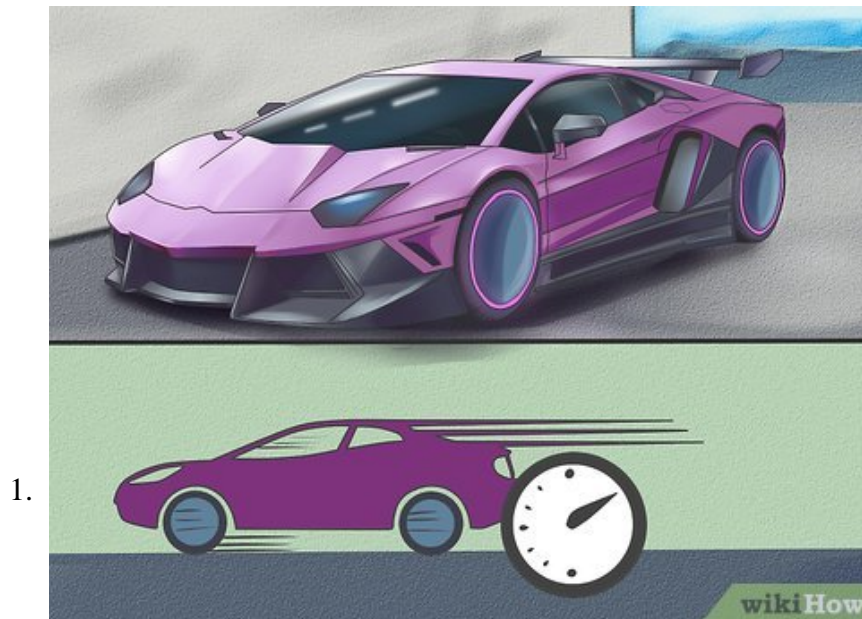


How to Drag Race

Burning rubber, hot tracks, awesome cars. Like Bruce Springsteen says, when summer's here, the time's just right for going racing. But you don't have to have a '69 Chevy with a 396, Fuelie heads and a Hurst on the floor to get into this...

Part 1 of 4:

Choosing and Modifying a Dragster

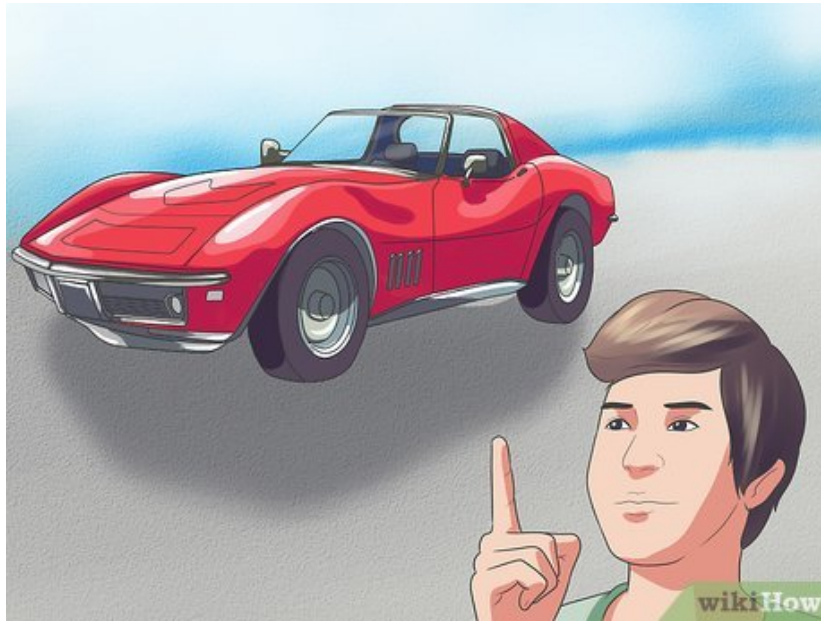


1.

Choose between style and speed. When you're picking a vehicle to drag race, there are a lot of things to consider beyond how fast your vehicle can rip away from the starting line. Cost, your commitment to rebuilding an repairing the vehicle, and your ultimate ambitions for the car should be taken into account. Most drag racers want basically the same thing: a throaty beast of a dragster with a great paint job, equally great looking when parked in the lot, as it looks when its blowing past you in the passing lane.

1. Ideally, you want a light that's amenable to lots of modifications. A good dragster often has an engine modified with aftermarket cams, heads, and other components, to maximize the horsepower so it runs in excess of 600 or 700 HP. If you've got that, you'll have a muscle-monster. But for many drivers, anything beyond 500 HP is excessive. That's still an insanely fast car.
2. Many aspiring dragsters probably have a frame or a model in mind when they're getting started, because of the look. A '57 Chevy Bel Air is a perfectly-great drag strip candidate for some classic-car enthusiasts, but for others that heavy frame might outweigh the style points.

