

Arts & Lifestyle

Bicycling



Saskatchewan

Reference Book

4-H MOTTO

Learn to do by doing.

4-H PLEDGE

I pledge

My HEAD to clearer thinking,

My HEART to greater loyalty,

My HANDS to larger service,

My HEALTH to better living,

For my club, my community and my country.

4-H GRACE

(Tune of Auld Lang Syne)

We thank thee, Lord, for blessings great

On this, our own fair land.

Teach us to serve thee joyfully,

With head, heart, health and hand.

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Introduction

Objectives

Upon successful completion of this project, members should be able to:

- Think and plan before going out on a bike ride.
- Properly fit a bike and bike helmet.
- Have a basic working knowledge of how a bike works.
- Know all the parts of a bike and what each does.
- Understand the benefits of bicycling.
- Feel comfortable riding in a variety of conditions and on a variety of terrain.
- Understand road signs and what they mean.
- Understand and be able to use hand signals to communicate intentions while riding a bike.
- Be able to perform basic maintenance and repairs of a bike.
- Safely navigate city streets.
- Engage with other club members about bike technique and safety.
- Safely cycle in a group.
- Have fun while biking!

Getting the most from this project

- Attend club activities regularly.
- Listen and ask questions. You will learn from other members as well as your leaders.
- Discuss bicycling with your friends, family and fellow club members. Cycling is a lot of fun, share your knowledge and enthusiasm and it might rub off on others.
- Consider joining a cycling club in your area. You'll meet other enthusiastic
Practice may not make perfect but it certainly makes better. Get out there with your bike and try out different cycling techniques. The more time you spend on your bike, the more comfortable you'll become. "Learn to do by doing!"
- Keep organized notes about your bicycling journey, including what you've learned, techniques you've tried and a maintenance log.

Achievement Requirements for this Project

- A completed record book.
- Select and properly fit a helmet
- Select and properly fit a bike
- Control a bike while balancing, starting and stopping
- Demonstrate how to stop and observe before entering traffic
- Recognize traffic signs and their meaning
- Identify bike parts and purposes
- Check bicycle tires, brakes, and chains
- Signal and balance while turning
- Locate and identify cycling hazards
- Plan a bike trip
- Change a flat tire

Safety and Bicycling

Bicycling is fun and easy and can be done (almost) anywhere at any time. But before we get to it, there are a few general rules you should always remember. Sometimes you may get so excited about going out on a bike ride that you stop thinking about where you are or what is going on around you. Safety is of utmost importance when it comes to cycling because you are not protected like when you are in a car. So, remember that you have to first and foremost keep yourself, and anyone with you, safe.

Think of all the places and the conditions in which people go bicycling and the hazards associated with them. The following are a few situations that could have been better dealt with. What do you think the best way would have been for preventing them?

- “It’s raining out, but only a little bit, and I can hear thunder in the distance, but I’ll just go out for a quick ride.”
- “This bike trail looks really steep, and I don’t feel like I’m quite good enough for it yet, but my friends are with me so I’ll try it anyway.”
- “This bike is a little big for me, but I’ll take it out for a ride anyway; I’m sure it will be fine.”
- “There’s a stop sign ahead, but I’m on a really fast downhill and I don’t want to stop. I’ll just speed through it quickly.”
- “It’s getting dark out, but I really want to go for a ride. I don’t have time to change my clothes into something brighter coloured, but I’m sure it’s fine. I’ll go out in my black sweater and pants.”
- “That sign says ‘No Trespassing’ but the trail looks like it would be really fun. It probably won’t matter if I go in just this once because nobody is around.”

- “My friend wants me to meet her at the park. I don’t need to bring my water bottle or my bike repair kit; I’ll just be out for a few minutes.”
- “There’s a train coming but I think I can beat it. I don’t want to have to wait.”
- “Helmets wreck my hair. I think I’ll leave mine at home.”

I’m pretty sure you understand where I’m going with this: don’t make bad decisions that could put your life in danger when cycling! There are a lot of people who care about you and want you to be safe, so make sure you remember that you pledged your “head to clearer thinking” and make smart decisions! Here are a few important points to remember.

- Always, always, always wear a helmet. No exceptions.
- Always be visible to others when riding your bike. This is especially important if you’re riding at night. Front and rear lights and reflectors are essential.
- Always obey all traffic signs and laws at all times.
- Think and plan before you head out biking, above all else, you need to make sure that you, and anybody with you, are safe.
- Tell someone where you’re going, when you’re leaving, and when you should be back. Better yet, bring a friend with you!
- If you are planning to be out for a while, be sure to have a lot of water and snacks with you. You’ll have a lot more fun if you don’t have a dehydration headache and your stomach isn’t growling!
- Always think ahead and bring extra clothing in case it gets cold, sunscreen for those really hot days, and a cell phone in case of emergencies.
- Bring your emergency repair kit along for the ride. You might get a flat tire and it could be a really long walk home without it.
- Be aware of your surroundings and ask permission if you want to go on someone else’s property. If you don’t think you should be going into a particular area (because it belongs to someone you don’t know), then don’t!
- When you go out cycling with younger enthusiasts, be sure to set a good example and teach them safe and respectful practices.
- Do not endanger yourself, your friends, or property when out on a bike ride. This is an important responsibility for all cyclists.

It is NEVER a good idea to endanger yourself, others or the environment when cycling.

Online Safety

The Internet is a great resource when you start learning about cycling. You might find interesting forums where enthusiasts share experiences, techniques, and just plain discuss everything about biking. You may find local cycling groups on social media sites like Facebook. These places can be very helpful to you with the activities in this project. Use the following guidelines when online:

- Do not attach ANY personal information to the questions or stories you post online (names, addresses, phone numbers, what school you attend, etc.). ALWAYS REMEMBER that the person you are talking to in a forum may not be the person they claim to be.
- When using social networking sites like Facebook or Myspace, set your online profile to private. That way, only people that you approve can see your profile. Don't give out your passwords to anyone but your parent or guardian and never meet anyone in person that you just met on these sites.
- Report any inappropriate comments or messages if they violate the terms of service for that site and tell your parent or guardian if anything happens online that makes you feel scared or uncomfortable.

Resources for Learning:

People

- Members of local cycling clubs and other cycling enthusiasts
- Local professional bicycle mechanics and staff at bike shops
- Your local parks and recreation office
- Local cycling coaches
- Other 4-H members or leaders
- Your parents or guardians

Resources

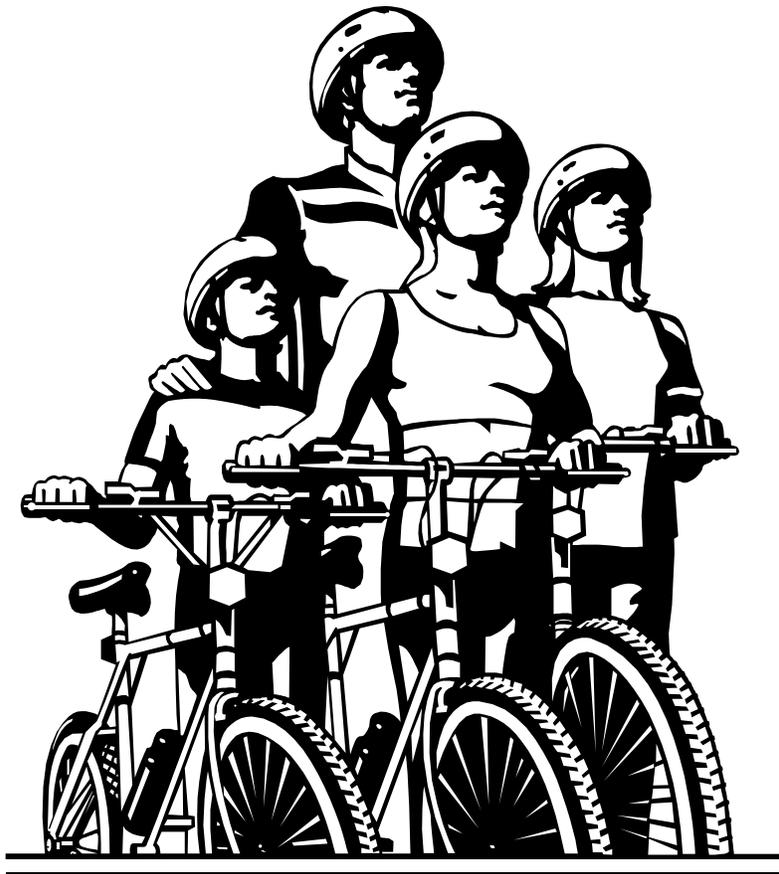
- Your bicycle manual
- Books or magazines about cycling
- Television shows or documentaries about cycling
- Websites dedicated to discussing everything about bicycles
- Online tutorials on cycling techniques

Places, Events, and Organizations

- Local cycling clubs
- Local bike parks, trails, or skate parks
- Cities and towns that have bicycling races and events
- Local bike shops that organize events for cyclists

Websites

There are many websites where you can find information about the wide variety of bicycles and the world of cycling. At the end of this manual is a list of websites you may like to visit, but Google is a great tool for locating any and all websites devoted to bicycling. You can just search for “How to change a flat bike tire” for a visual guide, or “bicycling in [your home province]” if you are looking for local bike trails, or just about anything else. The web is also a great resource for future learning after you have finished this project, to find a group of people who share similar interests or to find out how you can get involved.



Unit 1

The Basics of Bicycling

Why Bicycle?

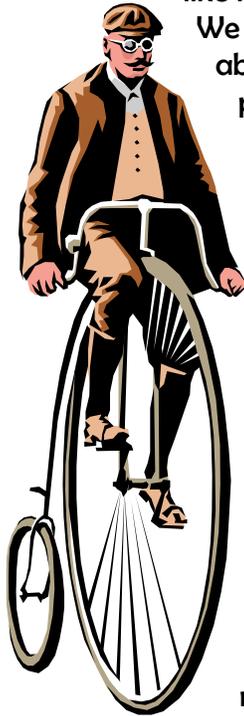
The real question here should be why *not* bicycle! There are so many reasons to get out there and enjoy bike riding, the first of which being that it's fun! But besides being fun, bicycling is also versatile: you can bike alone, with a friend or even a group of friends. You can bike in almost any weather (as long as you have the right type of bike, clothing, and bring safety supplies). It's a great way to exercise, stay healthy, and build strong muscles and lungs to keep you in great shape. Biking is also a fantastic way to get from point A to point B. It's faster than walking, and if you don't have a driver's license or a car, it can take you almost anywhere. With a bike, you have the freedom to go where you want, when you want (always keeping safety in mind, of course!). Finally, biking is really good for the environment: unlike cars, bikes don't emit any harmful greenhouse gasses, and if we take good care of bikes, they last for a really long time. Think about how clean and quiet the world would be if everyone rode bikes instead of drove their cars. Imagine what the Trans-Canada Highway would be like if all the cars were bikes! How cool would that be?! So what are you waiting for? Hop on your trusty two-wheeled steed and come along with us on a fantastic bicycling adventure!

A Brief History of the Bicycle

Bicycles have a pretty interesting history. At their most basic, these two-wheeled transportation vehicles requiring balancing by the rider have been around since the early 19th century. In 1817, the first model of our modern bicycle, then called a “**draisine**” or “**velocipede**”, was invented by a German designer named Baron Karl von Drais. Von Drais was inspired to create the velocipede when a crop failure in 1816 caused many deaths among horses, and an alternate mode of transportation was necessary. The velocipede looked a lot like our modern day bicycle, only it had no pedals. The rider sat on the seat like we do today, but instead of pedalling, he would use his legs (running along the ground, sort of like how they “drive” cars on the cartoon, *The Flintstones*) to propel the bike forward. Steering was performed much like we do today, with handlebars that manoeuvred the front wheel. Constructed almost entirely from wood, the velocipede weighed 22kg (48 lbs), and featured iron wheels and a rear wheel brake. They were all the rage in Europe for a short time, until their increased popularity began causing accidents and, due to their means of conveyance, people got tired of wearing holes in their boots!

