

Pack 1776 Scouters-

For those of you that are new to scouting or those who just need a refresher course, here are some planning steps that may help in making a Pinewood Derby® car. Remember, while Pinewood Derbies® gives a Cub Scout and an adult a project to complete as a team, we should encourage each scout to do as much of the car building as possible.

## **Step 1: Design the Car's Body**

Choose your favorite design. Outline it onto your paper template or graph paper. Remember to maintain a width of 1-3/4 inches where the metal axle is to be inserted. Then outline the bare block of wood onto the paper. Keep the design simple enough to avoid overly intricate or detailed cutting.

## **Step 2: Shape the Car's Body**

1. When deciding how detailed you want your car to be, keep in mind the tools you have available: saws, drills, sanders, etc. Consider safety as well. Usually, the adult makes the major cuts with the power tools and then lets the youth file and complete the sanding.
2. Check the axle grooves to ensure that each is at a perfect 90-degree angle to the car body. A car with untrue axles tends to steer to one side or the other, causing it to rub up against the side of the lane strip, slowing it down.
3. Cut away the large sections of waste wood to get close to your etching of the final design. This makes it easier to shape and detail your design. It's much harder to add wood if you overcut your original design.
4. Do not forget to have a place for weight if you need it. Weight may be placed anywhere as long as it is not taped on and does not exceed the specifications.

## **Step 3: Inspect the Wheels**

1. Only the official wheels are acceptable.
2. Wheels can be sanded to remove surface imperfections, but the treads must be left flat.
3. Inspecting the wheels is important. Make sure all wheels roll freely and smoothly around the axle. Get a drill bit that fits just inside the wheel where the axle fits. This cleans out the roughness and burrs that cause wheels to not spin freely.

## **Step 4: Insert Axels**

1. Check each axle for a burr on the underside of the head.
2. To let the wheels run as freely as possible, place an axle in a hand-drill chuck to hold it steady, then smooth the burrs with a fine emery cloth or file.
3. To fine-tune your axles, polish them with jeweler's rouge or fine emery paper. These items can be purchased at a local hardware store.

## Step 5: Paint

After shaping and sanding your car to your satisfaction, prime it, sand it with fine sandpaper, and add additional coats of paint or a "skin". Do not glue details on yet.

## Step 6: Install Wheels and Axles

Put the axles and wheels on the car, but don't glue axles on at this point. Weigh your car, being sure to place the car and the accessories (driver, steering wheel, roll bar, etc.) on the scale.

## Step 7: Add Weights

1. The car may not weigh more than five ounces. Get your car as close to that weight as possible.
2. If you do not have a scale, the U.S. Postal Service or a supermarket might weigh your car for you. Our Pack 1776 Pinewood Derby® Committee has an official scale for you to use at the weigh-in the day before the race.
3. Weight must not be taped on. The car may be hollowed out and weight inserted to build it up to the maximum weight. Make sure it is securely attached or built into the body of the car so as to not fall off the car and onto the track.

## Step 8: Test the Car

1. Once weight is securely mounted, slip wheels back on. Place car on a long, flat surface, such as a floor, and give it a gentle push. The car should travel in a straight line for a reasonable distance (five to ten feet).

## Step 9: Lubricate the Car

1. Lube and mount the wheels permanently. Dry, fine powdered lube works best. Dust a little powdered lube in the hole of the wheel where the axle is inserted, some on the axle where the wheel rides, and a little at the axle head.
2. Slide the axles and wheels onto the car and glue into place. Use an epoxy or nonresin glue, and make sure you don't get any on the surface of the axle where the wheel rides.

## Step 10: Accessorize the Car

Make sure accessories are securely mounted on the car. Add stripes and decals if desired.

## Safety

To ensure the highest level of success and fun in your Pinewood Derby® experience, make safety your top priority. Here are some useful guidelines for maintaining safety:

1. Gather your safety essentials: dust mask, goggles, and latex gloves.

2. Wear eye protection at all times.
3. Monitor Cub Scouts' use of tools.
4. Wear dust mask when appropriate.
5. Work in a well-lighted and well-ventilated area.
6. Consider wearing gloves when using sharp tools.
7. Do not wear loose-fitting clothing.
8. Do not melt lead; handle lead with care.
9. Follow all safety rules and precautions listed on the tools and products you use.
10. Keep your work area clean and organized.

Most of all, have fun with your scouts! Activities like this will make memories of a lifetime!

Yours in Scouting,

Cubmaster Emeritus Ed