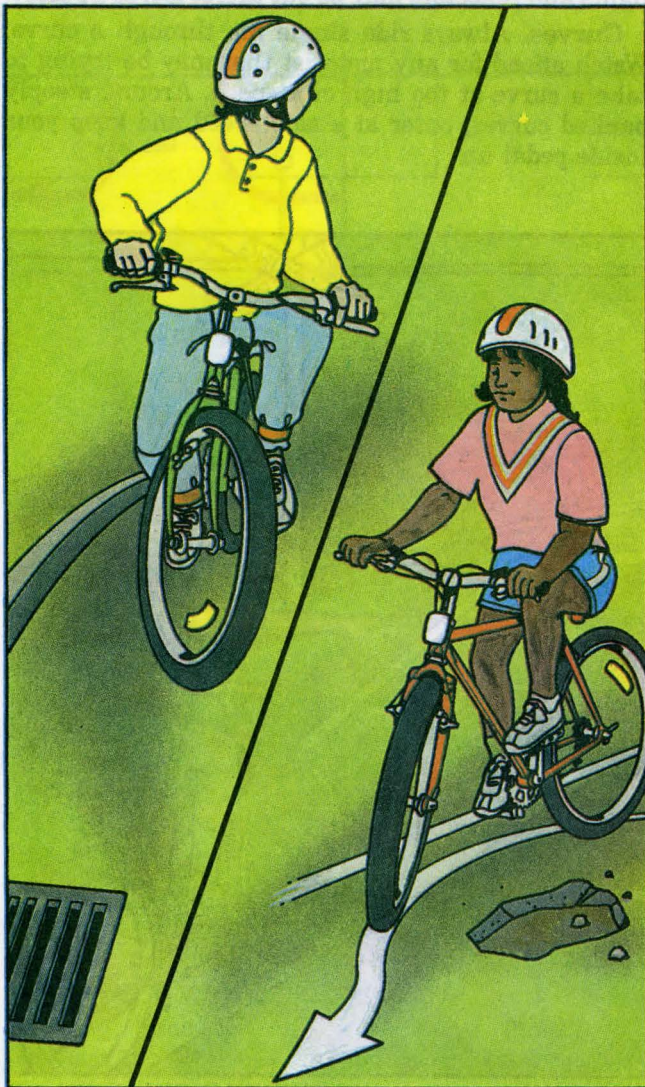
Hills. As you coast downhill, your speed increases and your braking ability drops. Keep a modest speed and stay low on your bike so that you can stay in control. On long, steep downhills, coaster brakes often heat up and may not always work. Long distance riders and racers who descend at higher speeds have learned to use the entire lane. Otherwise they cannot maneuver around objects. You do not need to do this at low speeds. Wait until you are older to go fast downhill.

Pedestrian/Bicyclist Situations

Children Darting Out. Watch for children at play. Even if they see your bicycle, they may dart out in front of you anyway. Little children can't always tell how fast a vehicle is coming toward them.

Riding on Sidewalks. In some areas it is legal to bicycle on sidewalks. If you do, be very careful to approach pedestrians slowly, or they may become scared and move suddenly into your path. When passing pedestrians or other bicyclists from behind, make yourself known by sounding a horn or bell, and by

Be aware of road hazards.



saying, "On your left/right." Then they will not turn and cross your path, because they will know where you are. Always pass pedestrians slowly.

Passengers (Riding double). *Nebraska state law requires that no bicycle shall be used to carry more persons at one time than the number for which it shall be designed and equipped.* On a one-person bicycle, a passenger's extra weight can make it difficult to stop, steer, or see, bend wheel rims, and cause tire damage. Only a small child should be carried as a passenger, in a safe bicycle child carrier.

Stunts. Stunts should only be practiced and performed with adult supervision, and never on a sidewalk or in the street. Always wear a helmet and other protective gear, and have proper padding on your bike.

