

PACK 702



PINEWOOD DERBY

Official

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Sportsmanship

Racing requires participants to learn two main things: the craft skills necessary to make your car and the rules that must be followed. There is also a third part to competition that's very important-sportsmanship. This has to do with how you act and behave while participating in the derby.

The first thing to remember about sportsmanship is that everyone's skills are a little different. Some people are better than others at certain skills. You may be good at one thing but not good at another. This doesn't mean you are a good person one time and not good another time. You can always be a good person, whether or not you have good skills for racing. Remember, you and your friends are individuals first and racers second. This idea is sometimes called *having respect for others*.

The second thing to remember is to follow the rules. Without rules there would be no Pinewood Derby. You will never know if you are really good at doing something unless you follow the rules. This is sometimes called *being fair and being honest*.

The third thing to remember about good sportsmanship is that there are winners and losers in every competition. You know this when you choose to compete. There are times when you will win and be happy, and times when you will lose and be unhappy. Being a winner is easy but being as loser is sometimes hard. To be a good sportsman, you must be able to say "I did my best" and be satisfied with the results. If you win, you must not gloat.

Volunteer Race Committee

The Pack 702 Pinewood Derby Race Committee is a volunteer group. Participation in the race by your son (who must be a member in good standing in Pack 702) qualifies you to be a volunteer member of the Race Committee. The Race Committee organizes and operates the Pinewood Derby, communicating and clearing all plans with the Pack 702 'Pack Committee'. In this role, the Race Committee establishes the rules, operates the race, and enforces the rules. Please volunteer to be a part of the Pack 702 Pinewood Derby Race Committee.

AN INTRODUCTION TO THE CUB SCOUT PINWOOD DERBY

An Instant and Enduring Hit

Every year more than a million boys and parents team up to participate in a Pinewood Derby. They carve the cars; decorate them; weigh, adjust, readjust, and fret over them; and finally race them. This partnership of parent and son has become a symbol of the event's success.

The first Pinewood Derby was held in 1953 by Cub Scout Pack 280C of Manhattan Beach, California, operated by the North American Aviation Management Club. The event was publicized in *Boys' Life* in October 1954. The magazine offered plans for the track and car, which featured "four wheels, four nails, and three blocks of wood."

The derby was an instant and enduring hit. It is estimated that more than 35 million parents and sons have participated in actual races. Millions more-parents, den leaders, Cubmasters, and committee members-also have been involved in various ways.

The rules of the very first race stated: "The derby is run in heats-two to four cars starting by gravity from a standstill on a track and run down a ramp to a finish line unaided. The track is an inclined ramp with wood strips down the center to guide the cars."

The cars still roll that way today, accompanied by shouts of excitement and grins of delight from both participants and spectators.

Take Your Place in History

Join the ranks of millions of Cub Scouts who have stood in the derby winner's circle. Cub Scouts just like you have been building their own cars and competing in pinewood derbies since 1953.

Millions of car kits have been built by Cub Scouts over the years, each one handcrafted to reflect the style of its owner's desire. And on race day across the country, these Cub Scouts pit their entries against the cars championed by fellow den members.

Pinewood Derby

The Pinewood Derby is one of the most popular and successful special events in Cub Scouting. Like all successful activities, it requires planning and preparation, but its value in fun and in strengthening family relationships has been proven over the years.

Pinewood Derby cars are simply small model cars of specified dimensions, created, carved, and assembled by the boys, under the guidance of their parents or other family members. The cars are gravity powered and run down a regulation track. The race can be run indoors or outdoors.

The Pinewood Derby committee sets simple, uncomplicated rules and familiarizes each pack family with these rules before the cars are built. The committee should follow the guidelines for planning special pack activities so that nothing important is overlooked.

Pack 702

Pinewood Derby

SCHEDULE

	Weigh in times (evening hours) Friday	Race Start Times (Morning hours) Saturday
Tigers	7:00 PM	8:30AM Start Breakdown begins at 12:00 Out by 1:00 PM
Wolves	7:20 PM	
Bears	7:40 PM	
Webelos I	8:00 PM	
Webelos II	8:00 PM	
Non Scouts	In conjunction with scout	
Judging	8:30 – 9:00 PM	

SUMMARY OF RULES

All cars must pass inspection to qualify for the race. Please read the entire document for full clarification of the rules.

