

SCOUTS BSA
BARBAROSSA DISTRICT
CUB SCOUT PINEWOOD DERBY
RULES AND GUIDELINES
2025



**BARBAROSSA
DISTRICT BSA**



DO YOUR BEST

NOTE TO PARENTS

Dear Parents/Guardians,

The Pinewood Derby is a Cub Scout project. Please feel free to give guidance and minimal assistance to your Scout to help build their Pinewood Derby car. This is a chance for your Scout to enjoy the spirit of friendly competition with their peers and for them to enjoy the satisfaction of building their car from the kit provided.

Please encourage your Scout to work on their car over several weeks, if the project is left to the last minute, the results may be an unfinished car and disappointment.

Please read the following article on sportsmanship with your Scout. While everyone will be trying to win, it's always a good idea to start by remembering the Cub Scout Motto, "Do Your Best," and some of the basic ideas behind good sportsmanship.

SPORTSMANSHIP

Two things the Pinewood Derby requires each participant to learn are 1) the craft skills needed to build a car, and 2) the rules that must be followed. Even more important though, is how we act and behave while taking part in the Pinewood Derby or any other group activity. This is called sportsmanship.

The first thing to remember about sportsmanship is that everyone's skills are a little different. You may be good at something like singing or drawing, but not as good at something else like football or computers. This doesn't mean that you are a good person one time and not good another time. You can always try to be a good person, and remember to always do your best.

Remember, you and your friends are individuals first and competitors second. This idea is often 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 good at doing something unless you follow the rules. This is often called being honest.

The third thing to remember about good sportsmanship is that there are winners and losers in every competition. You accept this when you choose to compete. There may be times when you win and feel happy, and times when you lose and feel unhappy.

Being a winner is easy, and losing is sometimes hard. If you win, you must not brag or gloat. If you lose, you must not feel jealous or bitter. To be a good sportsman, you must be able to say "I did my best" and be satisfied with the results. You must also be able to appreciate and feel happy for someone else when they run a good race or build a good car.

Good Luck!

DO YOUR BEST

"OFFICIAL CLASS" RACE RULES

Key Rules to Keep In Mind:

- Official Class cars must be built new for this season and cannot have been raced in previous years (*see section 1a*)
- Use an official BSA Pinewood Derby kit, not a PineCar or other kit (*see section 2a and 2b*)
- Car must weigh no more than 5.0 ounces [141.7 grams] as weighed on the official scale (*see section 3a*)
- Car must have a wheelbase of between 4" and 4-1/2" (*see section 3h*)
- Wheel treads must NOT be modified in any way (*see section 4i*)
- Only Dry Lubricants can be used (*see section 5a*)
- District Entries: 18 cars (3 Lions, 3 Tigers, 3 Wolves, 3 Bears, 3 Webelos, 3 Arrow of Light) from each Pack will be allowed to compete at the District level.
- Cars going to District must be impounded by Cub Master (Pack Race Official) immediately after Pack race. No modifications are allowed between Pack and District race. Dry lubricant may be applied on District race day prior to check-in.

CAR SPECIFICATIONS

1. General

- a. Each car entered in the race must be newly built for the current Cub Scouting year. Cars from previous scouting years are not permitted except in the "Outlaw Class" (see below).
- b. The car should be substantially built by the Cub Scout. Parental supervision and guidance in the construction of the car is encouraged, but the parent **SHOULD NOT BUILD THE CAR FOR THE CUB SCOUT.**
- c. Cars must be powered by gravity only! This means no engines, rubber bands, wind up motors, springs as used for propulsion, rocket motors, CO2 cartridges, thermo-nuclear reactors, plasma boosters, rodents on hamster wheels, or any other thrust generation or enhancement devices.
- d. Projectiles are not allowed. No part of the car may intentionally detach from the car during the race, come into contact with any other car, or extend outside the allowed dimensions.
- e. Movable or liquid weights that shift the center of gravity of the car when the car is tipped or rolled are prohibited (but are allowed in the Outlaw Class rules).
- f. Electronics are allowed as long as they do not provide any propulsion. Examples of acceptable electronics include LEDs, phototransistors, microprocessors, batteries, electromagnetic coils, transistors, relays, transmitters to cause lights or effects, etc. However, you may not use the electronics to create any kind of propulsion or inertial force.