Group Bicycling. *Nebraska law requires bicyclists to ride in a single file, except when overtaking another bicycle, or when riding on paths or on parts of roadways set aside only for bicycles.* To return to single file, agree before you start who will go first. Remember to use the "two-second" rule to prevent following too closely behind a rider ahead of you.

Animal Behavior

Even friendly dogs chase bicycles because they like to play "tag" with the turning wheels and pedals. Few dogs are hostile toward a rider, but being chased can be serious if your bicycle crashes while you are trying to avoid the dog.

The key is to watch the dog's ears and tail; they will tell you what he has in mind. Use the dog's body language as a guide, so you can decide what to do next.

1. Upright ears and tail held high mean that the dog is just curious.
2. Upright ears and tail held low mean that the dog is a chaser.
3. Flattened ears and tail held low mean that the dog may attack.

Stay on your bicycle if at all possible. Don't kick or strike the dog. If need be, get off your bicycle on the side away from the dog, keeping your bicycle between you and the dog. Most dogs will go away, but do not try to remount your bicycle until you are sure it is safe. Ride slowly if you know dogs are around. Always report a loose dog to your teacher, parents, or authorities. Most communities require dogs to be under control at all times.

Bicycle Front-Wheel Jamming

If the front wheel jams, it will throw you off the bicycle and cause an accident. To prevent this, make sure there is no loose or broken equipment above or around the front wheel, and that the wheel can turn without rubbing against anything. A handlebar bag should be kept tightly closed while riding, with nothing tied to the outside of the bag. Never tie shopping or book bags to the handlebars, or drape clothing over them. Make sure if you have a quick-release wheel that it is secure.

Chapter 9

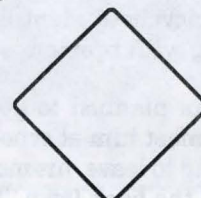
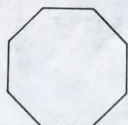
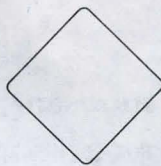
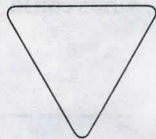
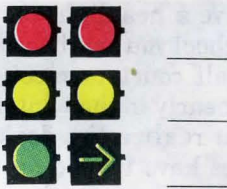
- After completing this review, the bicyclist will be able to:
- recognize traffic signs and signals.
 - review basic bicycling information.
 - identify and discuss attitudes about bicycling issues.

Bicyclist's Review

Matching

Find the correct term for each picture and put the letter in the answer blank next to the picture.

- A. Regulatory Sign
- B. Red, "Stop"
- C. Left Turn Signal
- D. Slow or Stop Signal
- E. Green, "Go"
- F. Right Turn Signal
- G. Warning Sign
- H. Stop Sign
- I. Yellow, "Caution"
- J. Route Marker Sign
- K. Yield Sign



Yes-No

Read each question carefully. Write "Yes" or "No" in the space opposite the statement.

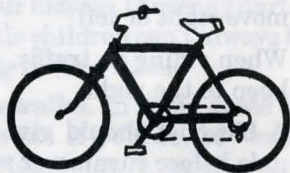
- _____ 1. Buying a bicycle that is a little bigger is all right because you will grow into it.
- _____ 2. Fluorescent clothing works well at night.
- _____ 3. Helmets are only needed by bicycle racers.
- _____ 4. Loose clothing can easily catch in pedals, chains, or wheels.
- _____ 5. The first step to cross a railroad track is to move right or left.
- _____ 6. When riding in traffic, a bicyclist should keep to the right.
- _____ 7. A bicyclist should give proper hand signals before turning or stopping.
- _____ 8. A bicyclist should not carry things in his hands when riding.
- _____ 9. A flashing "hand" sign means, "Don't Start."
- _____ 10. A bicyclist should wear light colored clothing or retro-reflective clothing at night.
- _____ 11. A good way to lock your bicycle is to put a chain through the wheels, frame, and around a fixed object.
- _____ 12. A solid "pedestrian" sign means "Walk."
- _____ 13. A white reflector is needed at the back of a bicycle.
- _____ 14. A bicycle is a vehicle.
- _____ 15. Bicycling takes at least as much skill as driving a car.