1. Cars will be built from the official BSA kit, the kit includes a block of wood, axles and wheels (kit provided by Pack 702)
2. The car must have been made during the current year (the year in which the derby is held) and has never been raced before.
3. The width of the car shall not exceed 2.75" (2-3/4") (wheels included)
4. The length of the car shall not exceed 7 inches.
5. The weight of the car shall not exceed 5.00 ounces
6. The car cannot exceed 3.0" in height
7. Wheels are to be positioned according to the slots provided in the wood block . In addition, you cannot reduce the width of the block where wheels are attached.
8. Axles, wheels, and body wood shall be from the kit provided by Pack 702 or from Official BSA kit purchased from the Scout Shop only
9. Wheel bearings, washers, and bushings are prohibited
10. Wheels cannot be modified however, you can remove the burr (mold seam) which is normally located in the center of the tire
11. The car shall not ride on any kind or type of spring
12. Any details added must be within length, width, and weight limits
13. The car must be free wheeling, with no starting devices
14. No portion of the car can extend beyond the starting post. (please see drawing located later in this document)
15. No loose material of any kind (such as lead shot) is allowed in the car
16. All parts/features of the car must be securely attached
17. All Scouts must be present for car to participate in a race (Race Committee has ability to waive this rule for exceptions)
18. Any car unable to complete 3 races is disqualified
19. Dry lubricants only – **NO OIL!!!**

Please contact any of the Pinewood Derby committee members with questions regarding the rules.

Note: Please contact pack702webmaster@gmail.com to volunteer. Your help is needed.

Pinewood Derby Awards

Speed Categories

Tiger Rank Fastest Car (1st, 2nd, 3rd)
Wolf Rank Fastest Car (1st, 2nd, 3rd)
Bear Rank Fastest Car (1st, 2nd, 3rd)
Webelos I Fastest Car (1st, 2nd, 3rd)
Webelos II Fastest Car (1st, 2nd, 3rd)
Fastest in the Pack – Scouts Only (1st, 2nd, 3rd)

Judged Categories – Scout Cars Only

Best Car Design (1st, 2nd, 3rd)

- Typically goes to the Pinewood cars that appear have the most realistic car like attributes (dragsters, indy cars, sprint cars, cars with fenders, etc)

Judges Favorite Cub Scout (1st, 2nd, 3rd)

- Based on Judges preference, anything goes.

Cubmaster Favorite (1st, 2nd, 3rd)

- Scout involvement weighs heavily in this category

Best Use of Imagination (1st, 2nd, 3rd)

- Most creative entries and non-traditional entrants (hot dog car, pencil car, swiss cheese wedge, pod racer, baseball bat, etc)

Notes:

- **Sibling Race:** All adults and siblings who want to enter their own cars may do so and the competition will be held right after the Scouts' race. You must use a car of your own design (boy's car may not be used.) Cars and materials from prior year's racing may not be used. Sibling race cars must comply with all Pinewood Derby rules similar to a Cub Scout's entry.
- **Outlaw Race:** Anyone can enter the outlaw race. There is no weight restriction for this class. Modifications of all sorts are allowed and the use of non BSA axles, wheels and other materials is completely acceptable. The car must be able to run on our Pinewood Derby track without interfering with other lanes. No moving parts or motorized devices allowed.

COMPETITION FORMAT

CATEGORIES

Cub Scouts will compete in a derby against other scouts in the same "Cub Scout Year." There will be seven competitive derby categories as follows:

1. Tigers
2. Wolves
3. Bears
4. Webelos I
5. Webelos II
6. Siblings (follow cub scout rules)
7. Outlaw (8 oz max, must fit the track)

RACE METHODOLOGY – RANDOMIZED LANE ROTATION

The lane rotation method will be used to conduct each individual derby. Using this method, every car in the derby will run in each lane, an equal number of times. Lane order and the competitive set will be randomized for each heat in a derby. In this manner, each cub will race in a different lane against a different set of competitors for each heat they race.