DO YOUR BEST

2. Only Official BSA Pinewood Derby Kits Permitted

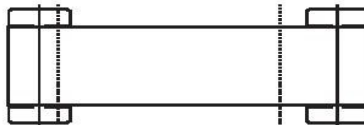
- a. The body of the car must use the block of wood provided in an official B.S.A. Pinewood Derby Grand Prix kit (BSA item #17006).
- b. Old style vintage kits with tall skinny wheels are not permitted in "Official Class" races, nor are "PineCar" or other non- official kits. Cars made with other than official BSA kits will be disqualified. Every year, a Cub Scout shows up with a PineCar kit-based car, and is disqualified, so please don't let this happen to your Scout. (Non-official kits MAY be used in the Outlaw Class races. See below.)
- c. The axles must be attached directly to the original block of wood (see below for axle slot rules).

3. Dimensions and Weight

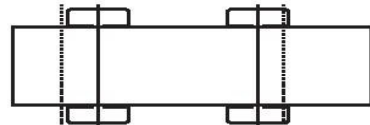
- a. The total weight of the car may not exceed 5 ounces (141.7 grams). Be careful about using scales at the store or Post Office, as they are notoriously inaccurate. Most digital scales are fairly accurate, but only the official scale will be used for the official weigh-in.
- b. The maximum width of the car, including wheels, may not exceed 2-3/4 inches.
- c. The maximum length of the car may not exceed 7 inches, but there is no minimum except that the wheelbase must be at least 4-1/2".
- d. The minimum ground clearance from the bottom of the wheels to the bottom of the lowest part of the car other than the wheels must be at least 3/8 of an inch. **No weights or accessories can protrude from the bottom of the car, they must be counter sunk.**
- e. Minimum width between wheels is 1-3/4 inches.
- f. The maximum height of the car is 3-1/2 inches including accessories.
- g. Other materials such as wood, plastic or metal may be added to the original block of wood from the official kit as long as the car is within the allowed dimensions.
- h. If an axle slot is not straight, is broken, defective, or otherwise not usable as determined by the car builder, a new slot may be cut. The new slots must be spaced apart (or have a wheelbase of) exactly 4-5/16" (4.3125"), but may be between 4" and 4-1/2". Note that too long or too short of a wheelbase is a common cause for car disqualification, so please **pay particular attention to this rule**. It is acceptable to true the original slots or cut new slots.



YES
CORRECT WHEELBASE
BETWEEN 4" AND 4 1/2"



NO
WHEELBASE LONGER
THAN 4 1/2"



NO
WHEELBASE SHORTER
THAN 4"