Multiple Choice

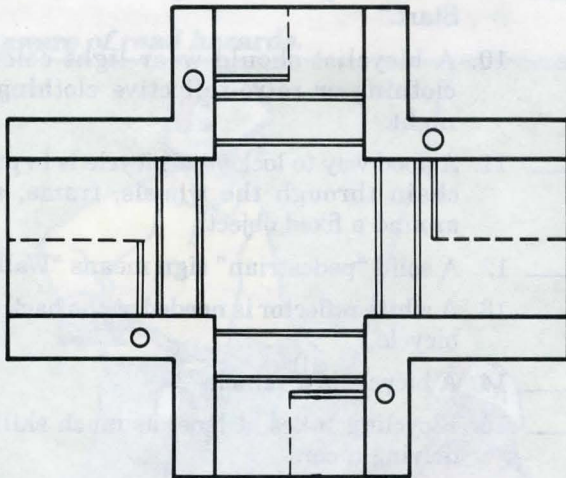
Read each statement carefully. Then choose the correct answer ("a," "b," or "c") and put it in the blank space next to the statement.

- _____ 1. When you turn a corner, you should signal with
 - a. your hand.
 - b. your foot.
 - c. a yell.
- _____ 2. The yellow color of this sign means
 - a. "Stop."
 - b. "Caution."
 - c. "Go."

- _____ 3. To prevent front-wheel jamming, check your bicycle for
- loose front brake pads or fender.
 - loose front wheel or spoke reflectors.
 - loose quick-release.
 - all of the above.
- _____ 4. How many people can ride this bicycle safely?
- Not more than two.
 - As many as you want.
 - Only one.



- _____ 5. Draw a line to show how you would make a safe left turn.



Discussion Questions

What Do You Think? (The purpose of these questions is to get bicyclists to identify and discuss their attitudes about bicycling issues.)

- Bicycle riders should have to pass a test like car drivers.
- Showing off on a bicycle once in awhile is all right.
- It should be okay if you exceed the speed limit when coasting downhill.
- Bicycle riders should be given traffic tickets when disobeying a law.

What Would You Do? (The purpose of these questions is to help bicyclists identify and select alternatives for dealing with problem situations.)

Situation I. Tom planned to go swimming with a friend and was to meet him at school by 1:00 p.m. Just as he was beginning to leave, his mother reminded him he hadn't watered the back lawn. Tom quickly set the

sprinklers out and hurriedly left on his bike. As he pedaled off he knew Bob would be waiting. As he turned the corner away from his house he thought if he biked to school by way of the highway instead of the residential route he would cut 4 to 6 minutes off his travel time. If you were Tom, what could you do? What would you do? Why?

Situation II. Judy had been late twice the past week getting home from school. Her mother told her that one more time late and she wouldn't be able to go to the show Saturday. After volleyball practice, Judy stayed a little too long talking with her friends about their upcoming first game of the season. She finally broke in to the conversation to say she had to get home. She had eight minutes to get home. Judy knew that if she pedaled fast all the way home, she could make it without being grounded. As Judy jumped on her bike, scenes flashed through her mind. The heavy automobile traffic and rough roadway, that dog that is always there to run out at bicyclists, and her deadline "not a minute past four-thirty"! If you were in this situation, what could you do? What would you do?

Situation III. Suppose your friend asks you to ride to the grocery store to buy some bread and milk for his mother. You get permission to go and as you get on your bike to leave, it is obvious your rear hand brake doesn't work. If you were in this situation, what could you do? What would you do?

Situation IV. You don't have a headlight on your bike. After going home from school you ride back eight blocks to the school basketball court to meet your friends for a game. It gets dark early in the winter and as your game breaks up, you realize the darkness rapidly coming as automobiles have turned on their lights. There is still enough light to see as you get on your bike and race across the playground. As you near the road, you have to decide what to do. If you were in this situation, what could you do? What would you do?