DETERMINATION OF FASTEST CAR

Event – Fastest Car by rank - Procedure the same for all categories of Fastest Car

Elapsed time will be recorded for each car in each lane. The four times for each car will be averaged. Lowest average elapsed time will be awarded first place.

QUALIFICATION FOR FASTEST IN THE PACK

The top 5 lowest elapsed time cars for each cub scout rank (siblings and outlaws excluded) will qualify to participate in the "Fastest in the Pack" Derby. This final derby will use the same randomized lane rotation methodology and the same procedure for determining the fastest car as was used in the derby by rank. Tigers, Wolves, Bears and Webelos I's & II's will be competing directly for this speed award.

JUDGED CATEGORIES

All scout cars will be judged in the following categories:

1. Best Car Design
2. Judges Favorite
3. Cubmaster Favorite (based on Scout involvement)
4. Best Use of Imagination

1st, 2nd and 3rd place will be awarded for each category as rated by impartial judges.

RACE ENVIRONMENT / TRACK DESIGN

The Racing Environment

T-1: Track Length and Drop: The track shall have a racing surface (starting line to finish line distance) of approximately 28 feet with a drop of approximately 4 feet.

T-2: Track Slope: The track slope shall decrease from approximately 30 degrees at the starting line to approximately 0 degrees at the finish line.

T-3: Lanes: The track will have (4) lanes. Each lane will consist of a straight, smooth wooden or aluminum strip approximately 1 1/2 (1.50) inches, but certainly less than 1 3/4 (1.75) inches, wide and approximately 1/4 (0.25) inches, but certainly less than 3/8 (0.375) inches, thick, centered on a smooth surface no less than 4 inches wide. Each racecar shall straddle such a strip during its heat.

T-4: Starting Mechanism: The "starting line" shall consist of vertical pins of approximately 1/4 inch diameter, extending approximately 1 inch above the track surface and approximately centered in each lane.

T-5: Finish Line Sensor/Location: This track is equipped with an electronic timing device at the finish line. It will record each lanes times and show these times in an **LED** read-out above each lane at the finish line. The "finish line sensors" shall be in alignment with the corresponding starting line pin and be approximately centered in its lane.

T-6: End of Track Car Stop: At the end of the track, which is approximately 5 feet beyond the Finish Line Sensors, the center lane strip is elevated to 1/2" height. This will apply friction to the bottom of the car to begin the deceleration of the car. [Note that the bottom surface of the car should not have any loosely attached items, such as weights.] As a final stop, the cars will impact a piece of foam.

CAR RULES

The Kit: All cars entered shall be constructed from the **Official Grand Prix Pinewood Derby Kit** (herefore referred to as **'the kit'**) as provided at the December pack meeting or sold by the Scout Service Center, (Kits may be purchased elsewhere if they are of the exact type specified above, but note that many kits sold at hobby stores do not meet the requirement.)

Essential Materials: All cars entered shall be constructed from the **Official Grand Prix Pinewood Derby Kit** (referred to below as **the kit**) as provided at the December pack meeting or sold by the Scout Service Center, (Kits may be purchased elsewhere if they are of the exact type specified above, but note that many kits sold at hobby stores do not meet the requirement.)

Material: Racecars shall be constructed for this event from the parts contained in the **Official Grand Prix Pinewood Derby Kit** (referred to below as **the kit**) as sold by the Scout Service Center. Materials from **the kit** may be supplemented but not replaced.