A Scottish blacksmith is credited with building the first mechanically propelled 2-wheeled vehicle in 1839. In fact, he's also credited with the very first bicycling traffic offence! In

1842, a Glasgow newspaper reported that a velocipede with an “ingenious design” knocked over a pedestrian and was fined five British shillings (about five cents). Sounds like issues of safety have been around since the very birth of the bicycle!



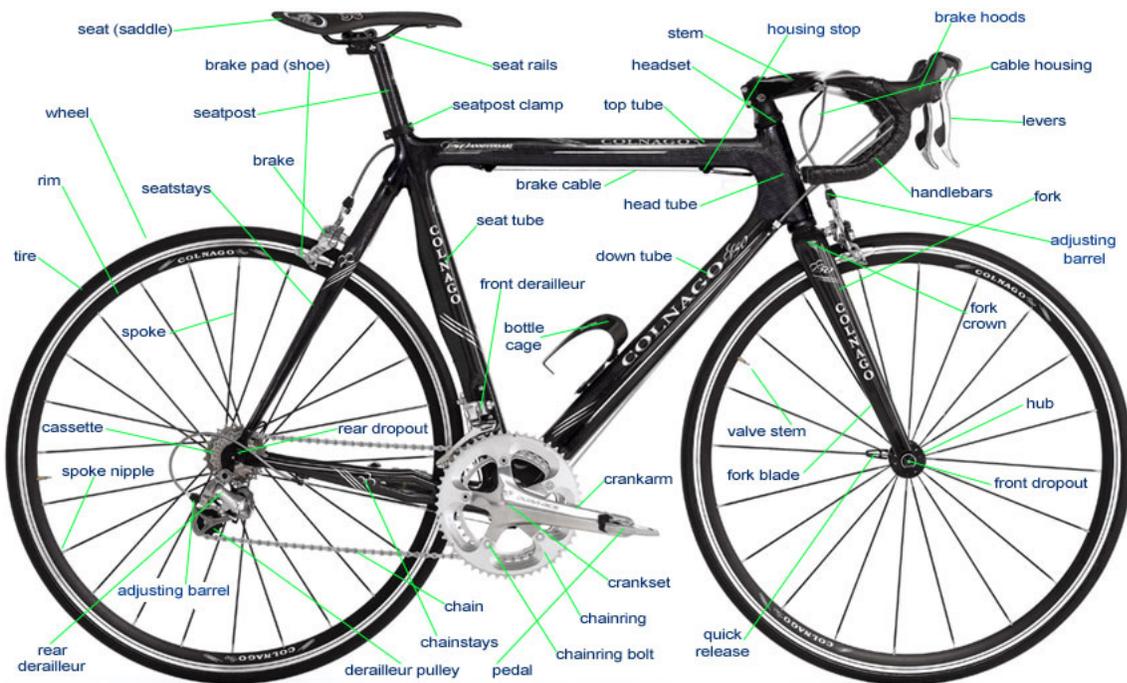
We can actually thank the French for the term “bicycle”, which came about in the 1860s. We can also thank them for designing the first really popular and commercially successful bicycle. A much simpler design than what came before it, it ignited a bicycle craze from 1868-70. These fashionable new bicycles had metal frames, which reduced weight, provided more sleek designs, and were easier to mass-produce. However, the rigid frame caused the bicycle to be slightly less pleasant to ride, which earned it the nickname “bone-shaker”. This led to the rise of the “**penny-farthing**”, the old-timey looking bike we’ve all seen with the almost comically enlarged front wheel. The penny-farthing’s larger front wheel was thought to enable higher speeds, lighten the bike frame (by making the rear wheel smaller), and be slightly more comfortable for the rider. These bikes were very fast, but *seriously* unsafe. The rider, being so high off the ground, was at risk of all kinds of nasty falls. This dangerous nature of early bicycle riding gave the sport a risqué reputation and was soon known as the pastime of adventurous young men. Given the fashion of the day (long dresses with layers of petticoats), only the most adventurous women would have been able to try riding a bike!

As time went on, bicycles started to grow in popularity in North America. Entrepreneurs in the United States started importing bicycles in the late 1870s and some even started inventing their own designs. However, despite its increased popularity, bicycling remained an activity solely for wealthy people (mostly men) until the late 1890s. In the end, what truly brought the bicycle to the masses was the invention of the “**safety bicycle**”. The safety bicycle looked a lot like ours do today; it had equal sized wheels, which made the bike safer, and a chain drive near the rear wheel, which improved comfort and speed. In addition, by this time, rubber tires were being used, which made riding much smoother and more comfortable. This new bicycle was much more suitable for women and people of all ages, and brought about a “golden age” of cycling.

The coming of the automobile somewhat stunted the explosive growth of cycling, particularly in the United States. Around this time, bicycles came to be seen largely as children’s toys. It wouldn’t be until the “bike boom” of the late 1960s when bicycling would become popular again for adults due to increasing consciousness about the importance of exercise and energy efficient transportation – values that are very important today. The bicycle design continues to evolve, with the addition of the **derailleur, gearing, suspension systems**, etc., and extremely lightweight materials such as carbon fibre. We now have **recumbent bikes, cruiser bikes, BMX bikes, mountain bikes, hybrid** and **commuter bikes**, and even **unicycles**! There are now more than a billion bicycles worldwide, twice as many as automobiles! Now that you know a bit about the history of the bicycle, and how much the design has changed over the years, hopefully you’ll look at your bike differently!

The Anatomy of a Bicycle

In this project, you're going to learn a lot about caring for your bicycle. You want your bike to last you a long, long time, right? It will, but only if you take good care of it. Before you're ready to learn all the ins and outs of the mechanics of your bike, let's start by going over the anatomy of the bicycle. Most bicycles will have all the parts listed below, with a little variation. For instance, if you have a unicycle, then you know that you only have one **wheel**, and not two! You also don't have **handlebars**, which allow the rider to change the direction of the front wheel. I would read over this section with your bike nearby and check and see which parts your bike has, focusing on some key areas. As you may have guessed, your bike has more parts than are listed here. I'll get more specific about certain parts in the unit about maintenance, so for now, this section is dedicated to the main parts of your bicycle.



Frame: All bikes have a frame. The frame is basically the bike's skeleton. Most bicycle designs feature what's called a "diamond frame", which consists of two triangles: one in the front and one in the back. The front triangle is created by the head tube, the down tube and the seat tube. The rear triangle is made up of the seat tube, the chain stays and the seat stays.

Frames come in all shapes and sizes that are meant to fit different riders of all ages. They also come in a variety of materials. In the early days of the bicycles, frames were made of wood or heavy metals and could weigh nearly 25 kilograms. Imagine carrying

that up the stairs to an apartment or classroom! Thankfully, as time has gone on and more emphasis has been placed on high strength and low weight, many frames are made with an aluminium alloy. This allows for a much lighter frame without sacrificing strength. Competitive cyclists often ride bikes with carbon fibre frames, which are ultra light. In fact, more and more companies are experimenting with frame materials, and today you can find bikes made from titanium, advanced steel alloys and even environmentally-friendly bamboo!

Pedals: These should be familiar! The pedals are the flat objects that you put your feet on when riding. They're attached to the **crank** that you rotate by pressing your feet down to propel the bike forward. Pedals (like most bike components) come in all shapes and sizes. You can get big, flat pedals that are more comfortable and easy to keep your foot on (anyone who's had their foot fly off a pedal and have it come back to hit them in the shins knows this is very helpful!). You can also get "**clipless**" **pedals**, which come with a special mechanism that attaches the rider's foot to the pedal using a special cleat mounted to the bottom of a cycling shoe. Serious cyclists use these to get more power out of their pedal strokes. Because the pedal is clipped into the shoe, when the rider's leg is on the upstroke, they are pulling the pedal up with them (as well as pushing down with the other foot), adding more power where there typically isn't any. There is often a special twisting method used to remove the shoe from the pedal, which is important to know (and practice), otherwise clipless pedals can be a little dangerous. The term "clipless" is a little confusing, since you might describe the mechanism as a "clip" to attach the shoe to the pedal, but this term is used to differentiate between the original "**toe clip**", which is a cheaper (and safer, if you're just starting out) option. Toe clip pedals use adjustable straps and a toe cage to hold your foot to the pedal. The toe clip, if adjusted appropriately, is often easier to release when necessary.

Front Derailleur: This is one of the mechanisms that helps you change "**gears**" (we'll talk more about gears in a little bit). The front derailleur changes the front gears by lifting the chain from one gear wheel to another. For more information on how this works, see the section below on how bicycles work.

Rear derailleur: The rear derailleur works similarly to the front derailleur, only it changes the rear gears.

Drive chain: This is your bicycle chain. It's made of metal and is composed of a bunch of links that fit together with the sprockets on the chain wheel and gear wheel to propel your rear wheel forward.

Reflectors: Reflectors work by returning light from car headlights, streetlights, flashlights, etc. Reflectors make the rider much more visible and are absolutely necessary for safety when riding at night. Generally, the front reflector is coloured white and the rear reflector is coloured red. This way, someone encountering a bike in motion knows which ends are coming and going!

Fenders: Not all bikes have fenders, but if you plan on being more than just a fair weather rider, I would recommend getting at least a rear fender. Fenders are curved pieces of metal or plastic that cover the wheels and protect the rider from water splashing up.

Brakes: These are two of the most important features of any bicycle! Most bikes have front and rear brakes that are activated by the brake lever and brake cable, which forces two brake pads against the sides of the wheels and stop the forward motion of the bike. Some bike models (particularly those for younger riders) have pedal brakes that are activated by pedalling “backwards”. These are not safe and are not recommended.

Seat post: This is the tube that attaches the bike seat to the bicycle. This tube should be adjustable to properly fit the rider.

Seat: I’m sure I don’t have to tell you what a seat is: it’s the small triangular (and often padded) structure attached to the seat post. There are almost as many different kinds of seats out there as there are bicycles! Seats come in all different sizes and materials. You can even find seats that are filled with gel for a softer and more comfortable ride.

Water bottle clip: This is a device that attaches to the frame and holds an all-important water bottle. Hydration is key when exercising, so be sure your bike has a water bottle clip and that it’s always holding a full water bottle.

Tire valve: Both your tires will have valves. These valves are the openings of the **inner tubes** that fit inside your tires. The valves can be opened to fill the tube with air but keep the air from escaping when they are closed. There are two main kinds of tire valves. They are the “Schrader” and the “Presta” valves. Schrader valves are the most prevalent, and are similar to the valves found on car tires. Presta valves are only found on bicycles, have a narrow stem and require a special attachment for the standard bike pump. If your bike tires have Presta valves, be sure your bike pump has the proper attachment.

Inner Tube: If you’ve never seen someone fix a flat tire, you probably haven’t seen the inner tube. The tube is the circular rubber tube that holds air and nests inside your tire. As mentioned above, the valve is the only part of the tube that is visible on a functional wheel. A “flat tire” is the result of a punctured or blown tube. Tubes are relatively cheap and you should always have an extra one on hand, just in case you get a flat. Learning how to replace a tube is one of the skills required for basic bike maintenance. You’ll learn how to do this in Unit 5.