Answers

Yes-No Questions

1. No. 2. No. 3. No. 4. Yes. 5. No.
6. Yes. 7. Yes. 8. Yes. 9. Yes. 10. Yes.
11. Yes. 12. No. 13. No. 14. Yes. 15. Yes.

Multiple Choice Questions

1. a. 2. b. 3. d. 4. e.

Chapter 10

After reading this chapter, the bicyclist will be able to:

- arrange a good commuting or touring route.
- collect necessary equipment for daily commuting.
- plan a bicycle tour.
- assemble equipment for long-distance touring.
- list the proper tools for a touring repair kit.

Traveling by Bicycle

Many bicyclists have discovered that their riding skills can be used for commuting daily to school or work, as well as for extensive weekend recreation. Traveling by bicycle opens up new choices of where to go, how to get there, and what to see and appreciate along the way.

Commuting

Since riding to and from school or work is usually done at peak traffic hours, a commuter must be concerned with safety. Precautions involve safe route selection, dependable equipment, emergency repair ability, and safe parking at your destination.

Choosing a Route. Select a route that you can ride comfortably with the gears provided on your bicycle. Consider traffic conditions, intersections, hills, and

bicycle paths before choosing your route. This should be done on a Saturday or off-traffic time.

Equipment. A commuter must be prepared for changes in weather and equipment breakdowns. To commute successfully you need reliable equipment: a bicycle you can depend on, tools or assistance available if needed, and clothes to change into if necessary. Watch the weather reports, use good tires, wear light or bright colored clothing, and encourage your employer to provide safe bicycle parking.

To protect your equipment, try to park your bicycle in a place sheltered from the weather, and keep your other supplies in a locker or safe place. Have your bicycle ready for night riding.

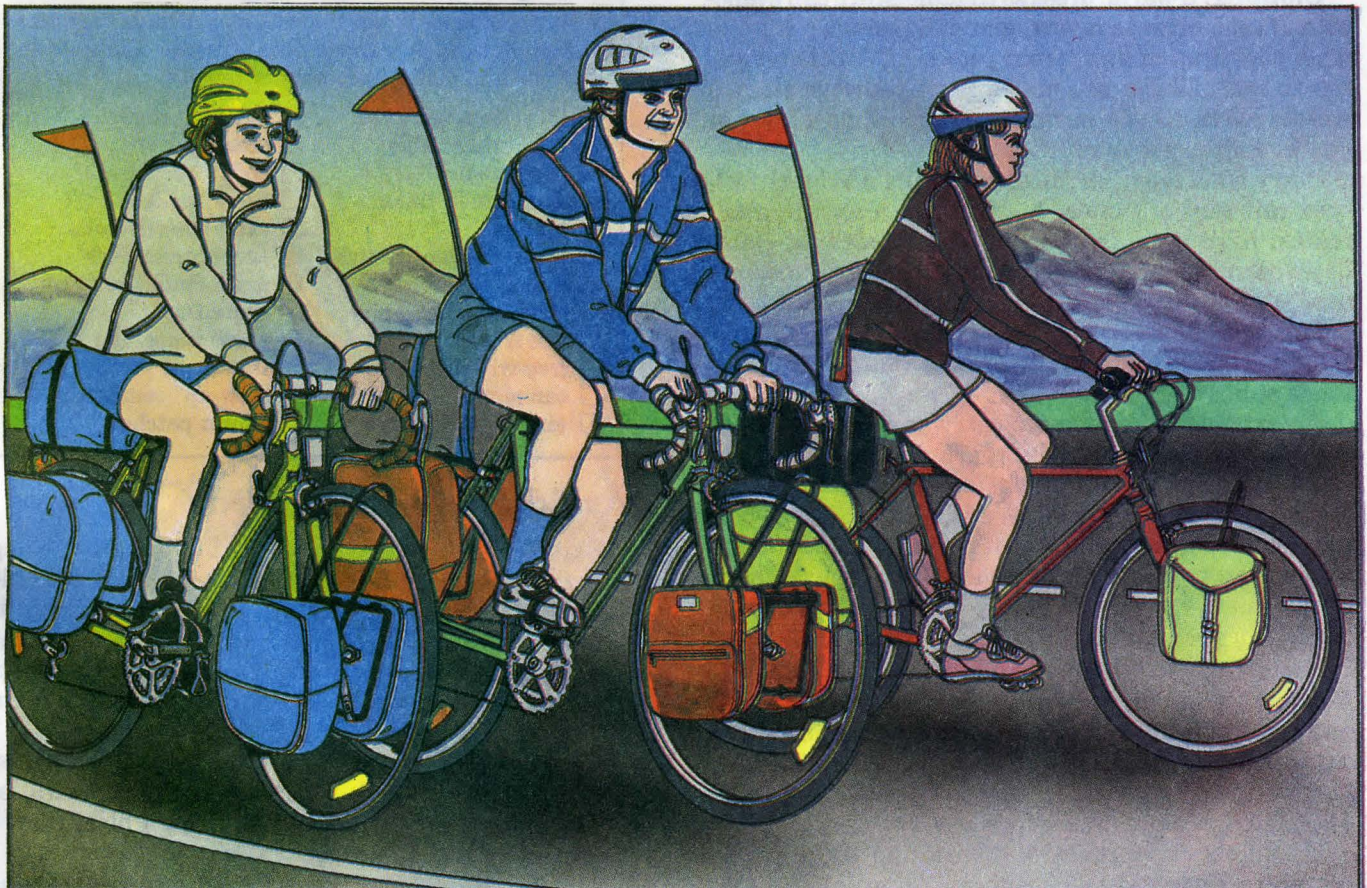
Riding Methods. Try to ride the same route each day, so that you become familiar with the traffic conditions and adjust to them. An added benefit is that the same motorists will see you each day, so that they will also learn how to accommodate your bicycle in traffic.