2.



Pick something that you'll enjoy working on. Hot-rodding for the drag strip is, above all else, a great nostalgia project. Get a hold of the Corvette model your dad always lusted after when you were a kid, painted sea-foam green, a car he never got to drive. Or maybe you want a Mustang just like the one Steve McQueen drove for the classic chase scenes in *Bullitt*. Maybe you want to go all-out and get an old Chevy Apache frame from the '40s and make a funny car to crack up the boys down at the track. There's no wrong choice, if you like the car.

3.

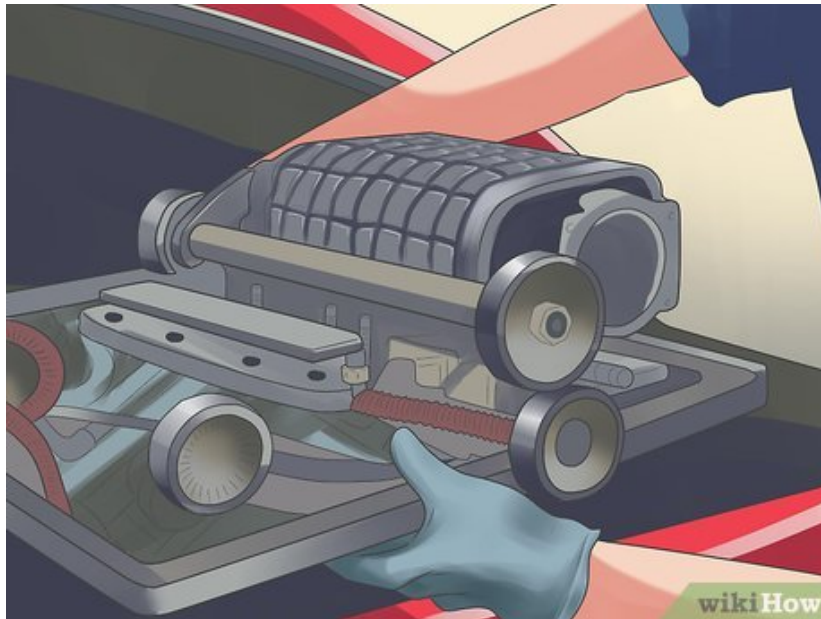


Start with a light frame with high aftermarket potential. Most cars that are successful on the strip are light in body and easy to work on. For this reason, you'll typically see a lot of Fox-body Mustangs built between the late 70s and early 90s, which are super-light and can take almost any engine you want to throw in it. Hemi? Flathead V-8? You can make it work in a Mustang body.^[1]

1. Because Mustangs are almost ubiquitous at American tracks, they lose a little cache. They're great to work with, but do you really want to be another guy with the same looking car? Trans-Ams, Z28s,

and Chargers all have similar characteristics, with great factory-built specs. The Charger McQueen drove was basically straight from the factory, with some suspension work done. If it was good enough for Bullitt...

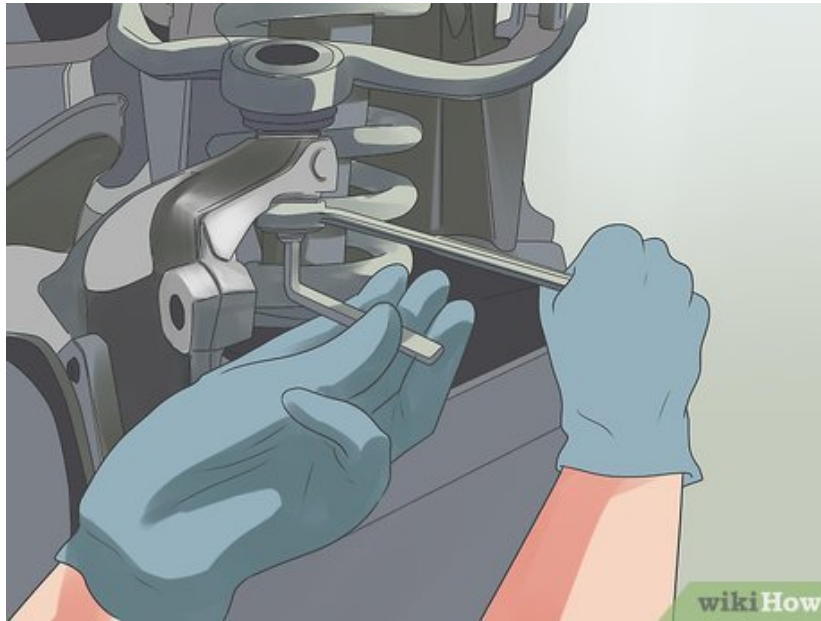
4.



