



# Pinewood Derby Official Rules 2018

Check In - Friday, February 23, 2018, 6 pm (Optional)

Race Day - Saturday, February 24, 2018 - 9 am Check In/9:30 am Flag Ceremony

Location: Crosstracks Church (Formerly Liberty Hill UMC), Liberty Hill, Texas

**Philosophy:** The Pinewood Derby is set up to be a technical learning / teaching experience. Cub Scouts are to build the cars with the aid of an adult. Each child should do as much of the work themselves as safely as possible.

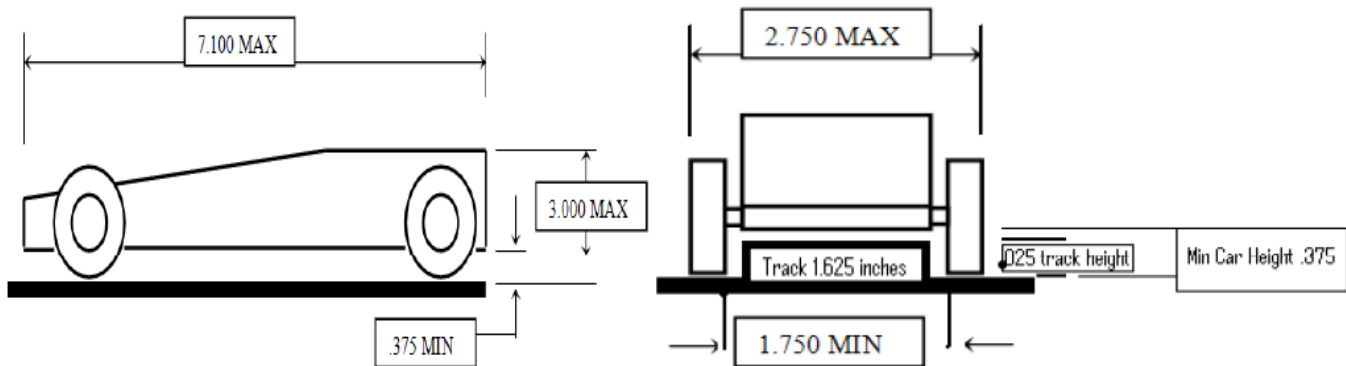
## Cost : No entry fee

**Note:** One of the main purposes of the Pinewood Derby is to teach the principles of sportsmanship. In this spirit, all Scouts, parents, and race officials will support every Scout in their attempt to build the best car they can. If you have questions or need technical assistance, please contact one of the race officials below, your son's Den Leader, or other parents in the Pack. You will find no shortage of people willing to provide tips, experience, and tools. We hope to have one or two days when Scouts and Akelas have access to a workshop with tools they may not have at home. Regardless, though, you will find people willing to share.

## I: Length, Width & Clearance:

- Maximum overall width (including wheels and axles) shall not exceed 2-3/4 (2.750) inches.
- Minimum width between wheels shall be 1-3/4 (1.750) inches at the axles.
- Minimum clearance between bottom of car and track shall be 3/8 (.375) inch.
- Maximum length shall not exceed 7.00 inches
- Maximum height between the wheels and the top of the car shall not exceed 3.000 inches.

\*\* NOTE: All dimensions will be verified by the official templates. Failure to meet these specifications will result in disqualification.



## II: Weight:

The weight of the finished car shall not exceed 5.0000 ounces. The reading of the official race scale is final.

## III: Appearance:

Details such as steering wheel, driver, spoiler, decals, painting, etc. are permissible as long as all of the size and weight specifications are met. Paint and glues must be dry when submitted for inspection or the car will not be accepted.

## IV: Numbering:

Clearly number the car with your assigned car number. Numbers can be placed on the top or hood of the car. Numbers can either be painted, stickered or decaled with a contrasting color.

## V: Lubrication:

All lubricants must be completely dry when submitted for inspection. Includes all wet products. (NO OIL)

Dry powdered lubricants such as graphite or Teflon may be used as well. Lubricants must be applied before inspection and no lubricants may be applied after the car has been accepted.

