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<https://sites.google.com/site/pack345sf/activities/pinewood-derby>

Hello Pack 345,

It's time once again for the Pinewood Derby!

The Derby is a unique event in Cub Scouts in that it's a competition. This means that all but one child might leave the event disappointed. We use this event to promote sportsmanship, good citizenship, personal achievement, and family togetherness. If your kids can cheer on their friends after their cars have been eliminated, then we have done something right. With that in mind please remember that what's most important is that your child DOES THEIR BEST.

It's always hard to balance how much work you should do on the car versus how much you let your child. A good rule is that your kid should feel like they did all the work. They'll be more proud of the messy wobbly car they built than the gorgeous one that you built for them.

And in the end, the kids just want to participate. Usually the part they like best is playing smash-up-derby on the floor after the race.

#### **HOW THE EVENT WORKS**

When you arrive on race day, your child will check in. The car will be weighed, inspected, and assigned a number. ***Once a car has been weighed and accepted, only race officials and the Cub may touch the car.*** Cubs will race in groups of 12 determined by the order in which the Cubs check in. A heat takes 20-25 minutes to complete. In that time each child will race at

least six times -- once in each lane of the track.. The three fastest cars from each heat will move on to a final round at the end of the day to determine the speed winners.

## **AWARDS**

In addition to recognition for 1<sup>st</sup> place, cars will be judged in the following categories:

- \* Funniest Car
- \* Most Colorful Car
- \* "That Does Not Look Like a Car"
- \* Scout-iest Car
- \* Cubmaster's Choice Award
- \* Cubs' Choice (voted on by the Cubs)

In addition, the pack will present a Best Sportsmanship award to one Cub.

## **RULES**

### **Dimensions**

- \* The overall width of the car shall not exceed 2 3/4 inches so that it does not interfere with the car next to it.
- \* The car must have 1 3/4 inches clearance between the wheels so that it can run on the center rail.
- \* The car must have 3/8-inch clearance underneath the body so that does not rub on the track.
- \* The car must be able to fit under the timing gate at the end of the track (about 4" high).

### **Weight**

- \* The car weight shall be no more than 141.75 grams, or 5 ounces if the scale does not display grams.
- \* The official race scale that is used at car check-in shall be considered final.

### **Wood, Wheels, and Axles**

- \* The official pinewood block must be used.
- \* The front edge of the car should be straight or U-shaped so that it rests easily on the starting pin.
- \* Official BSA wheels must be used. The wheels may not be altered except for light sanding to remove the seams and imperfections. Wheels hubs may be painted.
- \* The axle nails that came in your kit must be used. You may polish the nails to remove the seams and you may bend the nails.
- \* All four wheels must touch the surface of the scale during weigh-in.
- \* No other alterations are allowed.

### **Not Allowed**

- \* No lubrication will be permitted, dry or wet
- \* Riding on fewer than 4 wheels
- \* Wheel bearings, washers, and bushings are prohibited.

- \* The car must not ride on any type of springs.
- \* No starting devices, propulsion, or additional power. The car must be freewheeling.
- \* No loose material of any kind such as lead shot may be used.
- \* The front edge of the car needs to be reasonably flat and straight for the car to rest properly on the starting pin. Avoid V shapes for the front end.
- \* Pre-made car kits violate the spirit of this event.
- \* If you have a question about what is allowed, please check with race officials before race day.

### Important!

- \* Race officials reserve the right to ask for modifications or withhold cars that do not meet the spirit of the rules.
- \* ***Once the competition has begun, cars may not be touched or altered except under the supervision of the race officials.*** Graphite may not be added between rounds. If a car needs to be repaired, race officials must supervise it.

### How to Win

You win a Pinewood Derby by moving exactly 5 ounces of car downhill with as little friction, and as much gravity driven force as possible. Friction is anything that opposes your car's forward motion. What are some sources of Friction?

- Air
- The track
- Your Wheels and axles.

Your car will benefit from having smooth axles and an aerodynamic design. If you can't come up with a satisfying custom design for your car's shape, making your car a simple wedge shape is very effective.

Weighing down the back of the car rather than the front helps ensure that as the track's slope changes, your car will get a gravity boost that a car weighted in the front will not enjoy. Ideally, most of the car's weight should be about an inch in front of the car's rear axle.

### Parents

We believe that the pinewood derby is an excellent adult/child event in that it promotes craftsmanship, following rules, and has a healthy dose of competition. While you may feel the need to make your scout's car a winner, do not carry out any of the work, except for the use of dangerous tools. You may advise and instruct, but this is a contest among scouts only. I truly feel for you if you didn't win the derby when you were a young scout.

If you feel the need to participate in this race, you will have an opportunity to race your fellow parents with a qualifying car of your own design after the main event.