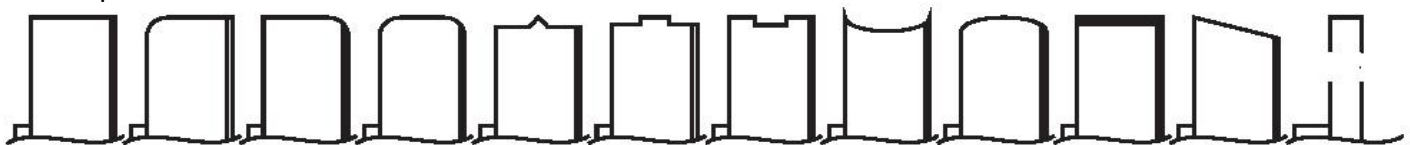
DO YOUR BEST

4. Wheels and Axles

- a. The original wheel axles (nails) must be placed in the original slots provided in the block of wood in the official kit, exception see axle slot rules above under 3h.
- b. The car may not be designed so that the wheels ride upon the center guide strip of the track.
- c. If the front of the car is designed to gain an unfair advantage by shortening the distance between the start pin and the finish line sensor, or the car design otherwise interferes with a fair start, race officials reserve the right to require the racer to modify the front of the car to eliminate the advantage, or the car will be disqualified.
- d. The axles of the car must be from an official B.S.A. Pinewood Derby kit or an official Pinewood Derby wheel replacement kit.
- e. Axles must be firmly attached to the car and may not pivot in the body.
- f. Axles may be polished, but may not be machined, reduced in diameter more than 1% of their original diameter, or plated or permanently coated with any finish. The heads on the axles may not be modified or reduced except to remove flashing or to polish. Reshaping, tapering, grooving, or otherwise modifying the axles will disqualify the car.
- g. The use of a flexible or sprung suspension system of any type is prohibited.
- h. The wheels must be from the official B.S.A. Pinewood Derby kit or official Pinewood Derby wheel replacement kit. All wheels must be marked with "BSA PINEWOOD DERBY" on the front and "OFFICIAL BSA MADE IN USA" on the back.



- i. Wheel treads **may not be shaped or rounded off in any way** (see illustration below). Light sanding is allowed to eliminate any defects however sanding may not reduce the diameter more than 1% of their original diameter. If excessive sanding is detected by **removal of the tiny bumps at the outside corner of the tread** or any other alteration from the appearance of the stock official BSA wheels, the car will be disqualified, no ifs, ands or buts. **This is the largest cause of car disqualification**, even when caused by a so-called over-eager Scout who just wanted to sand the wheels and there is no intent to reshape the wheels. Please be warned: **DO NOT RESHAPE THE TREAD OF THE WHEELS IN ANY WAY OR YOUR CAR WILL BE DISQUALIFIED REGARDLESS OF INTENT**. Below are acceptable and unacceptable wheel profiles:



YES	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
	ROUNDED CORNERS	ROUNDED CORNERS	ROUNDED CORNERS	ALTERED TREAD	ALTERED TREAD	ALTERED TREAD	ALTERED TREAD	ALTERED TREAD	EXCESSIVE SANDING	ALTERED TREAD	ALTERED TREAD WIDTH

DO YOUR BEST

- j. If commercial aftermarket wheels or axles that have been professionally polished, rounded, grooved, lightened, lathed, machined, trimmed, or shaved are detected, the car will be disqualified. You are expected to prepare the wheels and axles yourself.
- k. The bore of the wheels may be polished but not altered (i.e., coned).
- l. No cars will be accepted into the race where bearings, washers, spacers, or any materials other than dry lubricant or paint are placed between the axle/body assembly and the wheel or are used as part of the wheel assembly.
- m. Hubcaps or coverings that conceal the axle end and/or contain a reservoir of lubricant are prohibited.
- n. Three wheels must be in contact with the ground at the same time however, all four wheels must be on the car in a traditional style of a car.

5. Lubrication

- a. **The only dry lubricant allowed is graphite powder.** Non-dry lubricants including those with a petroleum, solvent, or non-dry base may attack the plastic wheels and keep them from turning freely, or can damage or contaminate the track, and are not permitted under any circumstances. Do not use oil or grease as a lubricant.
- b. Wheels and axles should be lubricated if desired before being inspected and checked in. District race organizers may or may not provide graphite powder lubricant at the race or at check-in.
- c. Once the car is impounded after the inspection and weigh-in, it may NOT be re-lubricated except when the wheel is damaged or becomes dislodged during a race.
- d. Dry lubricant must be applied over a trashcan or rag, and spills must be completely cleaned up.
- e. Lubricant reservoirs that are built into the car are prohibited.