If possible, try riding with a friend. This makes commuting more fun, and a buddy can be helpful in an emergency.

Touring

The same terrain that you merely glimpse from a car appears larger on a bicycle. The roadway seems to expand, so that even short distances can provide hours

Bicycle touring is fun and healthy, but requires planning.



of bicycling pleasure. Bicyclists who want to tour may wish to join a local bicycle club.

Choosing a Route. When planning a route, try to avoid long, steep hills or many short hills that could tire you on a bicycle. Look for places to eat, rest, or stay overnight along the way. Also make sure that the road surfaces are good and that highway shoulders are adequate.

A bicyclist can cover 10-15 miles in an hour of riding. If you want to meet people and see the country plan on an average of no more than 50-60 miles per day. Hills and mountain terrain add variety, and are a preferred terrain for most tourists. Most tourists can cover as many miles in the mountains as in the plains. This is true because downhill make up for lost time in the climbs.

When in a vacation spot, get up early, and try to get most riding in by 10-12:00. This way you avoid most heat and traffic, and can get a campground in even the more popular locations.

Maps. Before starting any trip, you should have maps for the area. In Nebraska, trip maps are available from the Nebraska Department of Roads. Try to get either county maps of where you will travel, or the 1-degree U.S. Geologic Survey maps. Some bicycling organizations like the National Bikecentennial, or League or American Wheelman can provide you with complete listings of general and specific bicycle touring maps.

Clothing. If warm, dress so that moisture can evaporate. If cold, dress in layers, and still include a layer to wick perspiration away from your skin. Wool and cotton content fabrics are best for this. Always carry a windbreaker. As you warm up, you can shed a layer or two and always stay comfortable.

Carry emergency clothing, including a brightly colored rain suit or parka. A cold rain in northern climates, high wind, or other conditions could cause hypothermia even during the summer. On super hot days, stay cool. It is best to travel in the early morning, before hot temperatures are reached. Carry a lightweight long-sleeved shirt to protect yourself from too much sun. Wear it often.

