
Consumer Decision Making Contest *1999-2000 Study Guide*

BICYCLES

Bicycles are used in many ways. Some bicycles are used to travel around town every day. Others are used to go exploring off main roads. Some people use bikes for fun, while other people use bikes to make a living. Bicycles can be used for racing or taking a long trip across the country. Because bicycles are used for so many different purposes, there are many different types of bicycles.

Some basic information about the way bicycles are designed and made will help in deciding which type of bike is best for the purpose a rider has in mind. The style of a bicycle, how much it weighs, and how tough it is are some of the things to look for when choosing a bicycle.

Types of Bicycles

Bikes come in several different types. The most common are city bicycles, sport bicycles, and standard bicycles.

City bicycles are also called road bicycles, racing bicycles or touring bicycles. These bikes are designed for use in a developed area with paved streets. City bikes generally have a higher range of gear ratios than other types. They come with narrow, smooth, high pressure tires for speed. The frame is lightweight. Front wheels on city bikes may be fitted with a quick release lever for ease in changing a tire. City bikes can be useful for riding on hilly roads, racing, or long distance riding as well as day-to-day city use.

Sport bikes are also called motorcross bicycles, mountain bicycles or all-terrain bicycles. Currently, mountain bikes are the most popular bike sold. They are designed

for rugged, off-road use but many are never used off-road. They have wide, knobby tires for mud and gravel. Gears on a sport bike will be lower ratio than on other bikes to provide power for rough riding. The frame is strong and reinforced. The pedals of a sport bike are generally placed so that they provide increased ground clearance on irregular terrain. Sport bikes may also include a quick release lever for seat height adjustment, but should not have a quick release front tire due to the danger of accidentally tripping the lever and releasing the wheel while still in use.

Standard bicycles are simpler, traditional style bikes built for multi-purpose riding. They usually have coaster brakes operated from the pedals, wide and cushioned seats, and rugged construction.

Many bicycles are coming out which use features from all types of bicycles. These bicycles may be called hybrid bicycles.

Depending on the features included, they can be useful for many different styles of riding. They usually have a lightweight frame, upright handlebars and moderately knobby tires.

Many bikes labeled as one type of bike may include features from other styles, making labels confusing. The best way to determine what bike to choose is to study individual features needed for the way the bike will be used.

Frames

The main part of the bicycle that holds the different parts together is called the frame.

Frames come in different sizes and should be chosen to fit the leg length of the rider. Frames can be either open (also called women's) or closed (also called men's) style.

Size of the frame is critical. The rider should be able to straddle the top crossbar on a closed frame with one to two inches clearance. A bike designed for off-road use should allow three inches clearance above the top crossbar on a closed frame. On all frame styles the rider should be able to slide onto the seat with feet still touching the ground.

Bicycle frames are made of metal--the kind of metal used in a particular bike will determine how strong the frame is and how much the finished bike weighs.

A general rule is that the heavier a bike is, the easier it will be to pedal but the less it will cushion the rider from bumps. Even though a heavy bicycle will be easier to pedal, the extra weight will tire the rider faster. A light bicycle will not tire the rider as quickly and will cushion bumps better, but will take extra effort to pedal. Finding the right bike means finding one

that fits the particular needs of the rider. Some of the strength of a bike frame comes from how the frame is held together. If a frame is made all in one piece, the bicycle will be strongest--but probably the most expensive. Another way a frame is built is to put a covering on the joints where the tubes are joined. These coverings will be small pieces of molded metal and may add a decorative look to the bicycle. This method is slightly less strong than an all-in-one frame, but much less expensive. A third type frame is welded and will show small lumps of solder in the joints where the metal tubes are put together. A welded bike frame may not be as strong as other types. The strength of a bike frame is important if the bicycle is to be used in rugged areas.

Tires

The type of tire used on a bicycle can be changed easily. Bicycle tires range from narrow and smooth to wide and knobby. Smooth, narrow tires are found on bikes used for racing and riding on city streets. Wide, knobby tires are found on bikes used for off-road exploring or rough riding conditions. Most bicycle tires are filled with air for a smoother ride, but some are solid so that they will be more durable. Solid tires give a rougher ride than ones filled with air.

The best choice of tire style depends on the way the bike will be used.

Seats

Bike seats should be adjustable in height to fit the rider. When the seat is adjusted to its top position, the tube attached to the seat must have at least three inches inserted in the supporting tube. Some specialty bikes,

especially those with very small tire size, are designed to have the seat raised much higher, but should still allow for ample length of supporting tube to be inserted into the frame.

On both a closed and open frame, the seat should be adjustable to fit the leg length of the rider. When sitting on the seat, the rider should be able to place the balls of both feet on the ground. With the rider's feet on the pedals, the adjustment should allow the pedal to be pushed all the way down while leaving the rider's knee slightly bent.

Handlebars

Handlebars come in several styles. Most road or racing bikes have drop handlebars.

Drop handlebars require bent-over posture. This position reduces wind resistance and shocks from bumps in the road, improves handling, and lets muscles work efficiently.