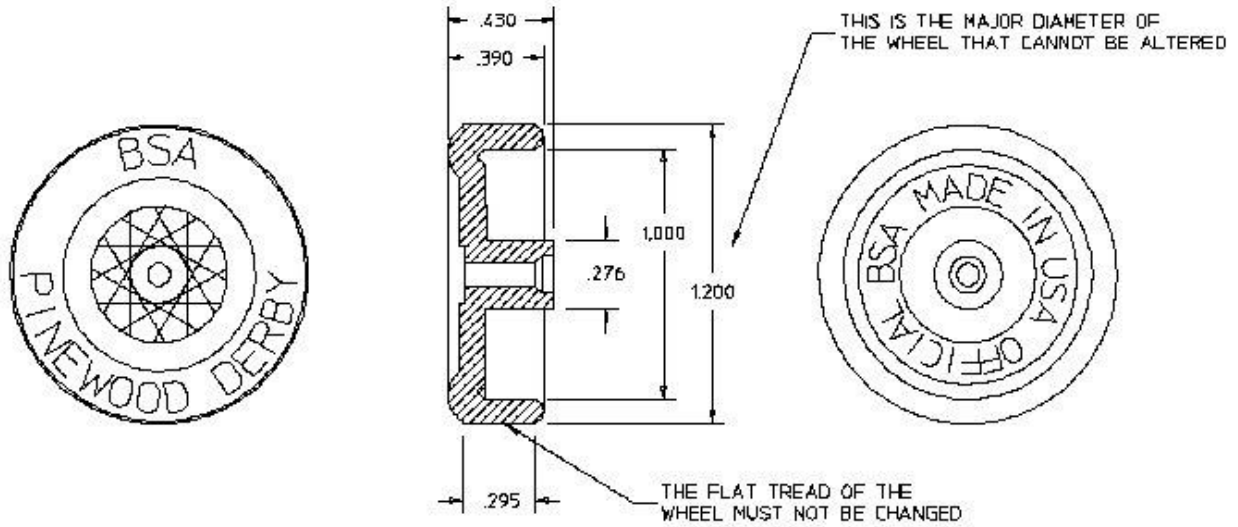
Wheels: The car shall roll on the wheels from official BSA wheels such as those from **the kit** or purchasable at an official BSA reseller. **Performance wheels and axles are PROHIBITED.**

Wheels: Wheel treatment (hub and tread smoothing and polishing) may not result in substantial removal of mass nor in reducing the tread (track contact) width from the original kit wheels. **Wheel tread surface must be cylindrical.** This means that the wheels may not be shaved, angled or brought to a point.

Axles: The wheels shall turn about the axle nails from **the kit**. The axle nails shall be firmly affixed to the wood of the car body. **Performance wheels and axles are PROHIBITED.**

Unacceptable Construction: The following may **NOT** be used in conjunction with the wheels or axles: hubcaps, washers, inserts, sleeves, bearings.

The following diagram provides the exact specifications for the tires. Any changes to the shape or size of the tire will result in immediate disqualification. As mentioned previously removal of the burr is acceptable.



"New Work": Construction of entries must not have begun before the previous year's Covered Bridge District Pinewood Derby Races (March 2003)

Weight: Racecars may weigh no more than five (5.00) ounces (total weight) as determined on the official scales during 'weigh in'.

Length Racecars may be no longer than 7 inches

Width nor wider than $2 \frac{3}{4}$ (2.75) inches

Height: nor taller than 3 inches

Track Clearance: Underside clearance of at least $\frac{3}{8}$ (0.375) inches and inside wheel to wheel clearance of at least $1 \frac{3}{4}$ (1.75) inches is recommended, so that the car will run on the racetrack. (Adequate clearance is the responsibility of the racecar builder.)

Weights and Attachments: Weight may be added to the car and will be considered part of the car for purposes of all measurements. "Weight" is considered to be any material on the car that is not provided in **the kit**. All weight must be securely fastened to the car, e.g. by permanent glue, nails or screws, but not by "sticky substances", e.g. tape, or tack spray. Weights shall be passive, i.e. non- moveable, non-magnetic, non-electric, non-sticky, etc.

Gravity Powered: The racecar may not be constructed or treated in such a way that the track's starting mechanism imparts momentum to the car. (For instance, this provision disqualifies cars with sticky substances on the front of the car and protrusions, which may catch on the starting pin.)

Lubricants: Only dry graphite lubricant may be used - no liquid Teflon or Teflon sprays – no oils or other liquid lubricants!

Staging: The entire car must stage behind the starting pin.