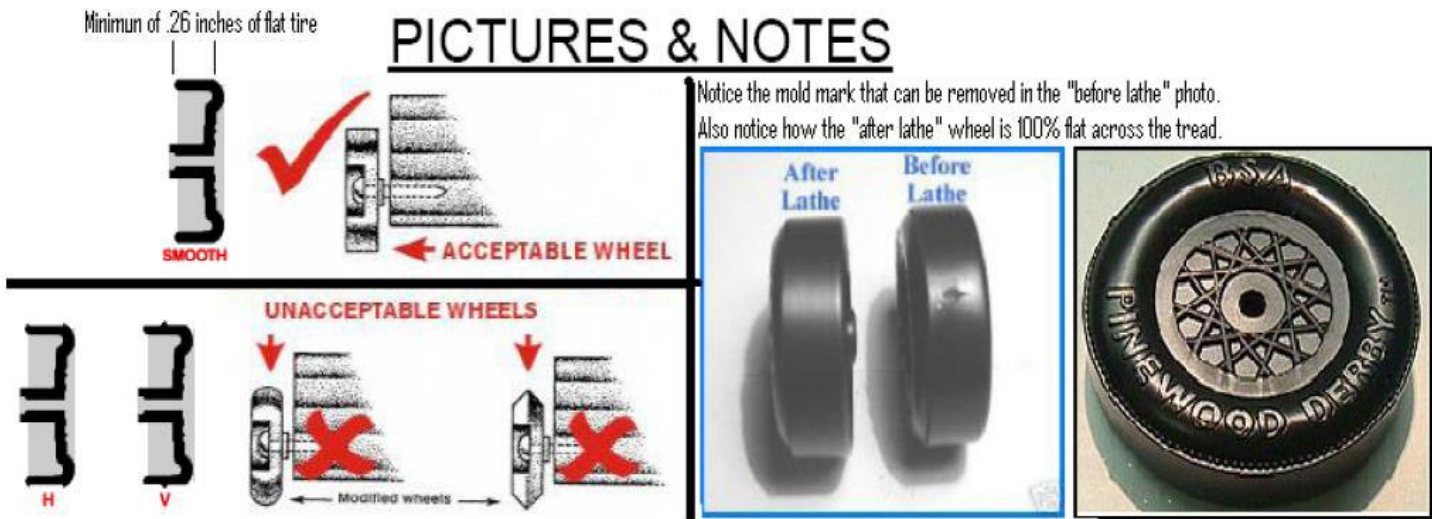
\*\* Please lubricate your car at home or outside the race venue. If we leave a graphite mess inside, we will not be allowed to return next year.

**VI: Wheels: Important, please read these very carefully. If your wheels are not as listed below your car will be disqualified.**

- Only official Scout wheels with “BSA PINE WOOD DERBY” molded on the outside may be used.
- Wheels may be sanded or lathe turned to remove the molding seams from the tread.
- Minimum wheel diameter is based upon the judge’s visual inspection of the serrated edge. This edge must remain intact and unmodified, no exceptions. (see far right photo below)
- Wheels may not be reshaped. The entire “tread” portion of the wheel must be 100% flat. (minimum 0.260 inches across, 0.280 is normal) Wheels with any rounding or cupping will not be accepted, the entire face of the wheel must be in contact with the track.
- **Note:** Be careful when using sandpaper, as you may round the tread. (See “unacceptable wheels” below) You may consider folding sandpaper around a ruler or other flat tool so that you can sand the wheel and still keep it flat. You must avoid “rounding” the tread.
- No “hub caps” or wheel disks are allowed.
- No bushings or other surface can be added between the nail and the BSA wheel. The wheel must ride on the nail.

**VII: Axles / Nail:**

- Unlimited modifications to the nails are allowed.
- Two nails must align with each other to create one front and one rear axle.
- Free floating washers or bushings on the nails are prohibited.
- The distance between the front and rear axles may be changed from that of the standard derby car kit.



- Axles may **not** be angled in the car body slots/holes so as to cause the wheel not to run flat to the surface of the track.
- Axles must be oriented to where at least three of the four wheels touch the track. (One wheel can be off the ground)

**VIII: Wood Block:**

- No pre-cut wooden blocks can be used (as purchased from the internet or other seller).
- Each Scout must build his own car from an official BSA block of wood.