Spokes: Your bike tires will probably have many spokes, which are very thin metal tubes that radiate out from the central “**hub**” of the wheel and connect to the “**rim**”. Spokes give the tire stability and strength. The wheels of some bicycles, especially professional racing bikes, often have fewer spokes, which makes them more

aerodynamic. Some specialty racing and BMX wheels are made from plastic or carbon fibre materials and can even have three or five thick “spokes” and can look like mag wheels on a car.

Tires: Most bikes consist of two (but some, like unicycles, consist of one) tires. Tires are made of cotton and steel fibres that are coated in rubber. Tires are mounted on the rim of the wheel and are the outer casing of the inner tube. Because they are rubber, tires provide traction while riding and help protect the inner tube.

Rim: The rim is the metal circle that forms the shape of the wheel. The tire is mounted on the rim.

Hub: The hub is the middle part of the wheel from which the spokes radiate.

Fork: The fork is made up of two parallel metal tubes that connect the head tube and the front wheel hub. By moving the **handlebars**, you are actually moving the fork to which the front wheel is attached. If you have a mountain bike, the fork may be equipped with a **suspension system** that lessens the impact of bumps and drops on your upper body.

Brake lever: This is the lever attached to the handlebars that allows the rider to operate the brake via the **brake cable**. The brake levers are what you squeeze when you want to use the brakes. By convention, the left brake lever operates the front brakes and the right brake lever operates the rear brakes.

Handlebars: The two handles that the rider holds on to and uses to steer the bike.

Brake cable: This steel cable transmits the pressure from the brake lever (when you squeeze it) to the brake pads. This is necessary for stopping the bike’s forward motion.

Gear shifter: This lever is used for changing gears via a cable connected to the derailleur. Gear shifters are small and are often mounted on the handlebars, but some older bikes and professional racing bikes have shifters mounted on the down tube.

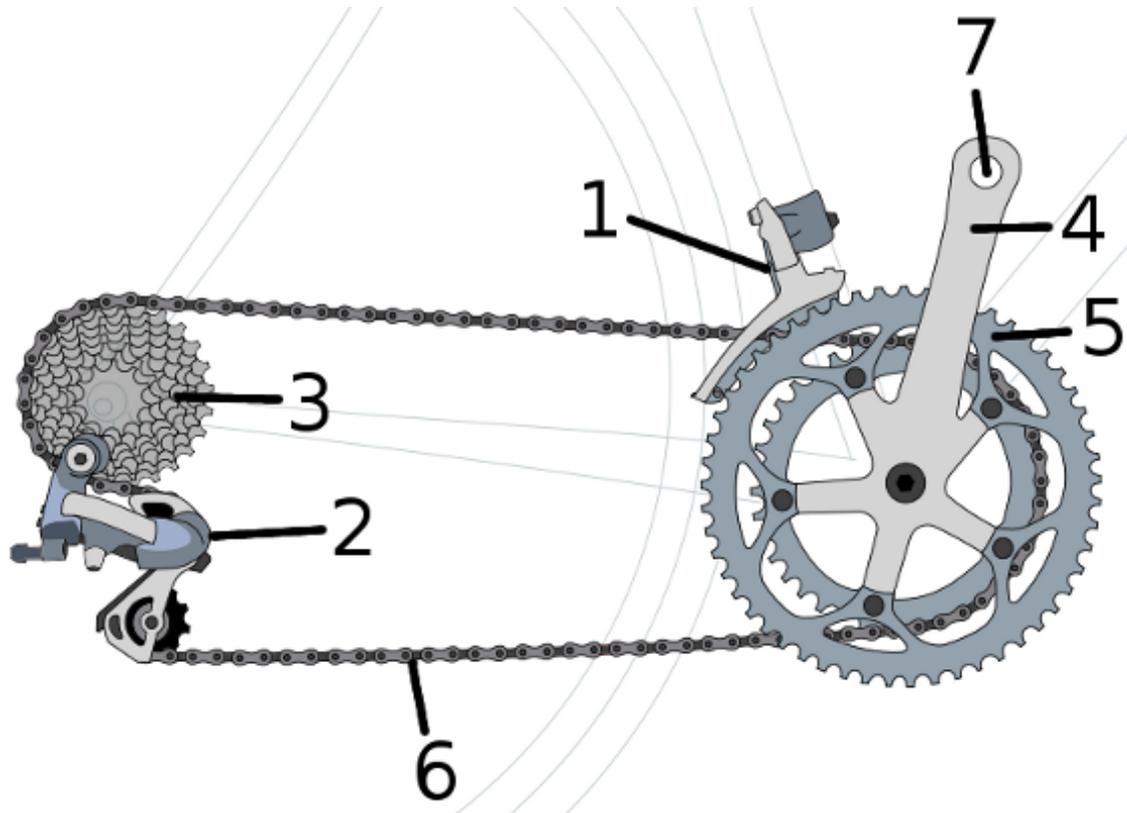
Wheels: Wheels are made up of a circular rim, hub, spokes, tires, and inner tubes. You need at least one to smoothly propel your bike forward (or backward)!

How do Bicycles Work?

This is a great question. When you’re on your bike, speeding (safely) down the street, you might wonder how it’s possible. Bicycles can actually be broken down into



a group of simple machines that work together: the wheels, pedals, gears, and brakes. Each piece of the bicycle puzzle works in conjunction with the others to get you moving forward. Look at the image below. It's a cross section of the **power train**, the system that transmits the force exerted by the rider from the pedals to the rear wheel.



When you pedal (7), you turn the crank arm (4), which moves the chain (6) along the chain rings (5), which turns the rear sprocket (3), which then turns the rear wheel. The links on the chain fit into the **sprockets** on the **chain wheels** and transmit the motion to the rear wheel. When you change gears, the front (1) and rear (2) derailleurs (using a chain guide) move the chain from one chain wheel to another making it either easier or more difficult to pedal, depending on which gear you're in. For instance, when the chain is on the larger chain wheel, it increases the distance of one rotation of the pedal, which makes peddling more difficult (requires more effort from you), but provides more power. You might use this gear to gain speed when going downhill or have a strong wind at your back. When the chain is on the smaller chain wheel, it decreases the distance of one rotation of the pedal, which makes peddling easier (requires less effort from you), but produces less power. You might use this gear if you're going uphill or into a strong wind.

The other parts in the image above all work together so that you can smoothly travel forward and change gears comfortably and effectively. It's important to keep all these mechanisms in good working order, and apply grease to the parts that need it regularly. Maintenance will be discussed in more depth in Unit 5.

The Laws of Physics

Right now you're probably thinking, "Okay, so I know how the bike mechanisms work, but how do I actually *stay up*?" In order to explain how this is possible, we need to talk a little bit about **physics**. The laws of physics apply to pretty much everything on earth, and bicycles are no different. Important bike-related tenets of physics include the laws of force and motion, gravity, and inertia.

Force and Motion: A force makes objects move and, when applied in the opposite direction, can also make objects stop. When you pedal your bike forward or backward, you are creating force (from your feet to the pedals to the crank to the power train) that moves your bike's wheels and gets you going. You are the engine that *forces* your bike into motion. When you squeeze the brake lever with your hand, you exert force (from your hands to the lever to the cable to the brakes) that stops this motion by applying friction to the moving wheel.

Gravity: I'll bet you remember when you were learning how to ride a bike. Did you fall a lot? I sure did! Do you remember when you stopped falling? It likely happened because you learned how to go fast enough that balance became easier. Even now, if you go really slowly on your bike, you might feel like you're going to lose your balance and good old gravity will pull you to the ground. When we go fast enough on our bikes, the wheels act as an anti-gravity force. Have you ever spun a top? When you spin it fast enough, it stays up on its own, but when it slows down, it falls. It's like that with biking. As long as you maintain fast enough motion, you stay upright. Of course, this takes a lot of practice!

Inertia: The law of inertia states that an object that is in motion will remain in motion and an object that is at rest will remain at rest. To get a good idea of what inertia is about, get on your bike and pedal really fast, then hit the brakes. Did you stop right away or did you skid a little bit before stopping? I'll bet you skidded. Your bike wanted to remain in motion – that's inertia at work! Similarly, when you're stopped, it initially takes a bit of extra pedalling to get your bike moving. That's because when your bike is at rest, it wants to remain at rest, so you have to overcome that inertia to get rolling.

Does that answer your question about how you stay up when you ride your bike? As long as you keep forward momentum (force and motion) at the proper speed, you'll keep moving (inertia), and avoid any run-ins with the ground (gravity)!

Unit 2

Important Equipment: Getting Suited Up

Now that you know a little bit more about the history of the bicycle, the parts of the bicycle, and how it all works, you're ready to get suited up for a bike ride! There are definitely some important things to think about when you're getting ready to go for a ride, both for safety and comfort. This unit is going to teach you how to select appropriate safety gear, clothing, and equipment before you head out. Let's start with the most important piece of equipment: the bike!

Selecting Your Bike

There are a lot of different kinds of bikes out there. In fact, if you're not prepared when you go bike shopping, it can be very overwhelming, very quickly. That's why it's a good idea to sit down and ask yourself a few questions before you head out. Start by making a list of the most important things you want from a bicycle, and also the things you would like but could do without if you had to. As you read through this section, it might become easier to make the list.

The first thing you want to do is think about what kind of bicycling you plan on doing. Think about the areas around your house or apartment where you'll most likely be biking. If you like the idea of going off-road on dirt or grassy trails, you might want a **mountain bike**, with a suspension fork to make riding smoother and knobby tires to provide extra traction on uneven terrain. If you think you'll be sticking to the roads more often, riding around town to visit friends or run errands, you probably want a **road bike**. Road bikes have a lighter frame for going faster, but their thinner tires only provide minimum traction. If you're not sure what you're going to do more of, but want something versatile that will work well in most conditions, you could consider a **hybrid bike**. Hybrid bikes are a combination of mountain and road bike styles. They work well on rough bike paths (where a mountain bike might be overkill) and are also great for light off-road riding (where a road bike might not be comfortable). For more detailed information on the variety of bikes there are to choose from, see Unit 6.

Another important feature to consider when buying a bike is the number of speeds you want. Are you going to be riding up and down hills a lot? If you are, you probably want a bike with several gear options. You also want to consider your age and experience. You don't want to buy a really expensive professional grade bike if you're just starting out. Choose a bike that fits your expertise but also gives you room to grow as a cyclist. More components to consider are the types of tires, seat, handlebars, and pedals you

want, among other things. Be sure to ask yourself all these questions and do a little research either online, in magazines, or at your local bike store. This is an important decision and you want to make sure it's the right one for you!

When you've chosen the kind of bike you want, it's time to size it correctly. If you buy your bike from a bike store, the clerk should be able to properly fit your bike to your body. It's **VERY IMPORTANT** that your bike is the right size for you. A bike that is too big or too small can be dangerous and difficult to handle. You don't want to hurt yourself on your first ride!

How to fit a bike: As a general rule, when straddling the bike (not sitting on the seat, with the crossbar between your legs), your feet should touch the ground. There should be about 1 to 3 inches of space between your groin and the crossbar. The seat should be adjusted so that when you're sitting on it your feet can *just* be planted on the ground. This is important because if you need to stop or get off the bike quickly, you want your feet to quickly and easily touch the ground. If the bike *feels* especially big, small, or awkward when you first get on it, ask for a different size. It is not a good idea to buy a bike a size or two too big so you can "grow into it". A poorly sized bike can be dangerous to ride.