On extended trips always carry camp clothes. You need to get out of bicycling garb and cool down, or warm up, and you can't do it properly in sweaty clothing. Cycling gloves, special lined cycling shorts, and even special cycling shoes are often worth the investment on longer trips. Multi-purpose shoes should have a firm sole. Many cyclists like running shoes as a good all-round cycling/camp shoe.

Food. You will need plenty of liquids and more calories during the high exercise levels of bicycling. Eat and drink often. Never allow yourself to become either thirsty or hungry. Dieting while on a bicycle trip is stupid. Carry spare food and liquid. Avoid exhaustion, and plan for common emergencies.

If you cook for yourself or your group, consider one pot meals, such as a stew, spaghetti, or chile. It is easier

to cook in small groups than when alone, since others can help distribute the load.

Camping Gear. Many lightweight tents are now available at reasonable cost. Yours should withstand high winds, block mosquitos, and hold out moderate to heavy rains. It should also ventilate well, since there may be some warm evenings in prime bicycling seasons.

Carrying Equipment. Panniers or saddlebags can be used both on the front and rear carriers. Carry heavy loads low, carry light bulky items high. Secure everything tightly. It is best to pack clothes and other things you do not want to get wet in plastic bags inside of the panniers. Then line everything with a garbage bag before inserting into the pannier.

Other Items. Take a small first aid kit, a flashlight and a repair kit (see checklist). Include a #12 or above sun screen, especially during the first week of your travel. Lip balm, eye protection, and other camping items should be considered.

Finally, for any extended bicycle travel it is best to do a shakedown ride of two to three days first. Then on your expedition, leave home things you learn to do without, and take along other things you forgot. Remember, bicycle touring, like cooking, is as much an art as a science, and no one can tell you how to enjoy it. It is something you must discover for yourself.

Bicycle Touring Checklist

A checklist for bicycle touring may include the following equipment, depending upon the type of bicycle and your skill in making emergency repairs:

- | | |
|--|---|
| <input type="checkbox"/> bicycle pump | <input type="checkbox"/> cleaning rags |
| <input type="checkbox"/> rear brake cable | <input type="checkbox"/> screw driver |
| <input type="checkbox"/> chain tool | <input type="checkbox"/> spoke wrench |
| <input type="checkbox"/> extra chain links | <input type="checkbox"/> extra spokes |
| <input type="checkbox"/> pliers | <input type="checkbox"/> extra toe-clip bolts |
| <input type="checkbox"/> Hex or Allen wrench | <input type="checkbox"/> extra brake pads |
| <input type="checkbox"/> 6-inch Crescent wrench (adjustable) | <input type="checkbox"/> extra fender bolts |
| <input type="checkbox"/> tire irons | <input type="checkbox"/> spare tire |
| <input type="checkbox"/> free-wheel tool | <input type="checkbox"/> spare innertube |
| <input type="checkbox"/> can of machine oil | <input type="checkbox"/> innertube patch kit |
| <input type="checkbox"/> air-pressure gauge | <input type="checkbox"/> "sew-up" cement |
| | <input type="checkbox"/> denim patches |

Avoiding Road Hazards

Extra caution is needed when bicycling over long distances. Fatigue can reduce awareness of possible dangers. It is best to avoid riding after 4:00 p.m. In this way you avoid the problems of glare, drinking motorists, and worrying about getting into a campground on time. Plan ahead, and do not pressure yourself to be anywhere.

Crosswinds. Anticipate strong headwinds. Often such areas are posted. When a passing semi-trailer blocks your wind, you could fall. A high blast from a truck can toss a light rider.

Long Bridges and Tunnels. In some areas long

bridges or tunnels are a high risk. You can often flag down a highway worker or considerate motorist, in case it is too long or treacherous to handle on your own. Plan days or weeks ahead for such crossings. Know in advance what you will do.

Glare. Glare from the sun's rays may block your view of other vehicles, and inhibit motorists' ability to see you. Especially during early morning and late afternoon hours, wear sunglasses and use extra caution.