**IX: Build, Don't Buy: Scouts and parents must “build their best” not “buy the best”.**

- No pre-made or store bought cars allowed.
- Official BSA parts must be used. The BSA wood block, nails and wheels can only be modified by the Scout and their parent/guardian. These items cannot be purchased, if they have been modified in any way. This is not a contest on who has the largest bank account. This is a contest of who can build the fastest cars themselves. The PWD rules judge will have final say on if the parts appear to have been purchased. Purchased parts will result in disqualification.

• \*\* To be very clear; any car perceived to have “purchased” parts will be disqualified. \*\*

**X: Ground Rules:**

- The race is open to all Scouts currently registered in Pack 196. Each Scout must enter only one car they built new for this

year's race season. Cars made in previous years are ineligible for the official race.

- If a car suffers a mechanical problem, loses an axle, breaks a wheel, etc. and a repair can be accomplished within 10 minutes, the car can be run again. If not, the car will automatically forfeit the remaining races. Repairs must be done in the pit area. Any car that has been repaired must be re-inspected before re-entering the race. Lubricant may not be reapplied during or after repairs.
- No cars or parts of cars from previous years may be used.
- The car must be freewheeling with no starting device or other means of propulsion.
- If a car jumps off the track, the heat will be run again. If the same car jumps off the track a second time, it will automatically lose the heat.
- An electronic timer will be used at the finish line. If the timer malfunctions, then the line judge at the finish line will call the winner. If the race was too close to easily call, then the heat will be re-run.
- Only race officials and boys racing in the current heat will be permitted in the track area.
- Racers must be registered prior to the start of racing. No late arrivals.

### **XI: Inspection & Disputes:**

- Each car must pass inspection by the official inspection committee before it may compete. The inspectors will disqualify cars which do not meet these rules. As described above, car owners will be informed of any violations and given an opportunity to modify the car to meet these rules.
- **Any car identified as having “purchased” parts (other than decoration) will be disqualified.**
- Any participant has the right to appeal to the Rules Committee for an interpretation of these rules. The Rules Committee, by majority vote, will be the final judge of these rules. If only one member of the Committee is present, they will have the final say.
- Good sportsmanship and behavior is expected. Race Officials may ask anyone not following these rules to leave.
- Remember that the focus of this event is not to win at any cost, but for each Scout to DO HIS BEST!

### **XII: Race Procedure:**

- Each Scout must bring his car to the inspection table during the designated Check-In time. If the car fails to meet any of the rules listed above then the Scout will be given an opportunity to correct the problem up to the close of their registration time slot. Any car disqualified from the official race will be able to compete in the unofficial races.
- After inspection, the car will be registered and placed in storage. From this point forward, the Scout cannot handle the car. Otherwise, only race officials can handle the cars after registration.
- Advancing or winning cars will be announced shortly after the completion of each Rank.
- After all divisions are completed, the fastest cars will be invited to run in a “Best in District” event. Cars running in this event must be left in pit row and cannot be touched.
- When a car has completed competition, it will be placed in a designated area marked “PICK UP” or handed to the Scout by a race official
- After the official races are complete, cars may compete in the unlimited and other unofficial races.
- Before official races, Scouts will be allowed to view cars and vote in the elections. At this time Scouts will be supervised and not allowed to touch or pick up the cars.

### **XIII: AWARDS:**

- There will be four groups based on the Scout's Rank (Tiger, Wolf, Bear, and Webelos).
- Awards will be given to the 1<sup>st</sup>, 2<sup>nd</sup>, and 3<sup>rd</sup> place winners from each Rank.
- A single award will be given for the Best in District event.
- Awards will be given to winners of the elections.
- Every participant will receive a derby “participant” ribbon.

### **XIV: Speed Tips & Other Tips:**

**MAKE THE CARS STURDY:** This is the most important tip. There have been several extremely fast cars in the past that have broken and either could not get fixed in the allotted time or, after having been fixed, did not run nearly as fast as before. Advancing cars can easily run over 20 individual races.