Now sit on the seat, while keeping one foot on the ground. When you place the other foot on the pedal, your knee should be only slightly bent. Too much bend and you'll end up with sore knees; too little bend and you won't get much power in your pedal strokes. This position should feel natural and comfortable. You should also be able to adjust the handlebar height so your elbows are slightly bent, your riding position is comfortable, and you feel in control of the bike. You should be able to grasp and squeeze the brake levers easily. Once your bike is sized for a perfect fit, you're ready to pick out the rest of your gear and start biking!

Protect Your Noggin!

What should you **NEVER** go cycling without? You guessed it, a properly fitted, CSA (the Canadian Standards Association registered mark shows that a product has been tested and certified to meet standards for safety and performance) approved **helmet**. A helmet is the **MOST IMPORTANT** piece of equipment necessary for bicycling (other than a bike because without a bike, you wouldn't be biking, would you?). If you fall off your bike without a helmet, you can be seriously and permanently injured. In many cities, it is illegal to ride a bicycle without wearing a helmet. Helmets are made from plastic and foam, both of which protect your head if there is an impact. The holes in the top and sides are vents to keep your head cool while riding. The straps are easily adjustable so that you can create the perfect fit that's both safe and comfortable. Just like properly fitting a bike, it's extremely important to have a properly fitting helmet. Don't even *think* about going for a ride until your helmet fits you perfectly.



How to fit a helmet: Definitely get your parent or guardian to help you fit your helmet. You might know more about bicycles than they do, but they probably know more about safety than you do. So, while they are helping you fit and adjust your helmet for optimum safety, you can teach them everything you've learned so far about bicycles! Make sure you select a helmet that's the right general size for your age. Try on a few helmets to see which one feels the most snug before doing any other adjustments. A good fit means that the helmet sits level on your head, touching everywhere, and is comfortable and snug, but not too tight. The helmet should cover your forehead (you should be able to fit no more than two finger widths between the front of the helmet and your eyebrows) and not rock side to side easily.

Once you've found a size that works for you, you can start making adjustments to the straps and the foam or felt sizing pads. Start with the pads. Place them in the areas where there might be some slight gaps in the fit of the helmet. Adjust their placement until the helmet fits even more snugly. Next, adjust the straps by centering the left buckle under your chin. Most helmets have straps that can be pulled from the back of the helmet to lengthen or shorten the chinstraps. It might be easier to do this by taking the helmet off. Adjust the slider on the side straps to form a "V" shape under, and slightly in front of, your ears. If you have a lock on the slider, use it. Now do up your chinstrap. Tighten it up until you can't fit more than two fingers under the strap.

Once you've made all these adjustments, do a final check. Open your mouth wide as if you're yawning. Does the helmet pull down on your head? If yes, good! If not, you may have to make more adjustments. Try rocking your helmet back and forth. Does it move forward and cover your eyes? If yes, it's still too loose. Try moving your helmet side to side. Does it bend your ears over? If it does, then it's back to tightening and readjusting for you!

Remember that helmets must be replaced any time you've had a crash. Impact compromises the foam core, and even if dents aren't visible, the damage is still there. Otherwise, use common sense when replacing a helmet. A lot of manufacturers recommend replacing a helmet after 5 years, but that's not always necessary if it's in good shape and has never been in a collision. Use common sense with your helmet; it protects the most important part of you: your brain!

Everything Else

Now that you've got your bike and helmet sorted out, it's time to talk a bit about the important other things you need to consider before you go out for your first ride.

Bell: Yes, you need a bell! A lot of communities actually require cyclists to have a signalling device like a bell on their bike. Bells come in all shapes, sizes and sounds and help cyclists communicate to **pedestrians** and other cyclists. The "ding" of a bell says, "I'm coming up behind you, please give me room!" or "I'm here, please be careful!" or "I can't see around this bend in the trail, so I'm letting you know I'm here!" Feel free to get creative with the

kind of bell you buy. I once had a blue hippo that squeaked like a dog toy! As long as the sound it makes is loud enough to be heard in traffic or heavy weather, you're all set.

Shoes: The shoes you choose to bike in are also important for your safety. Don't worry, you don't necessarily need to run out and buy special cycling shoes, but be sensible. Flip-flops aren't really a good choice. If you do fall, you will probably scrape your feet and open-toed shoes don't provide much in the way of protection. You want to choose shoes that have a thick sole and fit comfortably without any risk of them falling off. Sneakers or running shoes are probably your best bet for comfort and safety.

Clothing: Wear clothing that's appropriate for the weather in which you'll be biking. If it's raining out, wear a rain jacket. If it's really hot, wear a t-shirt (and don't forget sunscreen). Just remember that biking is exercise, and will probably make you warm once you get going, so consider wearing layers and bringing a backpack to put them in as you warm up. Also, if you're going out in low light conditions, such as on a really cloudy day or at night, it's important that you wear bright or reflective colours so you're visible to other people (like those driving vehicles).

Water Bottle: Exercise makes us thirsty, and you won't get far on your bike if you don't have water along for the ride. Choose a water bottle that can be cleaned easily and comes with a holder that can be attached to your bike frame. Fill it full of fresh water before every bike ride. You'll never regret the few extra minutes this takes!

Bike Lock: You like your bike, right? Do you want to have it for a long time? I'll bet you do! The best way to keep your bike safe is to lock it up with a high quality bike lock. Unfortunately, no lock can guarantee your bike won't get stolen, but you can buy high quality locks that will discourage bike thieves from even trying. There are a lot of different lock styles out there, but the best combine a "U-lock" (a lock that's shaped like a "U" with a flat bottom) with a strong cable. This way, you can thread the cable through your front and rear tires and U-lock, which will lock the frame of your bike to a bike stand. Other than the frame, the rear wheel, hub, and sprocket is one of the most expensive parts of a bike. Lock it all together for a very secure set-up. Many locks come with attachments so that the lock can be secured to your bike (just like your water bottle) and go everywhere with you. That way, you're never stuck without it.



Accessories: There are all kinds of biking accessories out there that can add to your cycling experience. You can find gloves that reduce impact and prevent blisters that can form on long rides. Similarly, bike shorts with built-in foam pads can make a long day on your bike seat a lot less painful at the end of the day. You can find cycling sunglasses that fit comfortably with a helmet and protect your eyes on bright, sunny

days. Odometers can be attached to your handlebars and record the distance you've travelled. You can even find a little generator that hooks up to your rear wheel and powers your bike light! There's no end to the types of gadgets you can find to enhance your cycling experience. Before buying anything, do some research either online or in your local bikes shop to make sure it's really worth the cost.

Safety First!

So you now have your gear and you're ready to get biking, right? Not so fast. By now, you've probably guessed that one of the most important aspects of biking is safety. Cycling is a lot more fun when you're behaving in a safe manner, mostly because being safe means you get to *keep* cycling, as opposed to waiting in an emergency clinic or worse. When you're on your bike, you are considered a vehicle, and you need to behave as such. Motor vehicles have rules they follow and bicycles are no different. I've compiled some tips for you that will keep you safe on the roads, trails or even in your backyard.

- **Always perform the “ABC” pre-ride check.** ABC in this case stands for **A**ir pressure, **B**rakes, and **C**hain. Check the air pressure in your tires to make sure they're properly inflated using a bike tire pump. The correct **PSI** (pounds per square inch) should be written on the tires. If you don't have a pump at home, many local bike shops have a free tire fill-up station, as do many gas stations. Just make sure you add a little bit of air at a time – air compressors can easily overfill or burst your tires. To check your brakes, start by lifting up your front tire, spin it, and squeeze the left brake lever (the front brake). The tire should stop quickly. Now repeat the process with your rear tire. Finally, make sure your chain is properly greased, clear of debris and not too loose. Once you're confident your bike is in good shape, you're ready to ride. Perform these checks prior to *every* bike ride.
- **Stop, look, and listen!** Always pay attention when you're on your bike. NEVER wear headphones or ear buds while riding, because music can block out traffic noise. Stay alert and know your surroundings, including where other vehicles are and what they're doing. Keep an eye out for distractions like animals, pedestrians, and other cyclists. Watch carefully for road hazards like potholes, broken glass, gravel, leaves, sand, puddles, and other debris, which can all cause crashes. If you are in a group and you're the lead rider, be sure to keep your companions aware of any hazards you encounter by yelling behind you and pointing them out.
- **See and be seen.** No matter what time of day it is, what the weather is like, and who you're with, you need to be visible to others. Avoid wearing dark colours, which can blend in with your surroundings. Wear neon, fluorescent, or other bright colours if you're riding at dusk or night. Wearing clothing that reflects light, similar to how your bike's reflectors work, like a vest or reflective tape, makes you easier to see. Local bike shops sell a variety of items that can make you more visible when riding your bike. Make sure your bike has

reflectors and that they are clean. Remember that just because you might be able to see a driver doesn't mean that the driver can see you.

- **Avoid riding at night.** You can probably guess why it's more dangerous to ride your bike at night than in the daytime. You are harder to see and it's harder for you to see obstacles. Unless you're very confident on your bike, both at manoeuvring and obeying traffic laws, I wouldn't recommend cycling at night. However, if you do want to ride at night, it is extremely important – and in some towns it's the law – that you use a set of bike lights. The front light should be a white light that looks a lot like a headlight. This light will attach easily to your handlebars. The rear light should be a red light that can be set to flash and can be mounted to your seat post. These lights will make you much more visible at night and may just save your life.
- **Obey all traffic laws.** Make sure to do some research into the traffic laws for bicycles in your area. Unit 4 will discuss this in more detail.



Unit 3

Learning How to Ride

Getting Started

You may already know how to ride a bike. In fact, you may have already been riding for years. If this is the case, keep reading, because this section can help even the most experienced rider. You never know if there's an easier or safer way of doing something, and that's what we're here to talk about. To start off, let's talk about the importance of **balance**. Thanks to Unit 1, you understand how the laws of physics keep you upright on your bike using the principles of force, motion, gravity, and inertia, but you have a job to do yourself, and that's balance. When you're seated on your bike and lean to left or right, you should be able to keep from falling over. Ask someone to help you by holding onto the bike while you put your feet on the pedals. Lean to the right and put your foot down to catch yourself. Now try it on the other side. Practicing this will help you learn how to balance and control your bike.

To learn how to ride, follow the steps listed below. If you need help, ask a parent or guardian, friend or club leader to assist you.

1. Walk your bike to a flat spot. You don't want to make things harder by starting on a hill.
2. Straddle your bike (one foot on either side) and grab the handlebars.
3. Point one pedal toward the front of the bike (whichever one you want).
4. Put one foot on that pedal and keep your other foot on the ground.
5. Push down on the pedal while pushing forward with the foot that's on the ground. This will move the bike forward. You may need to give yourself a little speed so it's easier to balance, but don't go too fast at the start so you feel out of control.
6. Now lift your second foot onto the other pedal and start pedalling forward while bringing your bum up to sit on the seat.
7. If you want, you can make your first try easier by starting on a very slight downhill slope. You could also adjust your seat so it's a little lower than normal. Once you've gotten the hang of riding, you can return your seat to the proper position.
8. Remember that practice makes perfect, so keep at it and eventually you'll be riding like a pro!