Transporting a Bicycle

When starting a bicycle tour away from home, you need a car carrier to transport your bicycle for you.

A car carrier is usually mounted on a vehicle's roof, trunk lid or rear bumper. The carrier must not cover the vehicle's lights or license plates, or interfere with the driver's ability to see the road. Be sure the rack is well secured to the car and the bicycle clears the road.

Final Note

We cannot possibly cover all situations and needs in a book this size. There are entertaining films, lectures, books, and dozens of other ways to learn about the joy and discovery of bicycling. For more complete lists and to get started, we recommend that you contact each of the below organizations:

Touring

Bikecentennial
P.O. Box 8308
Missoula, MT 59807
(406) 721-1776

Club Rides/Advanced Courses

League of Am. Wheelmen
6707 Whitestone Rd.,
Suite 209
Baltimore, MD 21207
(301) 944-3399

BMX and Freestyling

American Bicycle Assn.
P.O. Box 718
Chandler, AZ 85224
(602) 961-1903

Literature

National Bicycle
Education Consortium
1818 R Street N.W.
Washington, D.C. 20009
(202) 332-6986

Outdoor Empire Publishing
P.O. Box C-19000
Seattle, WA 98109
(206)624-3845

Programs

Bike-Ed America
11150 Napton Way
Lolo, MT 59847
(406) 273-6088

Films

I'm No Fool With A Bicycle.
Walt Disney Educational
Films, 1988. Coronet/MTI
Films and Video
108 Wilmot Road
Deerfield, IL 60015
1-800-621-2131

