

It's Pinewood Derby Time!



Derby Background

The first Cub Scouts to participate in a Pinewood Derby were from Cub Scout Pack 280c of Manhattan Beach, California. The event was originated by Cubmaster, Don Murphy, and was run in the Manhattan Beach Clubhouse on May 15, 1953. The Pinewood Derby caught on like wildfire and it has been a highlight of the year for the over 43 million Cub Scouts that have participated since then.

"I wanted to devise a wholesome, constructive activity that would foster a closer father-son relationship and promote craftsmanship and good sportsmanship through competition."

Don Murphy,
Founder of the Pinewood Derby in 1953
Manhattan Beach, CA Cub Scout Pack 280C

In Pack 1491 we will be doing our best to meet the objectives that Don Murphy originally conceived. We want to make sure that the Cub Scout will be doing all of the work building his car that he can safely accomplish and building lifelong memories with his adult partner, also. We expect him to work closely with the adult partner who will advise and supervise. This can be one of the best experiences in Cub Scouting.

Jealous that the Cub Scout gets to have all this fun and end up with a cool car? Don't worry. We have created some races for everyone else. We **strongly encourage** parents, brothers, sisters, neighbors, friends etc. to build and enter their own car into the All-Comers race or, if the standard rules in the All-Comers race seem a little too constricting, try the "Outlaw" race. Let your imagination run wild and see what sort of speed machine you can create. By the way, there are trophies at stake in All-Comers and Outlaw races, too.

We have also included a different category at each Scout rank level. For those who want a challenge, instead of competing for the fastest times, the "Best Mileage" trophy will be awarded to the Scout at each rank level whose car crosses the finish line in every heat, but has the highest total time. This is harder than it sounds – you have to make a car that won't stall before crossing the finish line, but is slower than the rest of the competition.

Pack 1491 Pinewood Derby 2012 Season Schedule

Monday, December 19, 7:00pm

Pack Meeting

Car kits are handed out along with this schedule and the Rules and Objectives. Please don't open the kits until you get home. The kit consists of a block of wood, 4 plastic wheels, and 4 small nails to be used as axles. The axles are easy to lose and to comply with the rules your car can only use BSA wheels and axles. See attached Rules for a complete set of derby rules.

Saturday, January 7, 9:30am-3:30pm

Derby Workshop

Where: **TBD**

What: We will have woodworking tools, the official race scale, and some experienced Derby car builders to assist. Anyone in the Pack who is interested including all Scouts and any who may be entering the All-Comers or Outlaw races can come anytime during the workshop. All you need in order to attend is:

- 1) The car builder (the Scout for Pack races) and a responsible adult partner to help.
- 2) The car kit and any weights or decorations.

We can help with cutting the car shape and most other aspects of the car build. We aren't planning on painting that day, but certainly can offer advice





Pinewood Derby Mania!

A CUB SCOUT PHENOMENON



Friday, January 20, 6:30pm-8:30pm

Race Setup

Where: Dolvin Elementary School

What: We will be setting up and decorating in the cafeteria for race day. Anyone who wants to help the Pinewood Derby committee, arrive around 6:30pm.

Saturday, January 21, 8:00am-12:30pm

Race Day

Where: Dolvin Elementary School

What: This is the big day. Wear your full Scout uniform and bring your race-ready Derby car.

8:00am-8:30am Setup

8:30am Registration Begins

Photographs, Inspection & Registration will be handled in Cub Scout Rank order. The **approximate** times for registration for each rank are listed below. Please try to arrive at the beginning of your registration period. If you don't pass, you will need time to correct any issues. We are attempting to overlap registration times in order to minimize the wait time between races. We ask that you let those in earlier races register before you, but otherwise, you can register as early as you want.

- Web 2 8:30-8:45
- Web 1 8:45-9:00
- Bear 9:00-9:15
- Wolf 9:15-9:30

- Tiger 9:30-9:45
- All-Comers 9:45-10:00
- Outlaw 10:00-10:15

9:00am Races Begin

Races will begin at 9:00 and will be run in the following order:

- 1) Webelos 2
- 2) Webelos 1
- 3) Bear
- 4) Wolf

- 5) Tiger
- 6) All-Comers
- 7) Outlaw
- 8) Pack Championship



1st, 2nd, & 3rd place trophies for each race will be awarded at the end of the race. Additionally, the Best Mileage trophy will be awarded at the end of rank level races only. The next race will follow immediately after the previous race's awards are handed out. The top finishers in each rank, Tiger through Webelos 2, will stay for the Pack Championship race.