How to Stop

Now that you're starting to get the hang of it, you're probably wondering how you're going to stop yourself from barrelling down the street, right? In addition to learning how to *ride* a bike, learning how to *stop* a bike is pretty important! You want to be careful not to pull your brake levers too tightly, too quickly. If you pull too hard, you could get hurt. Using both brakes at once, slow the speed of the bike by slowly squeezing the brake levers. As the bike starts to stop, slide off the seat and take one foot off the pedal. Lower that foot toward the ground as the bike continues to slow down. At the moment the bike stops, place that foot onto the ground to support yourself and the bike. When you're more comfortable, practice riding around and applying your brakes using different pressures so that you become familiar with how they feel. Start slowly and gradually increase your speed. Try to stop to avoid objects on the ground, like a toy or a pile of leaves.

Remember that the right-hand brake is for your back tire, and the left-hand brake is for your front tire. Some people say you should never use your front brake alone to stop the bike, which could cause you to go over the handlebars. Always use caution when only using your front brake. I learned the hard way that squeezing the front brake while on a particularly steep downhill is a really bad idea. I'll bet you can imagine what happened when I did that! Either use both brakes together as often as possible for maximum stopping power, or favour the right (rear) brake.

Body positioning

Since balance is so important in cycling, you want to be aware of your body positioning at all times. You want to keep a firm but relaxed grip on the handlebars most of the time. This will keep your arms from getting too tired. Keep your arms in line with your body with your elbows slightly bent. They will absorb any road bumps. Keep your back straight and flat to keep from experiencing early fatigue. When climbing hills, you want extra power, so you might want to raise your bum off the seat so you can pump the pedals harder. Lean forward slightly if the hill has a gradual incline and more if it has a sharp incline. When going downhill, depending on the incline, you want to lean slightly backward and put more weight on your back tire. Leaning too far forward might make you feel like you're going to go over your handlebars. When turning, lean a little bit into the corners, but not so much that you worry you might fall over. Your body position while braking is also important to avoid falling or losing your balance. Instead of sitting rigidly upright with perfect posture, get low on the bike and you'll be able to stop faster. If you stretch your arms out straighter and slide your bum to the back of the seat, you'll shift your weight to the back tire, which will give you more traction for stopping. It will also keep you from feeling like you're going to go over the handlebars and help you maintain balance when you do slow to a stop. Remember to always pay attention to your body and never push yourself through pain. You could be doing serious damage to your body, and worse, you might be forced to take a break from biking while you heal! Importantly, start slowly and be patient because learning how to properly position yourself while riding takes some practice!

Riding Tips

1. **Always look ahead** – Keep your eyes in front of your bike. There's a funny thing that happens in our brains while biking, and that's that wherever your eyes look, that's where the bike will go. Try it on your bike. Find a line on the road, like a bike lane divider, and try to bike right on top of it without going off. Stare ahead about 2 meters in front at the line. Now take your eyes off the line. Did you start to veer off? This technique works very well on mountain biking trails. Keep your eyes ahead to the part of the trail that you want to ride on and your body will follow!
2. **Know where you're going** – Before you even leave the house, know where you're going. It's fine to go for a fun bike ride without a purpose, but you should be relatively familiar with the area you're going to so you can ensure you understand the road rules, traffic history and can bring appropriate gear (for weather changes, terrain features, etc.). Do a little research before heading out.
3. **Watch for possible hazards** – There are a lot of hazards out there. They include potholes, loose animals and unexpected opening car doors. If you look ahead and predict potential hazards you'll be able to avoid them or react to them in time to stay safe. Practice avoiding hazards without swerving out into traffic. You'll learn more about how to do this in the section on scanning in Unit
4. **Plan your next move** – I mentioned in point one that you should always be looking ahead. Planning your next move means using the information you got by looking ahead to react appropriately to what you see. If you see a big pothole that's going to be difficult to avoid, you need to be ready to plan your next move. This might mean veering out sharply to the left or right to avoid it. However, you need to be aware if there are any oncoming vehicles that you might be swerving in front of. Planning your next move means making the right decisions based on what you see around you. Remember that most bike accidents happen when riding, so sometimes the best and safest move is to dismount (get off your bike) and walk your bike around or through an obstacle.
5. **Be Predictable** – Follow the traffic rules for your area. Ride on the right-hand side of the street with the flow of traffic. Stop at all stop signs and red lights. Scan all intersections for possible hazards and use hand signals (more on this in Unit 4) prior to all turns.
6. **Have confidence** – It's important to bike with confidence. You want to feel in control at all times on your bike, and capable of making safe decisions. Be decisive and trust yourself. Make eye contact with other cyclists, drivers, and pedestrians and ensure they can see you. You're in charge of yourself and your bike, be confident in your skills. If you are unsure or feel uncomfortable on your bike, perhaps you're not ready to make the big move to cycling on the street and should keep practicing in your backyard or another safe place free of traffic.

Shifting Gears

If you have a bike with gears, you've probably already learned that they make pedalling either easier or more difficult. You can think of bike gears like "speeds". A bike with 10 gears is also known as a 10-speed bike. Bikes have gears because we are hardly ever biking in perfect conditions (no wind) or flat surfaces. Gears help us keep a sustained pedalling pace on uphill or downhill sections without having to expend too much more energy. Lower numbers are the low gears and higher numbers are the high gears. First gear is the lowest gear, and tenth gear is the highest gear on a ten-speed bike. Low gears make it easier to pedal, and high gears make it harder. For instance, if you're going up a hill, you want to be in a lower gear and if you're going downhill, you want to be in a higher gear. Make sense?

When you "shift", you change from one gear to the other. Your bike shifts gears by moving the chain onto a different ring, as discussed in the section about how bicycles work in Unit 1. You shift by using the shifter on the handlebars (or down tube, depending on your bike). Downshifting means going into a lower gear and upshifting means going into a higher gear, but some people just say, "down shift" and "shift up". An easy way to remember when to shift is to remember that when you're going uphill, you want to shift down, and when you're going downhill, you want to shift up. It's a bit the opposite of what you might expect but that makes it easy to remember too!

Fuelling the Engine

When people drive cars, they have to remember to keep gas in the fuel tank. If the car runs out of gas, it's not going anywhere! It's the same with biking, only YOU are the engine and your fuel is water and nutritious food. Your body won't let you go much farther if you run out of this kind of fuel. As I mentioned earlier, water is very important with any exercise, and biking is great exercise! Your bike should have a water bottle holder with a water bottle in it at all times full of fresh water. If your bike doesn't have a bottle cage, then make sure you bring a backpack and keep water in there. Take regular water breaks while biking because if you get too dehydrated your muscles could seize up or get really sore – especially the next day. The more water you drink, the longer you'll be able to bike and the more fun you'll have! As for food, you definitely need that for energy. Food provides our bodies with plenty of carbohydrates, energy and protein to keep us moving and repair and build muscle. Granola bars, dried fruit, and nuts are great staples for maintaining energy during your rides. Professional cyclists swear by bananas, which provide tons of energy and potassium. Take healthy snacks along if you're going for a long ride, or have a snack before you head out to put extra fuel in your tank. Remember this handy mantra: always eat before you are hungry and drink before you are thirsty. This way, you'll never feel the effects of hunger or dehydration.

Taking Care of your Engine

If your body is your engine, you want it to run smoothly, right? In order for your engine to run in tiptop shape, you have to treat it right. It might be tempting to dive right into biking and take on your first 20-kilometre trip immediately. Unfortunately, this means you're going to wake up pretty sore tomorrow, and it might even turn you off cycling. It's important to let your body build up the muscles required for biking slowly. Start with short rides that increase in length over the course of a few months. Biking uses different sets of muscles than walking, running, or other sports. When you cycle, you use predominantly your leg and buttocks muscles. The leg muscles that get you moving on your bike are your quadriceps (the big thigh muscles on the front of your thighs), hamstrings (the muscles on the back of your thighs), and calf muscles (the lower leg muscles). It's always a good idea to stretch prior to any exercise, and stretching those muscle groups before you head out on a ride will seriously reduce the likelihood of pain the following day. Here are a few stretches you can do both before and after your bike ride. Hold each for at least 15-30 seconds.

1. **Calf stretch:** Stand with your feet flat on the ground pointed straight ahead. Bend at the hips with a slight bend in your knees and put your right heel on the ground slightly in front of your left toe. Point your right toes up at the sky. Put your hands on your left knee and lean forward. Push your buttocks up to the sky and feel the stretch through the back of your right leg. Hold and then switch feet.
2. **Quadriceps stretch:** While standing, raise your right ankle behind you and reach back with your right hand to grab your right ankle. Pull your ankle gently up towards your butt. Feel the stretch in your quadriceps, the big muscle on the front of your thigh. Hold for a few seconds and then switch feet.
3. **Hamstring stretch:** Standing, lift your arms up over your head and then bend forward at the waist. Reach your arms forward as you bend. Now let your arms dangle toward the ground. Gently put your weight onto your toes and feel the stretch through the backs of your legs. Hold this stretch for as long as you like, but at least 30 seconds. Breathe deeply and slowly. This stretch has the added benefit of stretching the back out too.
4. **IT band stretch:** The IT band runs down the side of your leg and helps with balance and control. To stretch it, lay on the ground in a sit-up position. Cross your left ankle over your right knee and lift your right foot off the ground as you bring your knee toward your upper body. Hold when you feel the stretch in the side of your legs for the allotted time and then switch legs.
5. **Gluteus stretch:** The gluteus muscles make up your buttocks. For this stretch, sit in a cross-legged sitting position on the floor. Angle your left leg over the right and plant your left foot next to the right knee, so your left leg forms a triangle. Hold onto the front of your left knee and lean forward, keeping your back straight. You will feel the stretch along your left hamstring. Hold this stretch and then switch legs.

Falling – Everyone Does It

You know what? You're probably going to fall. It's true. I wish I could say it wasn't, but it is. Everyone falls off his or her bike, at least once. Ask anyone. Who doesn't have a story about a fall or crash? Thankfully, those people are still here, alive and well, probably because they were wearing a helmet. So don't worry, crashes aren't the end of the world, and as long as you've been very careful and taken all the safety precautions into account, it won't be a big deal. If you do fall off your bike, you might have a few scrapes and bruises. Unfortunately, there isn't much you can do to treat the bruises, but you can treat the scrapes easily enough. Start by cleaning out all the debris from the wound, including dirt. You can do this with mild soap and water or a saline solution. Once you're confident you've gotten all the dirt out, apply some antibiotic ointment and a dry dressing. If you have lacerations in the scrape that look like they may potentially need stitches, apply a compress and direct pressure to stop any bleeding and see a doctor immediately. Also, don't take ANY chances with head injuries. If you hit your head during a fall, tell a parent or guardian and go directly to an emergency clinic.

Planning a Bike Trip

If you're planning a bike trip with others, there are some preparatory things you should do before heading out.

1. **Plan your route** – Plan ahead and find out the safest route to get to your destination and be sure there are no road hazards (like construction) in your way. Google Maps is a good place to search because it lists traffic congestion in addition to your route. Avoid routes with a lot of traffic, bad road conditions (potholes) or narrow roads with lots of parked cars. Choose side streets over busy roads *every* time. Safer routes have smooth, paved surfaces, are straight and wide, and have stop signs and traffic lights to make it easier to get through intersections.
2. **Check weather reports** – Always check ahead using a website like Environment Canada. Look at the radar to make sure a big storm isn't heading your way. Pack extra water if it's going to be hot or a rain jacket if there's a chance of rain.
3. **Bring plenty of food and water** – Decide how much water and food you bring based on how far you want to go. As a general rule, plan to snack every 16 kilometres and to drink one litre of water per hour.
4. **Use the buddy system** – Find a friend to come along on your trip. Not only is it more fun to have a friend along, it's far safer. If one of you gets hurt, the other can get help. If you get lost, there are two of you to find your way. Bring a cell phone for emergencies.