Handlebars on most sport and hybrid models are upright and are flat or antler shaped. Flat handlebars are more suited for off-road riding and can result in a bent-over posture. Antler handlebars are more upright and casual than flat bars. They are less suited for off-road riding and tend to be more comfortable for on-road or casual riding.

Handlebars should be able to be adjusted to a comfortable height for the rider, again with at least three inches of tubing inside the supporting frame. This supporting length prevents the seat or handlebars from slipping--which can cause an accident--or coming apart during an accident--leaving a dangerous, protruding tube.

Gears

A bicycle may be designed with a single fixed speed or may have 20 speeds or more. Most bikes designed for all-around use have either one speed, three speeds, or ten speeds. Most mountain and hybrid bikes have 18 to 24 speeds.

For flat terrain, a single speed is adequate.

Slightly hilly land could use a three-speed bicycle, and riding in large hills or on long trips would be easiest on a ten-speed bike. Most experts recommend a minimum of 18 speeds for off-road riding. Using a lower gear makes the bike easier to pedal.

In addition to the number of gears, it is also important to consider is the bike's gear range, from highest to lowest. The gear range sums up the interaction between the front and rear gears and the wheel size. For off-road use the minimum should be 22 or less. It should be 40 or less for a general use road bike. High gears around 100 help speed you downhill.

Shifters

Most bikes sold now have indexed gear shifters which make shifting gears easier than old-fashioned friction shifters. There are three common types of indexed shifters.

The grip shift is a collar encircling each handlebar to form part of the grip. Turning the grip one way shifts to a higher gear, turning it the other way shifts to a lower gear. The left grip shifts the front gears and the right grip shifts the rear gears. This type is easy to use and can shift through all gears in one motion. But, since it is part of the handlebar, it could be easy to shift when you don't want to.

A thumb shifter is a lever above each handlebar that you push or pull with your thumb or forefinger to change gears. A thumb shifter may require more dexterity than other types of shifters, but can shift through the whole range of gears in one motion.

The third type of shifter is a lever underneath each handlebar. To shift gears, you push one lever away from you with your thumb to shift one way and pull the other toward you to shift the opposite way. This type can be easy to use, but less expensive versions can only shift one gear at a time. More expensive versions allow for multiple gear shifts.

Brakes

Reliable brakes are vital to the safe operation of any bicycle. Some bikes have brakes in the crankcase which are operated by the pedals, but many bikes use brakes operated by hand from the handlebars. Whatever type of brake is used should be able to stop the bike quickly in different road conditions and should not stop one wheel faster than the other or lock the wheels.

Brakes which are operated from the handlebars may be side-pull or center-pull. Side-pull brakes may be more rugged and durable but have a tendency to brake unevenly. Center-pull brakes stop the wheel more evenly, but often require more hand strength to operate. Both types of brakes operate efficiently when well designed and maintained.

It is also important to consider the type of wheel rims on the bike. Some safety tests have shown that bikes with steel wheel rims needed a much greater distance to stop

when the rims were wet than did bikes with aluminum wheel rims. If you will be riding in wet weather, it may be safer to choose a bike with aluminum wheel rims.

Safety features

Bikes should be equipped with reflectors on the front and rear of the bike, as well as on the pedals and spokes. Additional reflectors may be added for increased visibility. A riding flag may be mounted on a thin rod to increase a cyclist's visibility even more.

Any bike which is to be used at dusk or after dark must be equipped with a headlight. An additional light, similar to a miner's headgear, may be worn by the rider for easier night vision.

Rearview mirrors fit on the handlebars or clip to a helmet. They offer a safety feature by allowing the rider to see behind without turning around. Rearview mirrors must be mounted carefully to keep from blocking the forward view of the rider. They provide a useful safety feature for most uses of bicycles.

A fender on the rear wheel can also be considered a safety feature. It deflects pebbles or other road debris from being thrown against the rider.

Extras

Many accessories can be added to a bicycle. All of these extras will add weight to the bike, which is something to think about if the bicycle is intended for use in racing or long distance touring. At the same time, many of these extras improve the safety and convenience of the bicycle, making them worth the extra weight.

Toe clips fit on the bike pedals. They let the rider pull up on the pedal as well as push down, improving riding efficiency. However, they also make it harder to put your feet down when making a quick stop and can trap your feet in a fall. Toe clips are best for racing and long-distance touring.

A kickstand is mounted near the pedals. It holds the bike in a standing position when the rider dismounts. If a kickstand is used correctly, it will help the bicycle last longer by keeping the pedals from hitting the ground or taking the full weight of the bike lying on its side.

Some bicycles offer a quick-release wheel which is designed to be removed and replaced quickly. This is convenient in repairing a flat tire. It is also helpful if you need to carry the bike in a small car or trunk. Quick-release wheels have a lever which holds the wheel in place instead of bolts which must be unscrewed and replaced.

A portable air pump for pumping up tires can be attached to the bike frame. This is useful if the bike is to be used for long distance touring where service stations may not be available for changing a tire.

Other extras such as chain guards for pantlegs, water bottles, carry bags, fenders, and storage racks can also be added to a bicycle. These extras can make the bike more individual to the rider. They will add extra weight and cost to the bicycle and should be chosen with care.

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