6. Build Techniques Not Specified

- a. Other than the prohibitions and limitations described in this document, **it is acceptable** for the car to employ any other "tricks" such as making the car ride on 3 wheels, favoring front, mid or rear weighting, streamlining, or any other techniques that the builder feels will make the car faster.
- b. The race officials may disqualify any car that in their determination is not in compliance with the spirit of these race rules. You are a Cub Scout, so Honesty is up to you.
- c. In rare circumstances, race officials reserve the right to perform a destructive teardown inspection of wheels, axles, or other systems on any car entered in the Official class. Any such inspections will be performed after all races have been completed, and should a car fail the inspection, the final race results will be adjusted. Race officials will return all parts to the participant, but will not be responsible for restoring the car.

DO YOUR BEST

"OUTLAW CLASS" RACE RULES

There are no rules for the Outlaw Class race except the following:

- a. Each car must follow all weight and dimension requirements listed in the "Official Class Rules", except for wheelbase.
- b. There are no minimum or maximum wheelbase requirements on Outlaw Class cars.
- c. Cars must be powered by gravity only! This means no engines, rubber bands, wind up motors, springs as used for propulsion, rocket motors, CO2 cartridges, thermo-nuclear reactors, plasma boosters, rodents on hamster wheels, or any other thrust generation or enhancement devices.
- d. No projectiles are allowed, and no part of the car may intentionally detach from the car during the race or come into contact with any other car.
- e. No hazardous materials (i.e. lead weights, liquid mercury, plutonium)
- f. Other than these rules, anything goes! Think outside the box. Use exotic materials, wheels, axles, bearings, or advanced engineering. Use exotic tools and equipment such as milling machines, lathes, laser cutters, 3D printers, or anything else you can think of to make your car. Put rolling weights inside the body or elsewhere to shift the center of gravity or reduce friction. Use a tiny computer and sensors to steer the car and keep it centered on the track so it never touches the center guide rail in order to reduce friction. Think of ways to make the axle bearing surfaces more efficient or even friction-free with magnetic bearings or jewel bearings. Springs can be used for suspension purposes only, but not to aid in driving the wheels or producing thrust in any manner.

THE WHOLE POINT OF THE "OUTLAW CLASS" RACE IS TO ENCOURAGE PARENTS TO KEEP THEIR MITTS OFF THEIR CUB SCOUT'S CAR AND LET THEIR KIDS BUILD THEIR OWN CARS WITH THE PARENT'S HELP. THE PARENTS, SCOUTS BSA, AND SIBLINGS SHOULD USE THE OUTLAW CLASS TO SHOW OFF THEIR TECHNICAL KNOWLEDGE AND SKILLS AND COMPETE DIRECTLY WITH OTHER PARENTS, SCOUTS BSA, AND SIBLINGS INSTEAD OF COMPETING VICARIOUSLY THROUGH THEIR SCOUT'S CAR. LET YOUR SCOUT BUILD THEIR OWN CAR WITH YOUR GUIDANCE, AND THEN YOU CAN BUILD YOUR OWN OUTLAW CAR.

DO YOUR BEST

THE TRACK



- a. The racetrack to be used is a 6-lane all-aluminum track and is 50 feet in length (this is longer than most tracks because of the higher speed reached by the cars on the smoother aluminum racing surface). Race distance (Start/Finish) is 38.5 feet.
- b. The incline from the start line to the level section of the track is approximately 30 degrees, and the cars start at approximately 54" above the ground.
- c. The surface and guide rails of the track are smooth aluminum and are cleaned prior to the race.
- d. The track is equipped with an manual starting gate that has an electronic switch to start the timer and electronic finish line that uses red light beams to stop the timer system. Software is used to determine exact heat timing for each car down to five decimal points of a second and the heat and overall finish order.
- e. The start line mechanism is comprised of vertical pins that are centered within each lane, and when activated for the start of the race, fall forward so quickly that no car will come into contact once the pins snap down.
- f. The finish line detector is comprised of red light beams centered within each lane at the finish line of the track pointing up into light sensors on the underside of the finish line overhead structure. The distance from the starting pin and the finish line beam is identical on each lane.
- g. The track will be adjusted to be as level as possible across the width over the entire track length.
- h. Every attempt will be made for the joints between track sections to be adjusted to provide a smooth transition by the car.
- i. Every attempt shall be made to ensure that all running lanes of the track are equal, but each car runs at least once on each lane to make sure that all effects of any minor differences in the lanes is averaged out.
- j. Race standings and results are displayed on a video projector and screen for all participants and spectators to see.
- k. Race officials will strive to make the race as absolutely fair as possible.