Consider rebuilding the engine or installing a new engine. How fast do you want your car to go? What kind of engine do you want to build? What kind of engine can the body of your vehicle take? Much of the work and much of the fun that goes into planning a hot rod project will come with making these decisions for yourself.

1. A good drag engine should maximize horsepower, probably using some aftermarket modifications to maximize the efficiency of the engine. Hydraulic roller cams and aftermarket cylinder heads are a common modification.^[2] Depending on the engine, you should be able to use at least some of the factory components in the drivetrain to keep the project as affordable as possible.
2. Try to set a limit for yourself. Sure, you can say you want to have a 1,000 HP dragon-breather going in that Trans-Am, but the cost of all the aftermarket drive train components necessary? The stress upgrades necessary for the chassis? If you can get 500 HP at street-level, you won't have to worry about getting embarrassed at the track. Ever. Try to keep your ambitions practical, Mr. Andretti.

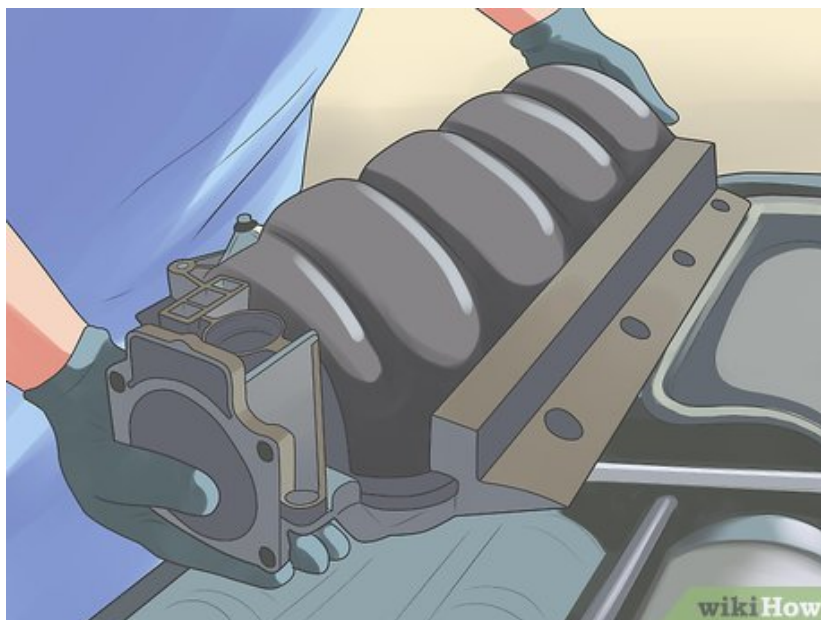
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Upgrade the suspension with control arms and drag shocks. As you increase the power in your engine, the stock suspension will quickly become unsuitable. One of the most important modifications that you'll need to make in a serious drag racer is in the suspension. Make sure you upgrade the suspension after increasing the power, to make sure you match the stress specs to the new power of the vehicle.

1. If your dragster has rear leaf springs, consider upgrading to CalTrac bars to increase the stability and the control. If your rod comes with coil-spring suspension, using aftermarket control arms is the best approach. You can also check out the possibility of using "no-hop" to modify the geometrical center of the suspension, giving your more muscle in your starts.
2. Some racers will unhook the front sway bar and install drag-style coil springs. Drag racing stresses the axles, making problems common, so it's a good idea to get shocks made for the purposes of standing up to the stress.

6.



Install a power-adder if you want to run your car on the street. After the *Fast and Furious* movies, everybody and his brother wants to hit a nitrous button and blow the competition off their rear bumper. Using a small nitrous system for your races will allow you to use a more basic torque converted for driving on the street and the highway at normal speeds. It can also help keep your engine leaner, making it easier to run at a low compression ratio. Naturally-aspirated engines will require a bigger cam and will need to process higher-octane fuel if the compression ratio rises.

7.



Keep a close eye out for overheating with modified muscle cars. The more you modify the factory parts, the more problems you'll encounter from those modifications, especially if you're running your dragster rough and stressing the accelerator. Hot rods commonly have problems with overheating, making some precautions necessary. You might not have any problems if you've done your mods correctly, but it's still a good idea to keep an eye out for potential problem areas.

1. Install a bigger radiator to keep the vehicle from overheating and check your fuel pump regularly. Running your drag car aggressively will wear out these components very quickly. Make sure you have a sensitive and accurate heat gauge and monitor it closely when you're driving.