Unit 4

The Rules of the Road

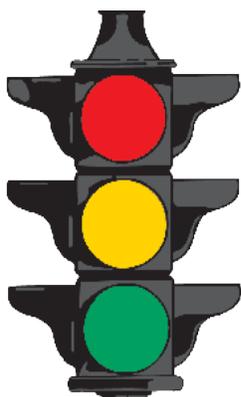
There are a lot of different kinds of vehicles out there. They include cars, trucks, motorcycles and other bicycles. There are a lot of people using the roads! Because of this, cities have traffic laws that *must* be obeyed, in order to keep everyone safe and get them to their destination efficiently. As a cyclist, you have a right to be on almost all roads, as long as you obey these traffic laws, just like a motorized vehicle. However, why put yourself in unnecessary danger? You wouldn't want to go riding on the busiest street in your town, would you? There are a lot of dangers on roads with heavy traffic. When possible, avoid busy streets as best you can. It will be a much more enjoyable ride for you. No matter what kind of road you're on, you should adhere to the traffic laws of the city or town you're in. Most cities and towns have similar traffic laws. The ones listed here are generally what you'll find in most places. I would recommend doing a little research about your own town and finding out if there are any specific laws for your area. You could even call your local town or city hall to ask about local traffic rules and regulations.

Traffic Signs

Road signs and traffic signals will help you make safe decisions while out cycling. These signs communicate to bicyclists, pedestrians and drivers what to do and what to look out for.



Arrow – The pointing arrow means go only in the direction of the arrow.



Red light – Stop! Never cycle through a red light.

Flashing red light – come to a complete stop. Check that it is safe to proceed. Go when the way is clear.

Yellow light – Stop! Do not enter the intersection. The light is about to change to red.

Flashing yellow light – Slow down. Check the traffic. Proceed with caution.

Green – Go if the intersection is clear.



One way – All traffic on this road must go in the same direction.



Railway Crossing – Look both ways and listen for a train. If you hear or see a train, wait at a safe distance for the train to pass. If there is no train, go carefully across the tracks. Consider walking your bike if the tracks are particularly uneven.



School Zone – Slow down and watch for children crossing the street.



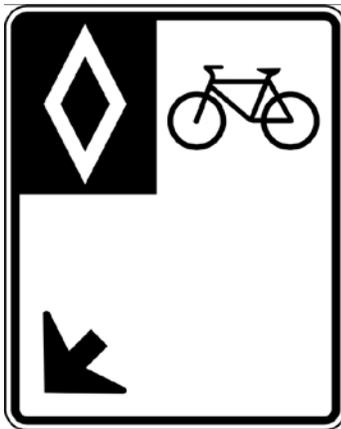
Stop Sign – Come to a complete stop at all stop signs.



Yield – Wait for the other vehicle to go first. Only go when it's all clear.



No Bicycles Sign – This one is pretty self-explanatory. Do not take your bicycle past this point.



Bicycle Lane Sign – This sign is present when there is a dedicated bike lane on the road. Stick to this lane at all times unless turning.

Hand Signals

Motor vehicles communicate their intentions to one another with turn signals on the front and rear corners of the car and brake lights on the rear. Can you imagine what driving would be like without these lights? You wouldn't know what the car in front of you was doing! Unfortunately, most bicycles don't come equipped with turn signals, so cyclists have to use their arms to communicate their intentions. Balancing while signalling can be a bit tricky at first, but with practice you'll get it. Don't go cycling in traffic until you're able to signal correctly and confidently while in motion.



Left turn signal – For this signal, lift your left arm off the handlebars and hold it straight out with your open palm facing forward, pointing in the direction you want to turn. When the coast is clear, execute your left turn.



Right turn signal – For this signal, lift your left arm off the handlebars and bend it at the elbow with your open palm facing forward and your fingertips facing upward. When the coast is clear, execute your right turn. An alternative to this signal is to do the left turn signal but on the right side, pointing with your right arm to the right. Check to see what the accepted hand signals are in your area before using this alternative signal.



Stopping signal – When you want to slow down or stop, put your left arm out and bend it at the elbow with your open palm facing backward and your fingertips facing downward. You'll have to use your right hand alone to squeeze your brake lever.

Cycling Etiquette

As more and more people start cycling for fun, exercise, and environmentally friendly transport, it becomes even more important for everyone to get along on the roads. Keep in mind that no matter where you go on your bike, who you meet, and what vehicle they are in, you should always be courteous and kind. If you respect other motorists, they will respect you. Sometimes people will be rude to you. If they are, never respond or strike back. Not only will this take your mind off what you're doing, but it could also prompt that person to react angrily and irresponsibly. We all have the right to use the road, and most of us follow the rules, but some people don't and getting angry won't solve anything. You pledged your "head to clearer thinking" and that means keeping your cool. Always treat others as you'd like to be treated, even if they upset you.

Scanning

Looking around and staying alert are the most important things you can do to stay safe while riding your bike. If you spot a hazard before it becomes a problem, you can successfully avoid it and continue on your way. Learning to balance and to look around at the same time is part of bicycle safety. Just like gymnastics, looking backwards while biking requires a lot of balancing. What can happen if you're on your bike and you lose your balance? That's right, you can fall. Scanning is the skill of looking all around and behind you while maintaining your balance. It takes a lot of practice, but it's not a good idea to go out cycling in traffic until you become an expert scanner.

How to Ride in Different Road Conditions

If you've been out biking you've probably already seen different road conditions. You likely ride on asphalt more than anything, but there are also gravel roads, sand, cobbled roads, and snowy winter roads to think about. Different roads have different hazards to be aware of, and they are listed below.

Asphalt – No matter what kind of bike you have, you will almost certainly encounter asphalt. Asphalt is what our city and town roads are made of. They can be incredibly smooth and comfortable to ride on, but they can also be treacherous with potholes and debris. The best conditions on asphalt are smooth and dry. When it rains, asphalt can get really slick and slippery. If you have to stop suddenly and slam on your brakes, you can appreciate how your bike might skid out (remember what you learned about inertia in Unit 1). Also, water tends to pool in the wheel wells in the road, causing deep puddles that are often hard to see. When biking on wet asphalt, go slowly and try to avoid puddles as best you can. If you hit a big puddle, not only will you get wet (which is no fun at all), but also your tires could slip out and you could fall. Be very cautious when riding in the rain on asphalt.



Gravel – Gravel roads can be dangerous to cycle on. The loose nature of the surface makes it difficult to get traction and your tires can slide out from under you. Gravel becomes even more precarious at high speeds or when turning sharply. If you are biking on gravel, ride as slowly and safely as you can and turn slowly. Watch out for passing cars, as they can kick up gravel that could hurt you.

Sand – Biking in sand is a lot like biking in gravel. It's slightly less dangerous, because the particles in the sand are smaller and create a harder surface. You can still slide out in sand if you try to turn too quickly, so take turns slowly. Biking in sand can also be very hard and slow moving. The harder the sand, the easier it will be to bike in, so try to find a more densely packed section on which to travel.

Cobbled – There aren't a lot of places in Canada that have cobbled streets, but there are some, so you want to be aware of the risks and strategies for biking on them. Cobbled streets can be uneven and slick in the rain. Bend your elbows when riding on them to reduce the impact of the unevenness on your upper body, and maybe even lift your bum off the seat to cushion the impact on your lower body. As for the rain, keep your pace slow and look ahead while avoiding turning sharply.

Winter Roads – Winter roads can definitely be tricky and should only be ridden by experienced cyclists. If you want to ride in winter, there are some issues you need to consider and additional gear you should purchase. Winter roads can be very slippery. Due to snow and ice, a lot of roads become narrower in the winter, which means there is less room to share with vehicles. If you want to bike in the winter, stick to side roads as much as possible. Also, consider investing in some studded bike tires that will grip the snow and ice and provide better traction. Since the days are shorter in the winter, always carry bike lights with you, because you might end up being out longer than you expected and it could be dark by the time you get home. Also be sure to layer up so that you're warm enough and are ready for inclement weather to strike. Bike slowly and deliberately and go slowly when turning. Adhere to all the rules of the road and be wary of cars skidding on the ice. Be predictable and safe at all times!

The Sidewalk

It's now officially illegal in most places to ride your bike on the sidewalk. You should feel comfortable in your bike riding abilities and have no problem being on the road. However, if you don't, you should NOT be biking in areas with traffic. If you are too afraid to ride on the road, and prefer the sidewalk, perhaps you're not ready to go out where other vehicles are and should stick to trails or your backyard. Riding on the sidewalk has its own set of dangers, like cars pulling out of driveways and hitting pedestrians. However, there are some places where you may have no choice but to use the sidewalk. The safest practice is to dismount and walk your bike when on a sidewalk. But if you absolutely *must* ride on the sidewalk, follow these rules that will greatly reduce your chances of getting a ticket (it is illegal, after all) or getting hurt.

1. **Go slowly** – The sidewalk is made for pedestrians, not vehicles. Pedestrians don't have rear-view mirrors, so they can't see you approaching from behind. You should never go faster on a sidewalk than someone jogging at a relaxed pace. Pedalling fast on the sidewalk is an easy way for you to get hurt, or worse, for you to hurt someone else.
2. **Yield to pedestrians** – This tip is pretty straightforward. You don't actually belong on the sidewalk, so you should give right-of-way to those who do. When you come up behind someone, ring your bell to let them know you're there. Pass slowly once they give you room, and definitely say "thank you" as you ride by. Be courteous!

3. **Check every cross street and driveway** – Drivers aren't looking for fast moving vehicles on the sidewalk, so sometimes they may not see you right away. As you come up to a cross street or driveway, be sure that there isn't a moving car ready to accelerate. This can be very dangerous if you're not paying attention!
4. **Only cross the street at crosswalks** – Drivers also aren't looking for vehicles to come *off* the sidewalk quickly. You don't get to decide to be a bike or a pedestrian any time you want. If you're going to bike on the sidewalk, use the sidewalk like a pedestrian and don't dart out onto the street and then get back on the sidewalk. If you need to cross the street, do so at a cross walk.
5. **Be willing to walk your bike** – Sometimes, you just have to get off your bike and walk it. This is usually the best decision when you're in a congested or crowded area with a lot of pedestrians, like at a street fair or a farmers' market. It's much safer (and kinder) to walk your bike through these areas and avoid hitting someone.

Life in the Bike Lane

Forget about living in the *fast lane*, if you're biking in the city, you want to live in the *bike lane*! If you live in a city or town with bike lanes, you're very lucky! Bike lanes are great because they minimize the risks and hazards of biking in traffic and also riding on the sidewalk. Bike lanes are dedicated areas of road (generally on the right hand side) that are dedicated solely to cyclists. Solid painted white lines and the images of a triangle and a bike designate these narrow lanes. If your town has bike lanes, stick to them as much as possible. Only leave them if you need to make a turn, and do so following the same guidelines as a regular turn. If the bike lane is full of debris or obstructions, avoid it and inform your local city council. It's their job to maintain the roads, and that includes bike lanes.

Cycling in a Group

I'd wager a guess that now that you're a cycling machine, you're going to want to go out with a group of friends. Biking can be a very fun group activity, as long as it's done safely. First off, you don't want to ride side-by-side. Instead, you should ride single-file. I know, it might be more fun to chat while you're riding, and it's certainly easier to do that if you're beside your friend. However, if you're on a road, there isn't enough room for both of you to ride safely beside one another, so keep in a single-file. Keep side-by-side riding for the trails. Now that you're riding in a line, give the rider in front of you lots of room. You never know when they're going to see an obstruction and have to brake or swerve. You want to be far enough behind that you'll be able to react accordingly. Give the cyclist in front of you at least two bicycle lengths of space because you need time to react if they stop suddenly. If you're in the lead, try to keep a steady pace and watch out for hazards. Use hand signals so the cyclists behind you will know what you're going to do. Communicate early enough so that everyone can stay together.