Body: The car body may have no moving parts.

CHECK-IN

Check-in will be conducted according to the schedule provided. Please arrive at your scheduled time. Please have the car ready for check in.

The inspection process is quite simple (if your car is ready and you have followed the rules in this pamphlet).

1. **You will have to complete a 'Check-In Form'**. (One is included in this pamphlet, or you can fill in one at Check-In.)
2. The owner will take the completed car and completed Check-in Form and enters the queue for the Check-In Inspector.
3. The Check-In Inspector inspects the car according to all guidelines in this pamphlet.
 - 3A: If any aspect of the car does not meet the guidelines, the car is returned to the owner.
 - 3B: A workstation will be set-up that will allow minor adjustments be made which will hopefully bring the car within the guidelines.
 - 3C: At that point, the owner will have to go to the end of the Check-In queue.
- 4: The Official Car number is affixed to the car and the car is impounded.

SPECIAL NOTE: Once the car is inspected and impounded, you will not be allowed to make any further modifications to the car, including but not limited to lubricating the axles. You will not have access to the car until race time on Saturday.

No lubricants can be added the day of the race.

Absolutely no cars will be admitted into the race if they are not delivered to the Check-In on Friday evening.

Car weight is limited to 5.0 ounces. The check-in scales will be calibrated using an official Cub Scout 5.0 Brass weight.

RACE PROCEDURES AND RULES

Conduct of the Races:

Race officials are determined by the Race Committee.

As described in the race environment, the race track consists of 4 lanes. Each age group of scouts are divided into race heat groups of 2, 3 or 4 boys. Each group completes 4 races in succession. The lane assignment will be alternated through the 4 heats so that each car is raced on each lane one time.

R-7: Competition Format: (As outlined above) Winning racers will be announced at the awards ceremony following race.

C-3: Car Handling Responsibility: Scouts shall be responsible to (1) transport their own cars from the impound garage to the race starter, (2) to retrieve their cars from the finish line (after the race has been called) and return their cars to the race starter or garage table.

C-4: Lane Assignment: Lane assignment for each heat shall be determined by lot.

C-5: Car Repair: If during the race, a wheel falls off or the car becomes otherwise damaged, then the **SCOUT** may seek advice for repairing the car, but may receive no other assistance. If a car is damaged due to track fault or due to fault of another **CAR** or **SCOUT**, then the track chairman, at his sole discretion, may allow additional repair assistance. **Only Track Officials are responsible for working with the Scout regarding repairs.**

C-6: Car Interference: If, during a race heat, a car leaves its lane and, in so doing, interferes with another racer, then the car at fault and the car(s) that were interfered with will race again from their assigned lanes. If for any reason a car cannot cross the electronic finish line to record his time, that car will be disqualified for that heat only. (However, see **C-5** and **C-9**.)

C-7: Car Leaves Lane: If, during a race heat, a car leaves its lane but proceeds down the track in a manner that does not interfere with its opponent, then the race will be called normally. (However, see **C-5** and **C-9**.)

G-3: Attendance: Only the Cub Scout may enter his car. This means that the Cub Scout must be present to enter his car into competition. **(Race Committee has ability to waive this rule for exceptions)**

C-8: Car Leaves Track: If, during a race heat, a car leaves the track without interfering with its opponent, then a repair inspection will take place by the race judge(s). If it is found that repairs are needed, see **C-5**. If it is found that no repairs are required, then it shall be considered to have ended its heat at that point. (However, see **C-9**.)

C-9: Track Fault: If a car leaves its lane, at his sole discretion, the track chairman may inspect the track and, if a track fault is found which probably caused the initial violation, track chairman may order the race heat to be rerun after the track is repaired.

C-10: No Finishers: Since electronic timers are being used to record and post race results, all cars must clear the finish line so their times can be recorded. If during a race heat a car fails to reach the finish line, then a repair inspection will take place by the race judge(s). If repairs are needed, see **C-5**. That car(s) will be given another try from the assigned lane from which he started that heat. Failure to cross the finish line at this point will result in that car(s) disqualification for that heat only.