Part 2 of 4:

Registering for a Race and Pre-Race Inspections



Understand the different classes of drag vehicles. Most pro drag race vehicles are specially designed roadsters made to race at short distances, but hobbyists and weekend warriors have their own categories, as well. Vehicles are rated and classed based on a variety of information, including the advertised factory weight of the vehicle, the type of fuel used, and the horsepower of the engine. The National Hot Rod Association (NHRA) boasts over 200 separate categories of vehicles, though the basic categories can be divided in two:

1. **Top Fuel Dragsters** have an almost-comical length of 20–30 feet (6.1–9.1 m), and upward of 10,000 HP, which run on nitromethane. These are the dragsters you'll likely find at pro races as a spectator. Top Alcohol Dragsters are similar to their Top Fuel cousins, though they run partially on methane.
2. **Stock Dragsters** started as factory vehicles and have been modified according to NHRA guidelines to improve HP and efficiency. On open-track days, this is typically the only kind of vehicle you'll find coming to the track, and probably what you're running if you're interested in drag racing. If you've got a modified muscle car, you can look up your vehicle on the NHRA Classification Guide.

2.



Find a closed-track racetrack with a drag strip in your area. If you want to drag race, you've got to do it on a racetrack under the proper conditions. Drag strips are usually a quarter-mile long, after which is a "speed trap" of about 70 feet (21.3 m), where your top speed will be measured.^[3] Many tracks will have open invitationals that anyone can show up for, as long as you pay the registration and track fees. Likewise, time trials are often available on a regular basis, if you want to get out and open the throttle a couple times.

1. When you arrive, you'll likely have to pay a small entrance fee, as well as a track fee if you plan to race. If you're going to race, the cost will depend on the class of vehicle you're racing, so it's a good idea to call first and find out about any costs before you show up.^[4]
2. Go watch some races first and try to get a sense of the culture and the kinds of races that happen at the track you're thinking of racing. Talk to other racers and track officials to ask for advice. If you drive a Honda Civic and want to drag race, you might be able to enter into a Bracket-Style race with handicaps, but you might also feel a little out of place. Before you drive all the way to the track, take the time to check out a few races as a spectator first. Besides being a fun sport, it's a great community that you can be a part of from the bleachers, as well.
3. Only drag race at approved sites. Drag racing in perfect professional conditions is dangerous enough, and drag racing in the street is downright suicidal. It's also illegal everywhere. **Never drag race on the street.**

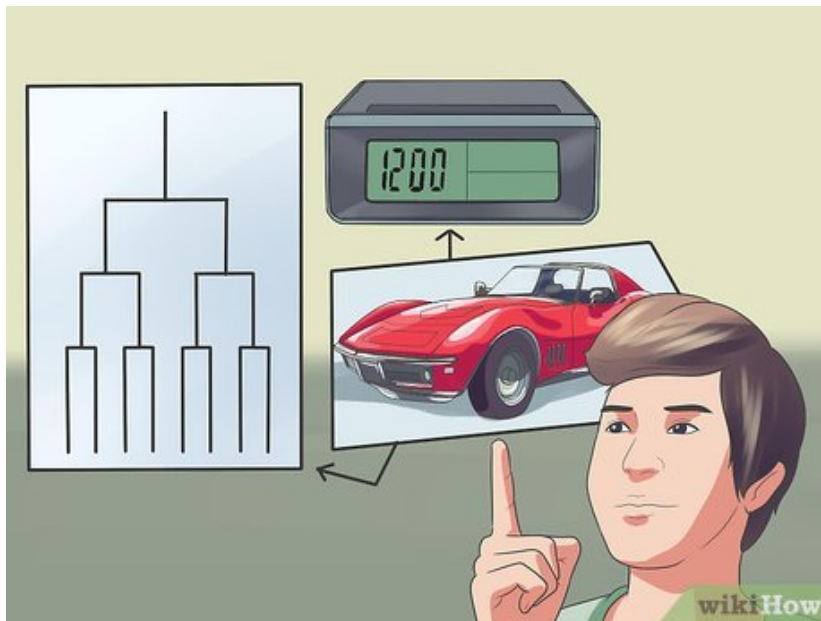
3.



Register your vehicle in the correct category. To keep the playing field level, most tracks and racing organizations divide the field into a large number of different vehicle classes. After paying at the gate, you'll need to fill out a race card, filling out information about the class you'll be racing in, your name, and other specific information about your vehicle.

1. If you just have a factory-standard vehicle that you want to race, or have made minimal modifications to it, the class will still vary based on the size of the engine and other specifications. [5] Many tracks will have open invitationals on a regular basis, at which you can register your car and find out what class and category your vehicle qualifies for, or what you need to do to get your vehicle to spec and race it, if you want. This is the easiest way to find out more about your class, if you're not sure.

4.