DO YOUR BEST

RACE PROCEDURES

- a. Only currently registered Cub Scouts may enter cars in the Official Class race. Proof of paid Cub Scout registration may be requested. AOLs that have crossed over to the Troop may still participate in the District Pinewood Derby.
- b. Cub Scouts should be dressed in a neat, clean, Class A uniform at the race event. However, a Cub Scout will not be disqualified from racing if they do not wear their uniform. AOLs that have crossed over to the Troop should be instructed to not wear their Scout BSA Uniforms to the race. All participants must wear the Cub Scout uniform.
- c. Chairs will be placed trackside for current Race Group Cub Scouts to sit in. This is only for the Cub Scouts and not parents and/or siblings.
- d. All spectators must stay behind the marked off area.
- e. Cub Scouts/Spectators must NEVER STEP OVER THE TRACK for any reason. WALK AROUND THE TRACK instead!
- f. No food or beverages allowed in the race area except for Race Staff however, they must keep them far away from the track.
- g. No additional lubrication may be applied to the car after passing inspection or during the race, so be sure to apply lubrication to your wheels and axles before submitting your car for inspection.
- h. After the Scout has registered and paid any applicable registration fee, their car will be weighed, measured, and inspected to ensure compliance with the official rules.
- i. Only an officially designated scale will be used to weigh cars. Cars will not be accepted if their weight exceeds five (5) ounces by even the smallest resolution of the balance. Scales vary widely, especially the scales at the Post Office, so be prepared to adjust weight of your car up or down at the time of inspection. Race officials will have an official BSA regulation 5 ounce reference weight on hand to calibrate and verify the official scale.
- j. A wood, plastic, or metal jig will be used to determine if the car complies with the dimension limitations (length, width, height, wheelbase, and ground clearance).
- k. After the car has passed inspection, it will be impounded and taken by a race official to the staging area to await the race. Cars may not be handled by the owner after inspection until after all racing has been completed.
- l. Cars will be handled only by the race officials (and the car owner only if the owner is making an emergency repair).
- m. A Cub Scout whose car fails any part of the inspection will be given the opportunity to make adjustments to the car. Cars will be re-weighed, measured, and inspected until they comply or until the scheduled race starting time. If you are unable to make your car comply with the inspection requirements before the start of the race, your car will not be allowed to run.
- n. Each heat will begin with a race official positioning the cars on the track.
- o. Each car will run once in each of the six lanes in a random computer-generated schedule. If you don't see your car running for a while, rest assured it will eventually run.
- p. Race officials will return the cars from the finish line to the staging area between races. Spectators should not touch the cars at any time during the race.

DO YOUR BEST

- q. In the event of a breakdown of a car during the race, the participant will be allowed to repair the car. Only the damaged portion of the car may be modified. The Scout must do the work with assistance from his parent or guardian. Race officials shall re-inspect any car that is serviced during the race. The Race officials may choose to continue with other race heats in order to avoid long delays in the race. The damaged car must be raced before the race proceeds to the next level of elimination.
- r. In the event of a breakdown of the track, electronic finishing or ordering system, or race management software, or in the event of an error in set up of the cars (car jumps from the lane, car positioned in wrong lane, car positioned backwards in the lane, etc.), the heat affected by the breakdown may be re-run and the original result, if any, will not be factored into the final results.
- s. Each car will run one time in each of the six lanes. Each car's time from each heat is added together by the race software, and the car with the lowest combined time is the winning car. All cars are ranked for standings by their combined times.
- t. There are no elimination rounds or heats. Every car runs once in each lane.
- u. If a participant needs to leave the race before all heats have been completed, the participant must leave the car in the care of the race officials. The car will be returned to the participant after the race or to their Cub Master.
- v. The results, as called by the judges, are final. Races will not be rerun due to parental interference.
- w. **Unsportsmanlike conduct (Adult or Cub Scout) will result in immediate disqualification.**