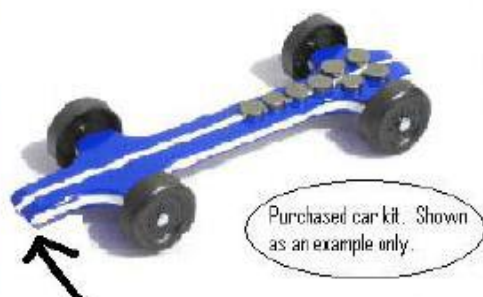
1. **Car Body:** Should be cut to a very thin and flat or wedge shape. The front and rear should be rounded. Although aerodynamics plays a very small role in the speed of cars, every little bit helps. We recommend that you do not “V” point the front of the car as it is difficult to stage a pointed car in the starting pin. It is recommended that you leave at least a ½ inch wide flat surface on the front of the car. (See photos of two PWD cars below)
2. **Wheel Base:** (Distance between axles) Make it as long as possible but not to exceed overall length that the rules allow
3. **Weight:** Build the car with a plan for adding and removing weight at registration. You will be allowed to adjust the weight prior to registration, but an overweight car will not be allowed. A second, unofficial, scale will be available at registration to get the car as close as possible prior to being weighed on the official scale. Although fine gradations of weight have minimal effect, it is important to realize that a completely unweighted car will likely not be able to keep up with any of the weighted

cars.

4. **Alignment:** To check alignment, roll the cars across a flat surface such as a glass table. Set up the wheels as flat as possible. Canting the nails to the front, back, up or down will slow the car down. Aligning the wheels so the car runs straight is one of the most important contributors to speed.
5. **Axles:** The axles should be free of all burs, sanded and polished until smooth or mirror-like. This can be accomplished by setting up a power drill in a vise. Remove burs from the nail and nail head using a fine-toothed file. Sand using very fine sandpaper then polish using emery cloth or a polishing compound. Unlimited modifications are allowed on the axles.
6. **Glue Axles:** Glue the nails into the body slots with epoxy or a hot glue gun to keep them from slipping out. Be careful if you use "super-glue" as the vapors can actually glue the wheel to the nail even if the drop of glue is kept clear of the wheel.
7. **Axle Tubes:** Use a brass or aluminum tube as an axle. Obtain a size to where the inside diameter would be a snug fit to the axle nail. This will aid in wheel alignment. Local hobby stores carry these items.
8. **Lubrication:** Liberally lubricate the wheels, axles and the side of the body. Graphite-Moly Lube is a good lubricant and can be bought at most hobby stores. Work the lubricant into the plastic and wood surfaces. Good lubrication is probably the most important contributors to speed. NOTE: Wet lubricants, such as NYOIL or similar products, can be used but must be completely dry when submitted for inspection.
9. **Bad Wheels:** If you receive a set of wheels with your Pine Wood Derby kit that are either off-center, misaligned or out of balance, the Scout shop at I-35 & Parmer sells a set of four BSA wheels and axles. You are not allowed to use purchased wheels that have been modified from stock in any way. The Scout must do any modifications himself (with the help of Akela)
10. **Ornamentation:** Please make any ornamentation sturdy. In past events, cars have had pieces break off during competition. Local hobby stores also have a wide variety of decals, stickers, fins, roll bars, engines, etc. The sky is the limit so be as creative as possible. Just make sure the final product fits within the rule specifications.
11. Don't wait! Start building your car in December. It really does take longer than you think. A fast car can easily take 50+ hours to build. Also, starting early and doing the work in small steps will maximize the amount of work your child can do. This is, in the end, the main point. A car built at the last minute will by necessity be a parent-built car.
12. **Weight Placement:** Car weight should be placed in the rear so the fore/aft balance point is about 1-1/4" to 1-1/2" in front of the rear axles.
13. **Weight Types:** Local hobby stores have a wide variety of sizes and shapes of weights. If you buy the weights that are designed to go under the car (see photo to the right) be sure to recess the weights into the body. These weights, if simply attached to the bottom may hit the track or result in the car having less than .375 inches of ground clearance.



Pointed car, very difficult to stage



1/2 inch wide front edge, good for staging.