Pick the appropriate style of drag race for your vehicle. Depending on what kind of vehicle you have, your ambitions for racing, and the particular rules of the track in your area, you'll likely have lots of

different options available to you for races. You might want to enter a pro-style elimination race, which is probably the most common, or you might just want to get on the track and burn some rubber in time trials. As long as you've got a good vehicle with some muscle behind it, you'll be able to find something that's right for you at most tracks.

1. **Elimination Races** are basic bracketed elimination rounds, in which two cars in the same class will go head-to-head. The loser will be eliminated, and the winner will move on to the next round, until one car remains. To seed the field, practice runs and time trials usually precede the race.
2. **Bracket Races** are similar to Elimination Races, but with the inclusion of handicaps to allow for vehicles of different specs to compete against one another, making these races a test of skill, rather than muscle. Instead of straight-up time trials, cars complete "Dial In" runs, in which the goal is to come as close as possible to the estimated speed (how fast your car can possibly make a single run). The difference will be subtracted from each of your trials throughout the race.
3. **Time Trials** are available for any class of vehicle that passes safety inspection and pays the track fee. Usually, if you're not planning on running trials to qualify, you'll only be allowed to make runs on particular days, sometimes called "test and tune" nights. You can collect a time sheet with specific details about each of your runs, and keep track of your long-term progress. This is an excellent way to start and build your drag-racing skills.



Pass a tech inspection at the closed-track drag strip. After paying at the gate and registering, you'll next drive your car to the inspection area, where track officials will give your car a once-over, checking fluid levels, weight, and other specifications to make sure that your vehicle is safe to run on the track. If you pass the inspection, they'll usually slap a corresponding inspection sticker on your windshield, signifying that you've passed and that you can proceed to the staging area.

1. Most tracks require a minimum running weight to be met by every vehicle, with the driver in the car. Many serious racers will find the minimum weight for their vehicle class and get it down as low as possible to increase the horsepower and the efficiency of the engine.^[6]

Part 3 of 4:

Running the Race

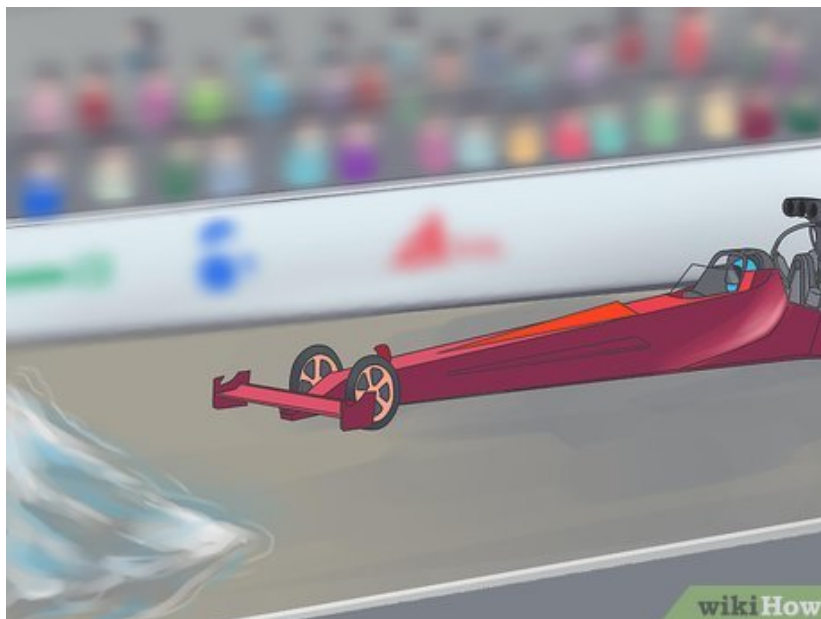
1.



Complete your pre-race qualification runs. Before you pull up to the starting line and jam on the gas, you'll have to find out where you'll race in the field by qualifying for your starting position. Depending on the track rules and the vehicle class, you'll be held to different standards, but you'll start most elimination rounds by qualifying for your starting place with the best possible run you're capable of. Several measurements are taken for each race, including your reaction time, the total elapsed time of the run, and your speed.