Scouts' cars will be kept until the Pack Meeting on the following Monday. All-Comers and Outlaw cars are not included in appearance judging or the Pack Championship and may be taken home on race day after the racing is finished.

Cleanup Immediately following Pack Speed Trophy Ceremony

Please plan on staying a few minutes to help put the facility back in order.

Monday, January 23, 7:00pm

Pack Meeting

Scouts will be voting on their favorite cars at the Pack meeting. Appearance trophies will be awarded at the Pack meeting. Scouts may take their cars home after the Pack meeting

We still need help on race day. If you want to volunteer, or have questions, please contact Jim Malcom (email: jemalcom@yahoo.com , phone: 404-663-9338) or any other member of the Pinewood Derby Committee. It's a lot of fun and it helps to provide a great experience for the Scouts.



PINEWOOD DERBY OBJECTIVES



- A Scout and an adult partner working, having fun, and learning together is the main objective. This is an excellent way to learn basic woodworking, painting, and maybe even a little about physics. The main result will be a great time together creating from some wood, nails, and plastic wheels a little keepsake that the Scout can point to with pride, knowing that he and a trusted partner worked together on it.



That is winning at the Pinewood Derby.

- The surprise here is that, although having the fastest car is an objective, it is not the main objective. Competition does give some few Scouts an opportunity to win like a good sport. It gives more Scouts an opportunity to lose like a good sport. Adults and Scouts should discuss and understand what good sportsmanship means.
- The Scout should do all the work that he can safely accomplish. The adult partner should be with the Scout, advising, but allowing the Scout to do the work.



WHAT WILL HAPPEN ON RACE DAY



- Scouts should wear their class A uniforms (blue or tan shirt, neckerchief, belt) to this Scouting event.
- Concessions will be available during the day for snacks and drinks.
- Participants first go to check-in to get on the race roster and obtain a pit pass and car number
- Next is the photographer's booth for a picture of the owner with their car.
- Then the Tune-up area to rough weigh the cart and adjust the weights.
- Lastly is Inspection and Impound.
- Arrive in plenty of time to have your car inspected and for corrections if the car doesn't pass.
- Please be able to tell the following things to the inspection team:
 1. Your name
 2. If you are a Scout in Pack 1491, what rank you are (Tiger, Wolf, Bear, Web 1, Web 2, etc.). If you are entering in the All-Comers or Outlaw races, you will need to specify this at the inspection station.
 3. What is your Den number?
 4. If you are a Scout in Pack 1491, which of the 3 Appearance categories you want to have your vehicle judged in (see item below)
 5. Be able to say that, yes, you read and understand the rules
- There are 3 Appearance categories the cars will be judged on. They are:
 1. Most Race Car Like – Make your car look like a favorite race car
 2. Most Original – Be creative and let your imagination run wild.
 3. Best Scouting Theme – a car to represent any part of Scouting



These categories will be judged between impounding and the next Pack meeting. Awards for 1st through 3rd place in each category will be presented at that Pack meeting. Appearance awards are at Pack level only, with no Rank level appearance awards. Each Scout will be asked to choose one of the 3 appearance categories he wants to enter his car in. The same car from each Scout may be

entered in their rank race and the Pack appearance contest. Only one appearance category can be entered by each Scout's car.

- The cars will be impounded after inspection is passed and will remain impounded until time for the race. No more work, including lubrication, is allowed after impounding. No one but race officials are allowed in impound area.
- The racetrack is a 32 foot long, aluminum, 4 lane track, with the start gate at the top of a slope about 3 ½ feet above the finish line. The slope ends about 12 feet from the start and the rest of the track is a flat straightaway to the finish line. The start gate is a set of pins that drop out of the way consistently faster than cars will accelerate. There is an electronic finish line that uses optical sensors to detect finish time. Times are measured to within 0.0002 seconds. The finish line timer is attached to a computer.