C-11: Appeals: The Cub Scout or Guardian must make all questions of rules interpretations, procedure and fact to the track officials promptly. A station at each track will be designated for this purpose.

C-12: Opponent Assignment: We will be using multiple tracks (4) lanes and the opponent assignment is computer generated via a random selection of track time official recorder.

R-6: Finish Line Backup Judges: In the event that the electronic timing device fails, there will be (2) impartial finish line judges, assigned by the track chairman. Heat finish judging is by majority rule.

Race officials are responsible for the proper conduct of the races. Decisions of Race Officials on questions of rules interpretations and procedures may be appealed to the event chairman. Decisions of track officials on questions of fact may not be appealed beyond the track chairman.

All times will be electronically recorded via serial interface to the digital race timer.

CHECK-IN FORM

PACK 702

PINEWOOD DERBY

Fastest Car Division:

- | | | |
|-----------------------------------|----------|--------------------|
| <input type="checkbox"/> Tiger | T | Racers Name: _____ |
| <input type="checkbox"/> Wolf | W | |
| <input type="checkbox"/> Bear | B | Den Number: _____ |
| <input type="checkbox"/> Webelo 1 | X | |
| <input type="checkbox"/> Webelo 2 | Y | |
| <input type="checkbox"/> Sibling | S | |
| <input type="checkbox"/> Outlaw | O | |

Description of your car (what does it look like)

Do not write below this line.

Inspected by: _____

Car Weight at check in: _____oz

Official Car Number: _____

INSPECTOR CHECK LIST

- Weight (recorded on front of form)
- Length
- Width
- Height
- Under carriage clearance
- Nose
- Wheels – Diameter
- Wheels – Flat Threads
- Wheels – from BSA Kit
- Wheels – all four wheels touching track
- Axels – from BSA Kit
- Body – from BSA Kit
- No Washers or bearings installed
- Lubrication – Dry lubrication only
- Body additions – All affixed securely
- Moving parts not allowed
- Wheel location

REFERENCE INFO FOR RACE COMMITTEE

Timeline for Pinewood Derby

August – September

- Committee Chair finds an Event Leader

- Committee Chair & committee select Date for Pinewood Derby

October

- Event Leader educates him/her self on Pinewood Derby using

 - This document

 - Official “Cub Scout Grand Prix Pinewood Derby Guidebook”

 - Searching the Internet

 - Quizing as many previous Pack 702 Derby Committee members

- Finds volunteers to be on PWD committee

 - Make sure that every parent in Pack is offered chance to be on

 - Committee or event volunteers

November

- PWD committee meets as required to determine needs for PWD, establish rules for race

December

- PWD cars are normally given to cub scouts at December Pack Meeting

- Hand out rule book with car

January

- Weigh In: Normally Friday evening before race, 7:00-8:30

- PWD race day: normally a Saturday, 8:30am until finish

Need PWD committee in November to review, and determine required changes, then distribute early in December.

Managing race timing; Pack 702 owns “GrandPrix Race Manager” software with a serial interface to the SmartLine timing equipment. This timer communicates via serial cable to a PC. A USB to Serial Port cable adapter is required and supporting USB driver is required. Configuration of the timer within Race Manager requires using the NewBold timer or manually configuring the timer commands and initialization parameters. Currently the SmartLine Timer option does not work.

2009 derby used a Perfect-N Type schedule allowing a more random opponent assignment and each boy running once per lane. An average of the top three times was used with the lowest race time dropped. The software provides several different types of schedules and will allow prioritization of cars for different award categories besides speed.

Official district pack roster was entered into the software and was used to assign car numbers for all boys. Printouts of the roster were made, segregated by scout rank, for verification of paying of pack dues (or waived due to fund-raiser sales or other committee accepted reasons) and inspection.

Arrangement of Still Cafeteria for Race

The following sketch is the general layout of how Pack 702's Pinewood Derby was set up in January 2002 in the Still Elementary Cafeteria. The sketch shows the general location of the the track, tables and chairs set up as a corral around the track, and location of the persons running the race.