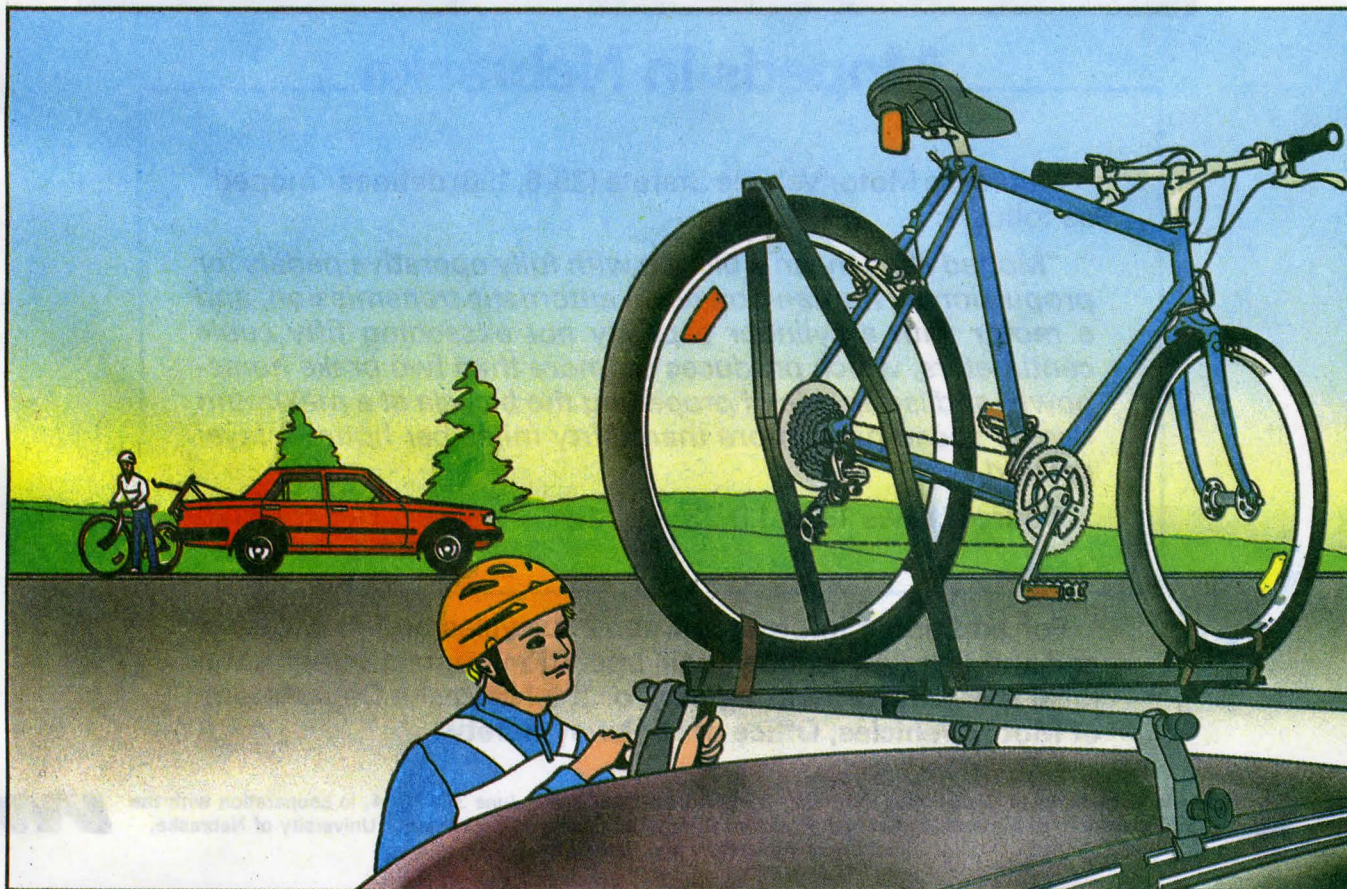
Bicycle Registration

National Bike Registry
1832 Tribute Road
Suite 205
Sacramento, CA 95815
1-800-621-0850, ext. 415

Retro-Reflective Materials

Life Safety International
P.O. Box 6128
Boca Raton, FL 33427
1-800-527-5156

Be sure your bicycle is firmly secured to your car carrier.



Nebraska State Laws for Bicyclists

(Below is a partial listing of Nebraska laws for bicyclists. Please obtain a complete listing before bicycling in Nebraska.)

1. As a parent, you shall not knowingly let a child break any of the bicycle ordinances. You may be held legally responsible if your child becomes involved in an accident while bicycling after dark without reflectors or a lighted headlamp. A parent may also be held responsible for the child's violation of any other traffic laws. This regulation applies to every bicycle ridden on Nebraska roadways.
2. Bicycles have all the rights of a vehicle on the roadway, and must obey the laws for vehicles. Use bicycle paths when you can.
3. The bicycle must have a permanent seat and the rider must sit on that seat when he or she is riding. A bicycle may not carry more people than it was designed for, such as on handlebars or rear fenders.
4. A bicycle rider cannot hang onto a car or let someone tow them with any vehicle.
5. When riding on a roadway stay as far to the right side of the road as possible, but watch out for parked cars and for cars going in the same direction as you on the roadway. Pass them carefully.
6. When riding a bicycle, don't carry anything in your hands or on the bicycle that will prevent you from keeping at least one hand on the handlebars.
7. A bicycle rider must keep his feet on the pedals at all times.
8. If you ride at night, you must have a white light on the front of the bicycle that can be seen for at least 500 feet in front of the bicycle and a red reflector on the rear that is of the approved type approved by the motor vehicle department. You can have a red light on the rear, but it must be visible from a distance of 500 feet.

Mopeds in Nebraska

Nebraska Motor Vehicle Statute (39-6, 196) defines "moped" as follows:

"Moped shall mean a bicycle with fully operative pedals for propulsion by human power, an automatic transmission, and a motor with a cylinder capacity not exceeding fifty cubic centimeters, which produces no more than two brake horsepower and is capable of propelling the bicycle at a maximum design speed of no more than thirty miles per hour on level ground."

Source: Laws 1979, LB 23

For additional information about bicycles and/or mopeds and the laws governing their operation contact either your **local law enforcement agency**, or the **Nebraska Department of Motor Vehicles, Office of Highway Safety**.



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