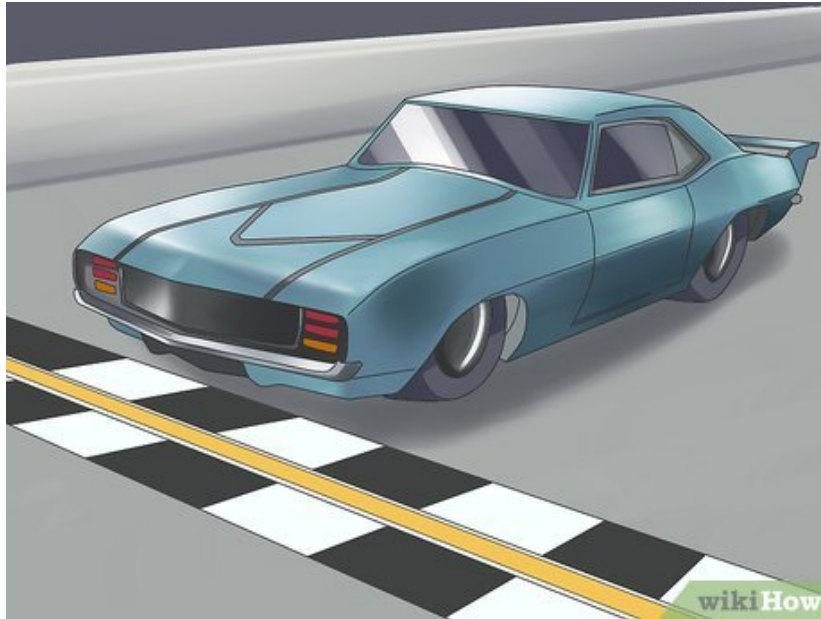
1. Your reaction time will be measured right at the start of the race, and should be as short as possible, tracking the time between the green light and your vehicle leaving the starting line.
2. Your elapsed time will be measured from the moment you've left the starting line to the moment you cross the finish line.
3. Your top speed will be measured just as you pass the finish line, making it important that you power across it for the best result. There should be ample room to slow down.

2.



Warm up your tires in the water box. In the staging area behind the track, you should pass through what is called the water box or the bleach box at most tracks, which is basically just a patch of the track that has been hosed down. This is where racers with track tires will do a burnout to heat up the tires and "burn off" any sediment or other gunk that's been built up.

1. If you don't want to burn out before racing, that's fine. Just drive around the water box and approach the starting line instead. Flat racing tires always need to be warmed up, but street tires with tread should generally not be. If you're worried about street build-up on street tires, you can do a peel out to clean them up, if you want.



Approach the starting line from the staging area. On professional tracks, the starting line is somewhat complicated, because it's not usually marked on the ground and is monitored with lasers. Let the track officials guide you toward the general area, and then look to the "Christmas tree" (the stalk of colored lights in the center of the track) to find out when you're on the money.

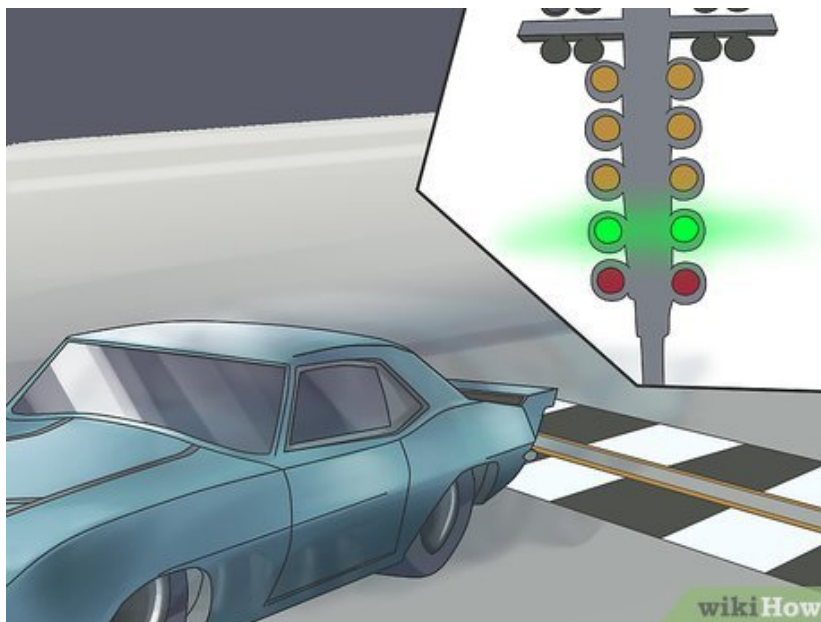
1. At most tracks, a yellow light will engage when you're close (within 7 inches) of the starting line, and a second light will engage when you're on it. Watch the track official between the two lanes for more specific instructions. They're there to help.

4.



Watch the Christmas Tree for the starting lights. Most trees usually about about seven lights, including the indicator lights when you're on the starting line. Depending on your class and the kind of race you're running, the tree will light differently to signal that start of the race.^[7] In some races, three large amber lights will flash simultaneously, followed by the green light in four-tenths of a second. In other races, the three bulbs will flash twice, followed five-tenths of a second later by the green light. Make sure you watch other racers start and find out what kind of light start will be used before you end up on the starting line.