Unit 5

Basic Bicycle Maintenance and Repair

Bicycles can last a long time when taken care of properly. You want to keep your bike in great shape so you're always ready to head out for a ride, and aren't kept home by mechanical issues. Maintaining your bike means more than just a yearly tune-up. It means inspecting it every time before you go out for a ride (remember the ABC check from Unit 1). Regular maintenance will help you spot potential problems before they become too difficult to fix on your own. If you do little repairs here and there, and keep your bike clean, you can prevent these bigger problems developing, which might require you to see a professional bike mechanic.

Basic Tools

There are a few tools you're going to need to keep your bike running smoothly. I've listed the essentials below. You should be able to buy these from any hardware store that sells bikes or your local bike store.

Bike pump – A bike pump is a required piece of equipment for every cyclist. Tires lose pressure all the time for a variety of reasons, and a low tire, in addition to being no fun to ride on, could cause damage to your rims. There are a lot of different kinds of bike pumps out there, but it's a good idea to try out a few to see which ones are more comfortable for you. Consider things like size, performance, and your individual needs when selecting a pump. They come in a variety of sizes, some quite large (which you'd want to leave at home), and others that are more compact that you can take along with you in case you encounter a flat tire on your ride. Performance means how efficient the bike pump is at inflating your tire. If you want something that works super quickly, you might have to spend a bit more money. If you don't mind getting a little sweaty while pumping up your tire, go for something a little cheaper that still gets the job done. As for your individual needs, consider the weight, the **valve stem** type on your bike tires, and ease of use. Some pumps come equipped with built-in tire gauges so you'll be able to stop pumping at the exact correct pressure for your tires. This little feature can be very handy!

Allen key set – Most bikes these days come equipped with hexagonally-shaped bolts that work with Allen (also known as hex) keys. These keys can be inserted to adjust everything on your bike from your seat, brakes, gears, etc. You'll want to buy a good set with a variety of sizes to work on every bolt. Keep your Allen key set with you during your ride to make adjustments en route.

Extra inner tubes – Flat tires happen to everyone. It's much better to be ready for it to happen than not. Each of your tires has an inner tube inside that holds air and keeps

your bike rolling smoothly. These rubber doughnut-shaped balloons can be fragile and pop easily. When you buy your bike, ask the clerk to sell you a few extra tubes that you can keep handy in case you blow a tire. You'll learn how to change a blown tube later in this unit.

Tire Levers – In order to prevent further damage to your tire, rim, and tube, always use tire levers when changing tubes. Don't ever use a screwdriver! Plastic tire levers gently lift the tire into place without damaging the rim. They usually come in sets of three and are very inexpensive.

Bike Lubricant (chain oil) – Keeping your bike parts lubricated is crucial for good performance. Lubricant protects the moving parts from excessive wear, keeps them working smoothly, and keeps rust at bay. Be careful not to lubricate too much, it can lead to poor performance and damage to the components of the bike. Wipe off excess lubricant before going out for a ride. You'll learn more about lubricating your bike later in this unit. Buy dedicated bike lubricant that is well suited to your weather and riding conditions. Ask the clerk at your local bike shop what will work best for you.

It's a good idea to have a bicycling "travel kit" on you at all times when you go out on a ride. You never know what could happen when you're far from home and you want to be prepared for anything. Pack a small bag with your Allen key set, an extra tube, a couple of tire levers, bike lubricant and bike pump if you have a compact one. You won't regret it!

Basic Bicycle Maintenance and Repairs

There are a few things you can do on your own to maintain or fix your bike without taking it to a professional bike mechanic. Perform these tasks regularly and you might not have to take your bike for a professional tune-up for a very long time, saving you money.

How to Clean your Bike – You can do your best to keep your bike clean, but I guarantee that eventually you're going to get it dirty. Keeping your bike clean will keep it from rusting and keep your components in tiptop shape. Cleaning your bike will also significantly reduce your need to replace damaged parts during its life. But there's more to cleaning your bike than just hosing it down with water regularly. High-pressure hoses can actually cause damage to sensitive braking systems, so you want to be careful when spraying your bike with any hose. Clean your bike frequently if you find yourself doing most of your riding in wet and muddy conditions. If you ride in the winter on salted or sanded roads, you'll have to be more vigilant with cleaning as well. Otherwise, clean your bike once a month or once a week depending on the kind of riding you do. To clean your bike, using a clean rag and a bucket of water with mild soap (like watered-down dishwashing liquid), gently wash your bike, being careful around sensitive components. Old toothbrushes work for scrubbing hard to reach places. Use a dedicated solvent or degreaser, to clean up gummy parts like your bike chain. Make sure any cleaner you use is environmentally friendly and gentle on your

skin. Many bike shops sell this kind of product as a “citrus degreaser”. When you’re finished washing, gently rinse with clean water and apply lubricant to all the areas on your bike that require it. To keep your bike clean when you’re not using it, store it inside out of the weather. If you must leave your bike outside, cover it up with a tarp or a blanket.

Pressure Check – The air pressure in your tires affects the way your bike handles. With too little, you can get a flat as soon as you hit a rock or a pothole. With too much, your control is significantly reduced and you run the risk of a tube explosion. Air pressure is measured in pounds per square inch (psi). The recommended psi for your tires should be written on the side of the tire, never inflate more than this amount. Sometimes a tire can lose air even though you can’t see anything wrong with it – like a nail embedded in it. It’s important to check your air pressure before every ride, especially if your bike sits around for a long period in between rides. Follow the instructions below prior to every bike ride:

1. Check the sidewalls of each tire. That’s the side of the tire, the part that doesn’t touch the ground. When tires get old and worn, cracks develop and are a sign of weakness. A weak sidewall might not be strong enough to hold a tube inside the tire. If the tube breaks through you’ve got a flat tire on your hands! If your tires have cracked sidewalls, it’s time to think about replacing them.
2. Now, using a tire gauge, unscrew the cap on the tire air valves, and check the pressure. If it’s low, grab your bike pump and inflate the tire to the recommended psi. Replace the air valve cap when you’re finished and you’re ready to ride!

Lubricating your Bike – There are a few parts on your bike that need to be lubricated to keep in good working order. The first is your chain, which is one of the most important parts of your bike and is also the most “at risk” lubricated part. You want to lubricate it frequently to avoid chain wear and those annoying squeaks and squeals. The more you lube your chain, the less necessary chain replacements are. As a general rule, lubricate your chain whenever it squeaks or looks dry. After any wet bike ride, lube your chain to prevent rust from forming. You’ll also want to lubricate your brake and derailleur levers occasionally. Add a drop or two of oil to the lever adjusters to keep them functioning well. Your brake and derailleur cables should be lubricated at roughly the same rate you service the levers. Keep an eye on your cables to make sure they aren’t frayed or tearing. You definitely want your brakes to always be functioning properly! In addition, you should be aware of all the small moving parts on your bike that might require lubricating from time to time. Be careful not to over-lubricate, but be sure to watch for dry or squeaking parts and give them a few drops every now and again.

How to change a flat tire – Have you ever fixed a flat tire on your bike? It’s actually a lot easier than you might think, and once you learn how you’ll have a whole new level of confidence and independence (not to mention more money in your pocket). Follow the steps below and you’ll be rolling again in no time. If any of the steps below sound confusing, your best bet is to search a video tutorial online to illustrate the

process. Type “How to change a flat tire” in your browser’s search bar and find a good quality video with step by step instructions. (Photos courtesy of <http://www.wikihow.com/Replace-a-Bicycle-Tire>)

1. Loosen the nuts that hold the axle to the frame. Some bikes won’t even have nuts and have what’s called a “quick release” system, which allow you to easily loosen and remove the wheel. Check your owners’ manual for how to do this properly. If you didn’t get your bike new, search online for a manual matching the make and model of your bike.
2. Take the wheel out of the frame. This is a little easier with the front wheel than the back wheel. If it’s the back wheel, you have to free it from the gear cluster. To do this, shift the chain to the smallest gear on the chain wheel before loosening the nuts. You will also need to release the brakes in order to remove the wheel.
3. Press on the air valve to release any leftover air in the tube.
4. Ease one of your plastic tire levers under the wheel rim and pry out the edge of the tire (be careful not to puncture the inner tube) and bring it up over the wheel rim. Repeat the process as you move around the rim with a second lever and the tire should come right off to one side.



5. Take off the wheel and tube completely and inspect the tube for a puncture. Determine if the tube can be patched using a **patch kit** or if it must be replaced. Once you've either patched the old tube or are using a new tube, you're ready to replace the tire.



6. Partially inflate the tube and ease it into the tire, making sure the valve lines up properly. Make sure no part of the tube sticks out of the tire.



7. Starting at the edge closest to the valve, use your thumbs to work the other side of the tire over the rim and into the well. You may need to use your tire lever to get the tire back into the proper place.



8. Before you inflate the tube, use your thumbs to ease the tire from the rim all around, looking in to ensure the tire isn't pinching any area of the tube against the rim. If it is, and you inflate the tube, it could pop and you'll have to repeat the whole process with a new tube.



9. Finally, inflate the tire slowly and carefully, regularly checking to make sure there is no pinching of the tube.



10. Now replace the wheel by reversing the process you used to take it off, make sure your brakes are hooked up, and get back to riding!



How to replace your chain – Be sure to regularly check your chain before and after you ride. If the bolts on your rear wheel are loose, the wheel will wobble back and forth, causing your chain to fall off the chain wheel. Your chain could also come loose or fall off if you scrape it against a curb or other object. When you're riding and the chain comes off, stop peddling immediately. Otherwise, the chain could get jammed between the frame and the chain ring, become harder to fix, or cause damage. Carefully loop the chain back onto the sprockets and, lifting up your back tire, rotate the pedals so that the chain links back onto the chain ring. Keep rotating until the whole chain is back in place.

It feels great to be able to maintain and repair your bike yourself, doesn't it? You feel confident, independent and ready for anything. However, there are times when you should avoid trying to make your own repairs and take your bike to a professional. Professional bike mechanics have dedicated tools that help them make more sophisticated repairs quickly and efficiently. For instance, if you have a bent rim, it's time to take your bike in. If you have rust or damage to any of your components, a professional mechanic will either be able to help you fix or replace them. It's great that you can take care of your bicycle, but know your limits! Certain kinds of damage can seriously compromise the safety of your bike, and you definitely don't want to take risks with that!

Unit 6

Getting Specific: Types of Cycling

What kind of cycling do I want to do?

There are so many different kinds of cycling. Now that you've gotten a taste of general biking, you can decide where you want to go next. Do you want to take your biking to the next level? Do you want to get competitive and start racing or do you want to continue cycling for fun or for exercise? If you think you might enjoy competitive biking, find a local club in your area that holds training and race days. Depending on where you live, you might find both highly competitive and casual clubs. Either are great places to meet people and keep fit, not to mention see some cool new places. If you're not sure if competitive cycling is for you, find a local race in your area and just head down. Watch the race to see what's involved, and maybe even chat with a few racers and their coaches. Better yet, offer to volunteer at the race, either handing out water or marking the track. It's a great way to get involved in the community and learn more about competitive cycling.