DISTRICT REGISTRATION

- a. 18 cars (3 Lions, 3 Tigers, 3 Wolves, 3 Bears, 3 Webelos, 3 Arrow of Light) from each Pack will be allowed to compete at the District level.
- b. Each Pack may specify an alternate (one from each rank) in the event one of the top 3 racers from their Pack cannot compete at Districts. The alternate may race at the district race only to replace a racer from their Pack. In no event will a Pack have more than 18 cars competing at the District race.
- c. **The cars for entry from the Cub Scout packs must be impounded by Pack officials (Cub Master) at the end of their Pack's race day.** The Pack Official will bring all cars to the District Registration. The cars are not allowed to be kept by the racer, and must be impounded to ensure that the car is not modified. Cub Master/Racers will be allowed to apply dry lubricant prior to car inspection.
- d. If any owner of one of the top cars does not wish to have their car impounded for race at the District, then the Pinewood Derby official for the pack may offer the slot to the next fastest car.
- e. There will be a limited entry Outlaw class for Parents/Siblings/Scouts BSA in the Districts race. 25 cars maximum first come, first served.

DO YOUR BEST

- f. Each Pack must provide the District Race Coordinator (Daniel Cole) with the names of the top 3 racers and alternate from each rank. (Lions, Tigers, Wolves, Bears, Webelos and Arrow of Light) as well as the order of finish. **These names must be emailed NLT March 1, 2025 @ 1500 CET to daniel.cole32@live.com.**
- g. The registration fee for the 2025 race will be \$10.00 per registrant. (Max \$30 per a rank, alternates are not an additional cost)
- h. Check-in & inspection begins on **March 8, 2025, 08:00-10:00 at the Ramstein BX food court.**
- i. It is the Cubmaster's responsibility to inform the owner of the alternate car if they need to come to the District race.

RACE SCHEDULE & AWARDS

1. All heats will be run based on a schedule set by rank.
2. Heat times are as follows:
 - a. 10:15 Arrow of Light
 - b. 10:45 WEBELOS
 - c. 11:20 Bears
 - d. 12:30 Outlaw
 - c. 13:00 Wolves
 - d. 13:25 Tigers
 - e. 14:00 Lions
 - f. 14:30 Grand Championship Race
3. The top three racers in each Rank will be recognized, as well as the top three Grand Champions.

SCOUTS BSA EVENT RULES REMINDER

- a. This is a Scouting environment and adults are asked to refrain from using profanity. This will result in being asked to leave the premises.
- b. There is no smoking or use of alcohol permitted at any Scouts BSA function.
- c. No pets are allowed at Scouting events.

EACH PACK IS FREE TO SET RULES FOR THEIR INDIVIDUAL RACES. HOWEVER, COMPLIANCE WITH DISTRICT RULES WILL ENSURE THAT PACK CHAMPIONS WILL BE QUALIFIED TO RACE AT THE DISTRICT EVENT. THE DISTRICT STRONGLY RECOMMENDS THAT PACKS FOLLOW DISTRICT RULES WITH REGARD TO ELIGIBILITY, USE OF OFFICIAL KITS, AND REPLACEMENT PARTS, WEIGHT RESTRICTIONS, ETC. IT IS IMPORTANT TO REMEMBER THAT EACH CAR WILL BE IMPOUNDED AFTER THE PACK RACE AND NO MODIFICATIONS ARE ALLOWED PRIOR TO DISTRICT CHECK-IN. ALL CARS WILL BE INSPECTED PRIOR TO THE DISTRICT RACE AND, IF FOUND TO BE IN VIOLATION OF DISTRICT RULES, WILL NOT BE ALLOWED TO COMPETE.