5.



Leave on green. In general, if you see the green light, you probably started too late. It takes some practice and skill to get a good start down, because it's very much about anticipating the green and leaving with it, rather than waiting until you see it. Experienced drivers are often very good at this, so don't get frustrated if it takes you several time trials and runs before you get the hang of it.

1. Before you start, maintain your RPMs at the optimum speed to jump into your desired gear (lots of dragsters will pop in second, for example). Keep track of the timing changes in the lights, anticipate

the green, and hit the gas.

6.



Power through the finish. Drag racing isn't the time for taking it easy, it's the time for seeing what your machine is made of. If you've passed the safety inspection and know your vehicle inside and out, you should know what it's capable of and use this opportunity to open up the throttle and go all-out. Floor it, shifting up as you power through the track, and accelerating into the finish.^[8]

1. While you're tearing down the strip, be very careful to stay in your lane. Don't look at the other car, if you're going head-to-head, pay attention to your own car and what you're doing. Crossing the center line, apart from being extremely dangerous, will usually earn you a disqualification.

7.



Follow the proper slow-down etiquette. Often, at tracks, there's a particular "track rules" etiquette regarding which lane has the right of way in head-to-head runs. Often, the common courtesy, however, is that the slower car will slow down more quickly, falling in line behind the faster car. You'll both pull off in line, then, and drive to the timing booth.

8.

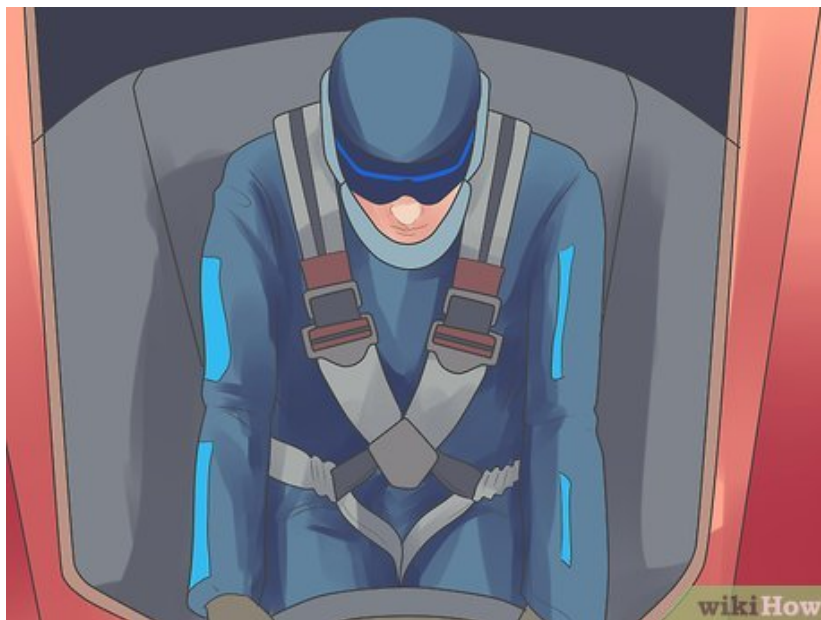


Pick up your time slip from the timing booth. After running the race, you'll pass by the timing booth, where you'll receive a slip with your reaction time, your total elapsed time, and your top speed. At some tracks, this may also show large on a scoreboard-style screen, but often these are back closer to the starting line for spectators to see.

Part 4 of 4:

Winning the Race and Staying Safe

1.



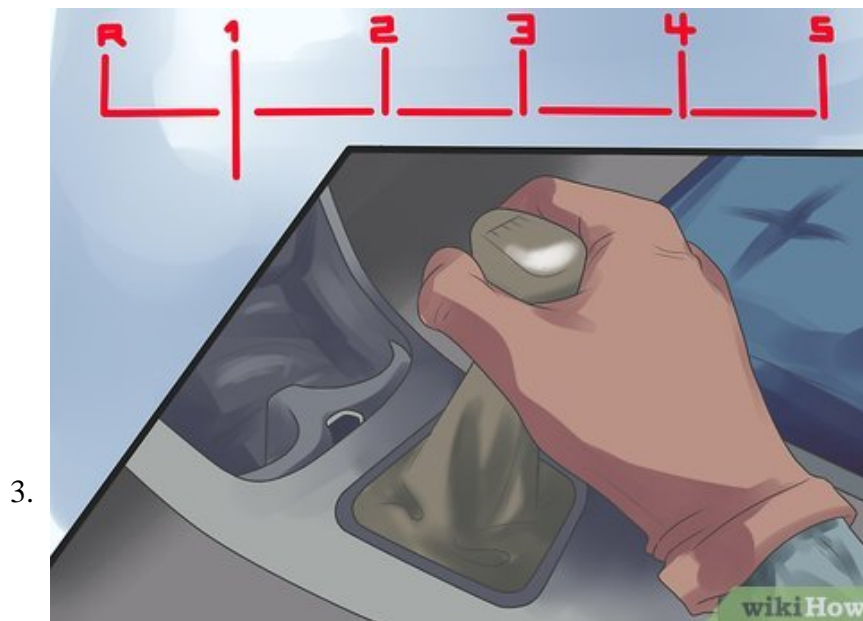
Always put safety first. When you get wrapped up in all the grease and machismo floating around at the strip, it can be common to forget about the most essential part of drag racing: surviving it. Make sure that you're aware of everyone on the track, around it, and stay focused on completing the run with safety. If