You've probably already bought your bike, which dictates the kind of cycling you do, but I thought I would list a few of the varieties of cycling there are out there for you to choose from if you decide to try something new. Mountain biking, road biking, and BMX biking are three kinds of cycling that feature competitive racing. I've already touched on hybrid bikes in Unit 2, so I won't discuss those here.

Mountain biking – Mountain bikes have become hugely popular in the last thirty years. They have wide, knobby tires meant to provide grip and traction in all types of terrain. Their frames are strong and able to withstand a lot of knocks, jumps and sharp turns. They have suspension forks to reduce jarring on the rider's upper body and make the ride more comfortable. Mountain bike handlebars are usually flat and go straight out from the stem. Rider position on this type of bike is upright and provides the most control, with a well-placed centre of gravity and the ability to easily shift weight back and forth for maximum balance in uneven terrain. These bikes often come with a lot of gears, which are required for a lot of different inclines and varying topography. If you think you might like to take up mountain biking, be sure you actually intend to do a lot of off-road biking, you don't just like the idea of mountain biking. Mountain bikes can be very expensive and have a lot of extra features that aren't necessary for those who rarely go off-road. When mountain bike shopping, be wary of the cheap, heavy bikes sold by mass-retailers. Although they seem to offer many awesome features and components, they are often cheaply made and add weight to the frame and rarely last long in rugged riding conditions.



Road biking – You know road bikes; they're the ones with the super skinny tires and those curled handlebars. They're designed for riding on paved streets and going really fast. Traditional bicycle racing, like what you see in the Tour de France, takes place on these bikes. The super skinny tires minimize contact with the roadway, which causes less resistance, and makes the bike go as fast as possible. However, they don't do a very good job of absorbing bumps in the road, so the smoother the roads the better the bike ride! Road bike frames are often ultra light to maximize speed as well. Those curled handlebars allow the rider to get as low as possible over the bike and create less wind resistance. These bikes also have a wide range of gearing, but often less than a mountain bike. Road bikes are made for speed and smooth roadways, so they're great for long distance riding. If you want to ride long distances, consider buying a set of **panniers**, packs that can be strapped to the back of your bike, so that you can take along extra gear, water and snacks. If you think you really want a road bike, save up and invest some money in buying the best frame you can afford. You can always upgrade the **components** later, but a good frame will stay with you for a long time.

BMX – Bicycle Motocross (BMX) racing came about in the 1970s when young people began racing their bikes on dirt tracks in California, modelling their style on motocross. These bikes are small (20-inch wheels) and their design is focused on better handling and performance. BMX bikes feature circular pegs that are attached to the either side of the front and back wheels to help riders perform tricks on any surface. BMX racing often takes place on rough terrain like hilly or sandy tracks and also incorporates performing tricks on plain ground, ramps, or obstacles (known as **BMX freestyle**). If you think you might like to try BMX racing, it's a good idea to consider buying some elbow and kneepads. The learning curve can be steep, but BMX is a lot of fun and the community is very supportive. Look up BMX biking clubs in your area to get involved or just head down to a local skate park with your bike and safety gear.



Cruising – Cruisers are all about comfort. They have wide tires, wide seats, upright handlebars, and sometimes they come with only one gear. These are the types of bikes you might see people riding along the boardwalk at the beach. They require minimal maintenance (as they are simpler mechanically), and work best on flat terrain, but are not built for speed or climbing hills. Get one of these if you really want to go for laid back bike rides in nice weather on even ground.



Other types of biking – If you don't think any of the above bikes are for you, there are more options out there. If you want to live a little more dangerously, consider a **unicycle**. These one-wheeled bikes are a little more complicated but a lot of fun once they're mastered. In the same vein, **tandem** bikes can be a lot of fun. But choose your partner carefully; you'll be stuck together for the duration of the bike ride! There are also **recumbent** bikes, which are much lower to the ground and look almost more like a motorcycle than a bike. They have

a wide chair-like seat with a backrest and place the rider in a more relaxed position. Recumbent bikes are great at reducing wind resistance, for people with back problems, and virtually eliminate nasty falls from heights.

Wrapping Up

You have come to the end of this project and your bicycling adventures. Or have you? Hopefully you've enjoyed this project so much you're looking forward to learning more about bicycling. Thankfully, there are *hundreds* of resources out there for you to take your bicycling skills to the next level. Not to mention, there are so many clubs and groups full of other cycling enthusiasts that will help you learn more, do more, and push yourself to try new things. Don't let the journey end here; keep having fun and exploring the world of cycling. As long as you're enjoying yourself, you'll never want to get off your bike!



Glossary

Air Pressure – The force of air that keeps bicycle tires inflated.

Balance – Adapting body position to steady the bicycle and keep it upright without falling.

BMX – Bicycle Motocross, a type of dirt-track racing and trick based riding using non-motorized bicycles.

Brake – The part of a bike that stops or slows the wheel. Brakes are activated by squeezing brake levers.

Brake Cable – Connects the brake levers to the callipers (the part that slows or stops the wheel).

Brake Lever – The lever attached to the handlebars that allows you to operate your brakes via the brake cable (see above).

Chain – The linked metal rope that connects the chain wheel to the back wheel.

Chain wheel – A series of links or rings, usually made of metal, that are connected or fitted into one another; used for support of the exertion and transmission of mechanical power.

Clipless Pedals – Pedals that have a special mechanism that attaches the rider's foot to the pedal using a cleat mounted to the bottom of a special cycling shoe.

Commuter Bicycle – Any bicycle used in traffic instead of a car to get to work or school; some specialized commuter bicycles have reduced numbers of gears that are adapted to the particular commute.

Components – All the parts that add functionality to the bike that are not the frame and fork. This includes brakes, brake levers, gear shifters, derailleurs, etc.

Crank – The arm that connects the pedal to the bottom bracket axle.

Cruiser Bicycle – A type of bicycle with a large seat, wide tires, and upright handlebars meant for comfort riding at slower speeds on flat surfaces.

Derailleur – A device for shifting gears on a bicycle by moving the chain between sprocket wheels of different sizes.

Draisine – One of the earliest forms of the bicycle. Also known as a *velocipede*.

Drive Chain – A bicycle’s chain. It works with other parts to propel your bike forward.

Fenders – Fenders are plastic covers that go over your front and back wheels to keep you from getting soaked when the road is wet.

Fork – The fork is made up of the two tubes that connect the head tube and the front wheel hub.

Frame – This is the bike’s skeleton. Components (gears, gear shifter, brake levers, derailleurs, etc.) are attached to the frame.

Freestyle – A type of bicycling with a focus on stunt riding or doing tricks.

Front Derailleur – One of the mechanisms that change gears.

Gears – Part of a bicycle transmission that determines the speed and ease of peddling.

Gear Shifter – Used for changing gears via a cable connected to the derailleur.

Handlebars – The bars used for steering the bicycle.

Hand Signals – Positions you place your hands in to communicate to other vehicles what you are planning to do.

Hazard – A possible source of danger.

Helmet – An absolutely essential protective head covering made of hard material.

Hub – The middle part of the wheel from which the spokes radiate.

Hybrid Bicycle – A type of bicycle that is a cross between a mountain bike and a road bike.

Inner Tube – Also referred to simply as a “tube”, it’s the airtight rubber tube inside a pneumatic tire that holds air under pressure.

Intersection – A potentially dangerous place where two roads meet or cross.

Lubricant – A substance that reduces friction, heat, and wear. It is a film between the chain links (also called “chain oil”).

Mountain Bicycle – An off-road bicycle with thicker, heavier tires, meant for rougher terrain.

Panniers – A set of luggage bags that fasten alongside bike wheels.

Patch kit – A small bag with supplies for patching a hole in an inner tube.

Pedals – The flat platforms on which you push with your feet to move the bike forward.

Pedestrian – A person who is walking.

Penny Farthing – An early type of bicycle with a large front wheel and a much smaller rear wheel that was popular until the development of the safety bicycle in the 1880s.

Physics – The science that deals with matter and energy and their interactions.

Power Train – The system that transmits the force exerted by the rider from the pedals to the rear wheel.

Predictable – Acting in a way such that people know what you are going to do.

PSI – Pounds per square inch; the unit for measuring air pressure.

Rim – The metal circle that forms the shape of the wheel.

Road Bicycle – A lightweight bike with very narrow tires meant for speed on even road surfaces.

Rear Derailleur – One of the mechanisms that changes gears.

Recumbent Bicycle – A type of bicycle that sits much lower to the ground and puts the rider in a sitting position with the legs peddling in front.

Reflectors – These brightly coloured plastic discs reflect road lights to make you more visible in low light conditions.

Safety Bicycle – A type of bicycle that became very popular beginning in the late 1880s as an alternative to the penny farthing and is now the most common type of bicycle. Early bicycles of this style were known as safety bicycles because they were noted for, and marketed as, being safer than the high wheelers they were replacing.

Scanning – Quickly looking in all directions to know what's going on around you.

Seat – The part of a bicycle that you sit on; attached to the seat post (see below).

Seat Post – The part of the frame that supports the seat.

Spokes – Thin metal tubes that connect the hub of the tire to the rim.

Sprockets – The disc with teeth for driving the chain.

Stop – To come to a complete standstill.

Suspension System – The system or systems used to *suspend* the rider and bicycle in order to insulate them from the roughness of the terrain. Bicycle suspension is used primarily on mountain bikes, but is also common on hybrid bicycles.

Tandem Bicycle – A type of bicycle that seats two riders.

Tires – A rubber circle that contacts the ground; typically has an etched tread to provide traction. All bikes have at least one tire.

Tire Lever – A simple tool used to remove and install the tube found within the tire.

Toe Clip Pedals – Type of pedal that securely attaches the rider's feet to the pedals through the use of clips and straps.

Traffic – All cars, vans, busses, trucks, and other bicycles moving on the road.

Traffic Signs – Signs that communicate to vehicles what they are supposed to do in traffic.

Traffic Signals – Lights that communicate to vehicles what they are supposed to do in traffic.

Unicycle – A type of bicycle with only one wheel.

Tire valve – The opening of the tube that lets air in into and out of the tire.

Velocipede – One of the earliest forms of bicycle. Also known as a *draisine*.

Water Bottle – A water bottle is a plastic or metal bottle that holds water to keep you hydrated on your ride. It is attached to the bike by a water bottle clip.

Water Bottle Clip – An attachment that fits on your bike that holds your water bottle.

Wheel – The hub, rim, and spokes all together form the wheel.

Resources

General Sites

Canadian Cycling Association: www.canadian-cycling.com

International Mountain Bik Association Canada: www.imbacanada.com

Bicycle Canada: www.bicyclecanada.net

Provincial Cycling Sites

Ontario: <http://www.mto.gov.on.ca/english/pubs/cycling-guide>

Alberta: www.albertabicycle.ab.ca

British Columbia: www.cyclingbc.net

Manitoba: www.mbcycling.ca

Saskatchewan: www.saskcycling.ca

New Brunswick: www.velo.nb.ca

Newfoundland: www.bnl.nf.ca

Prince Edward Island: www.cpei.ca

Quebec: www.velo.qc.ca/en

Yukon: www.bikeyukon.com

Nova scotia: www.bicycle.ns.ca

Trail Finding Sites

Canada Trails: www.canadatrails.ca/biking

Let's Go Biking!: www.letsgebiking.net

Map My Ride: www.mapmyride.com

Bicycle Safety

Safe Kids Canada: www.safekidscanada.ca

CAA Bike Safety: <http://bikesafety.caa.ca>

ThinkFirst: www.thinkfirst.ca/documents/bicyclingtips-final.pdf

Transport Canada: www.tc.gc.ca



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