you feel unsure about racing, unconfident in your vehicle, or uncomfortable with the track conditions, pack it up for the day.

1. You need to always have your vehicle inspected before drag racing. Blowing out a tire going 120 mph (190 km/h) is extraordinarily dangerous, and turning out of a skid at those speeds can be deadly. Use extreme caution.



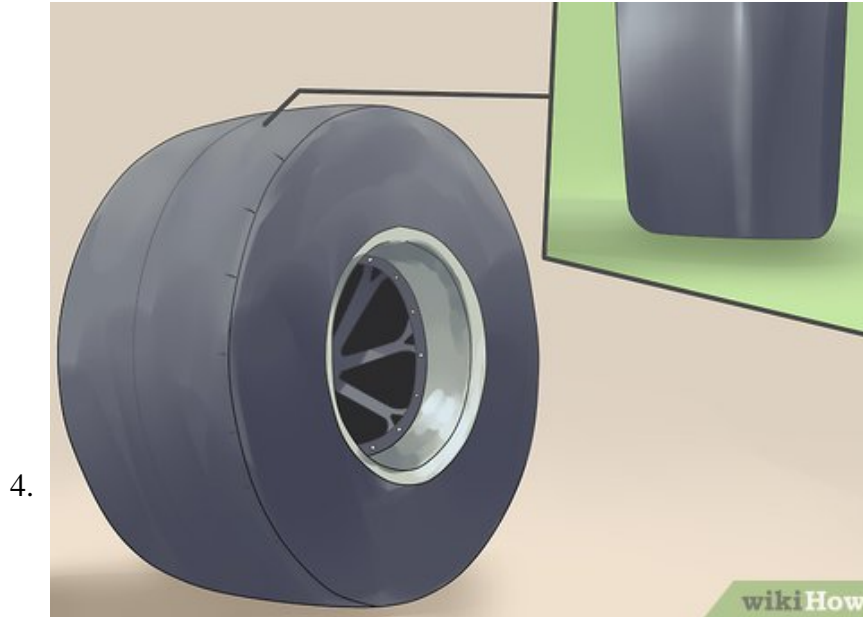
Invest in a Snell-certified helmet. The Snell Memorial Foundation was founded by William "Pete" Snell, an amateur auto racer who died in a racing event in 1956. His then supposedly state-of-the-art helmet failed to protect from passing away, and a number of his fellow racers, colleagues and friends came together in an effort to improve the design of helmets along with their capabilities. They're now considered the standard in the field. If you're going to drag race, you need one.



Shift at the correct times. The ideal time to shift is when the descending power curve for the lower gear crosses the ascending power curve for the higher gear. Most drag racers will use a tachometer to closely

monitor the RPMs and feel for that sweet spot, just before the RPMs hit the red patch on the gauge.

1. Many drag racers will use a lighted tachometer, which will flash a light indicating the optimal time to shift. Great racers anticipate these lights, however, shifting perhaps 200 or 300 RPMs before the "ideal" time, to make the action slightly smoother.
2. Drag racing in automatic transmission vehicles exists, but is less common. Manual transmission vehicles offer faster acceleration times if you can get the technique right. If you want to get into drag racing, practice your shifting in a manual transmission vehicle.



Use bald racing tires inflated to the proper specs. If you want to really grip the track, you need to get some racing tires for your vehicle. Without tread, heading up bald tires will allow you to grip the track and increase the efficiency of the engine.

1. Contrary to popular belief, keeping the tires a little low doesn't help improve your times as much as once believed. While it does increase the surface of the tires by a small degree, keeping the tires too low can cause the interior wall to wrinkle, having the opposite effect. Keep the tires inflated to the low end of the proper specs.

5.



Drive in the "groove" created by other racers' tire slicks. After several runs down the strip, you should start to notice some build up from other cars' rubber and exhaust developing. That's the sweet spot. Bare asphalt won't have the traction that this coating of rubber has. Stick to the groove and barrel down the track.

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