- Races will be run in the following order:

1. Webelos II
2. Webelos I
3. Bear
4. Wolf



5. Tigers
6. All-Comers
7. Outlaw
8. Pack Championship

- The computer organizes the race so that every car runs one heat in each lane. A race is complete when each car in the race has run all four heats, once on each lane.
- The individual race winners will be those that finish with the lowest cumulative time from all four heats within the race.
- Ties among the top 3 finishers after the race has been completed will go to a tie-breaker race-off. The race-off will consist of a minimum of two heats. The cars will race once, swap lanes and race again with lowest total tie-breaker time winning. Ties below the top 3 spots will not go to a tie-breaker.
- The top three winners in each race will be awarded trophies on Race Day.
- A trophy will be awarded at each rank level this year – The “Best Mileage” Award. This award will go to the car with the highest cumulative time for all four heats. The car must have crossed the finish line in all four heats. There will not be a Best Mileage Award in the Pack Championship, All-Comers, or Outlaw races.
- Only the top rank level finishers will advance to the Pack Championship. All-Comers and Outlaw race winners will not compete in the Pack Championship.
- Scout's cars will remain impounded for appearance judging until the following Pack meeting. All other cars (All-Comers and Outlaw) may be taken home after their race is completed.
- Everyone should plan on staying to help pack up and clean up after the race.



Who Can Enter:

- Registered members of Pack 1491 may enter ONE car in the appropriate rank race. (i.e. Tigers can enter in the Tiger race, Webelos 1 can enter in the Webelos 1 race, etc.)
- Registered members of Pack 1491 who enter the rank level races will automatically get to enter the SAME car into ONE of 3 appearance categories. No others are eligible for appearance awards.
- Anyone (mom, dad, sister, cousins, friend, etc.) is **strongly encouraged** to build and enter in the All-Comers race, meet the same rules in effect for the rank level races. Pack 1491 Scouts may enter a second car in this category, if they already have one car entered in the rank races.

- Anyone may, and is ***strongly encouraged*** to, enter a car in the “Outlaw” race. Pack 1491 Scouts may enter one extra car in this race. All others may have up to two entries in this race, but only one speed award per person will be allowed. With less restrictive rules, this is a great place to experiment.

The All-Comers and Outlaw races are available for parents, siblings, aunts, uncles, friends and others to join in the race day fun. It also permits the Scout to build his own car and let the Scout’s enthusiastic adult partner build a separate car of their own to showcase their talents and race. We want to keep the Scout races between Scout-built cars. The adults are there to advise the Scout and let the Scout do all of the work on the Scout’s car that the Scout can safely accomplish.


RULES
SCOUT

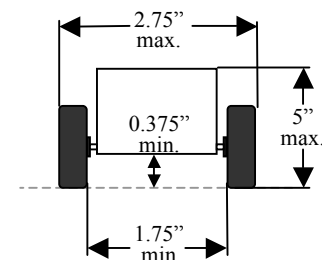
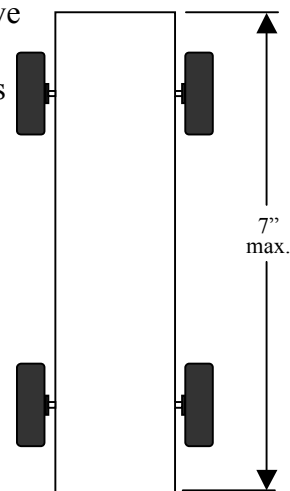



FOR
AND ALL-


RANK
COMER RACES

Basic Requirements:

- **READ AND UNDERSTAND ALL RULES!!!** The slowest car is one that is disqualified. If you are unsure about a rule, ask someone on the Pinewood Derby committee.
- The Scout’s car should be worked on by the Scout with guidance and assistance from an adult partner. Assistance from the adult partner should be limited to tasks which the Scout may not safely perform.
- The car must be made by the Scout for this specific race. Cars made for other races, including previous years’ races are not allowed, even if modifications have been made.
- Only the wheels and axles from the official BSA kit may be used. Other wheels and axles will result in disqualification. Any cars found with wheels or axles ordered online will be disqualified from all races.
- Precut shapes or kits are not allowed and deprive you of the fun of creating the car. The wood supplied in the official kit is a great start.
- The car must be made mostly of wood. Weight, lubrication, and decoration may be added, as long as the car meets all other rules.
- The car must not leave residue or otherwise harm or interfere with the track, electronics, or any part of the venue. **NO WET PAINT OR GLUE.** Clean excess lube off. We don’t want graphite all over the cafeteria.
- No form of propulsion other than gravity is allowed. No motors, springs, jets, warp drives, etc.
- No hazardous materials including mercury are allowed.

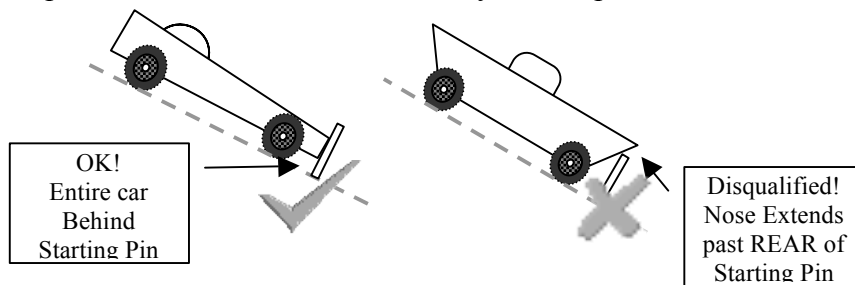


Dimensions:

Note that all dimensions include the basic car, wheels, axles and all decorations and weights

- Maximum overall length: 7.0 inches
- Max. overall width, including wheels & axles: 2 ¾ inches

- Min. clearance under car (to clear track guide): $\frac{3}{8}$ inches
- Min. clearance between wheels (to clear track guide): $1\frac{3}{4}$ inches
- Maximum height (to clear the finish line) 5 inches
- Maximum weight: 5.00 ounces
- No part of the front end of the car may extend past the rear surface of the $1\frac{1}{2}$ " tall starting pin



Weight:

- The total weight of the car, including all accessories, paint, etc. must be no more than 5.00 ounces.
- The race scale will be calibrated prior to check-in, and it *may* vary from your scale. It doesn't matter what you scale says -- **THE RACE SCALE IS OFFICIAL**. Allow some way to adjust your car's weight.
- No moveable weights, liquid, or powdered weights, etc. may be used. All weights must be solid and firmly attached to the car. Any weight that falls off during a race may not be reattached.

Axles:

- ONLY THE OFFICIAL BSA WHEELS AND AXLES ARE ALLOWED. OTHER WHEELS AND AXLES WILL RESULT IN DISQUALIFICATION FROM RACING in Rank and All-Comers races.
- Only axles from official BSA kits may be used. These are small nails. Solid, one-piece axles may not be used. After market axles from other sources may not be used. Wheels and axles purchased on-line are strictly prohibited and will result in disqualification for all racing classes.(Note this is STRICTLY ENFORCED)
- The axles must be solidly attached to the wood of the car. No other suspension mechanism such as springs may be used. Axles may not be inserted into tubes, washers, bearings, bushings, etc.

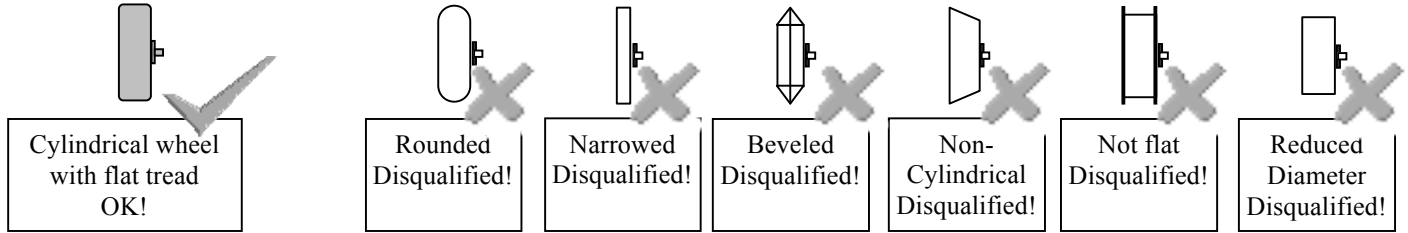


Wheels:

- ONLY THE OFFICIAL **BLACK** BSA WHEELS AND AXLES ARE ALLOWED. OTHER WHEELS AND AXLES WILL RESULT IN DISQUALIFICATION FROM RACING in Rank and All-Comers races.
- There must be two wheels each on the left and right sides of the car, 4 wheels total.
- Wheel imperfections may be removed, but the tread of the wheel must remain flat and cylindrical. No rounding, beveling, grooving, or other reshaping of the wheel tread is allowed. The width of the tread must not be reduced. No holes added to the wheel.
- The diameter of the wheel must not be significantly changed. The "tread marks" on the outer face of the wheel must remain visible. No holes may be added to the sidewall.



- Following are examples of an allowed wheel and *some* of the modifications that will cause a car to be disqualified from Rank level and All-Comers races.



Lubrication:



- Only dry lubrication such as graphite and Teflon may be used.
- There should not be excess lubrication that would cause a mess either on the track, tables, or floor. PLEASE clean excess lubrication from surfaces. **Only apply lubrication outside the building or in designated lubrication “pit”**. Clean up any lube that finds its way to floors, tables, etc.
- Lubrication may only be applied prior to inspection and impounding of car. NO further lubrication before or during the race will be allowed.



RULES FOR “OUTLAW” RACE ONLY



This race category has somewhat relaxed rules intended for those who either can't meet the standard rules above, or who want to push the performance envelope.



IF YOU ARE ENTERING RANK LEVEL OR ALL-COMERS RACES, DON'T USE THE OUTLAW RULES. FOLLOW THE APPROPRIATE RULES DESCRIBED IN THE RULES FOR SCOUT RANK AND ALL-COMER RACES SECTION.

Outlaw Basic Requirements:



- The car must fit on the track.
- The car must not interfere with other cars
- The car must not leave residue on, interfere with, or otherwise harm the track, electronics, or environment
- The only propulsion system is via gravity. No motors of any kind including weight gravity assist.
- Wheel modifications as discussed above are allowed however all work **MUST BE DONE BY THE RACER. NO AFTERMARKET WHEELS (INCLUDING COLORED WHEELS) OR AXLES ARE ALLOWED. ALL PARTS MUST BE FROM YOUR KIT (No springs, bearings, bushings, etc.)**

Outlaw Dimensions:



Note that all dimensions include the basic car, wheels, axles, and all decorations and weights:

- Maximum overall length: 8 inches
- Maximum overall width, including wheels & axles: 2 7/8 inches

RULES FOR OUTLAW RACE ONLY

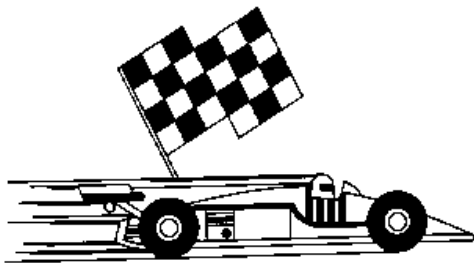
RULES FOR OUTLAW RACE ONLY



- Min. clearance under car (this is really close to not clearing track guide): $\frac{5}{16}$ inches
- Min. clearance between wheels (to barely clear track guide): $1 \frac{11}{16}$ inches
- Maximum height (to clear the finish line) $5 \frac{1}{4}$ inches
- Maximum weight: 6.50 ounces
- No part of the front end of the car or wheels may extend past the rear surface of the $1 \frac{1}{2}$ " tall starting pin

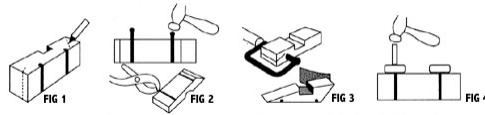
RACE DAY RULES FOR ALL RACERS

(Applies to *ALL* Race Categories)



- **You must be, and act like, a good Scout, which includes good sportsmanship, at all times.**
 - All cars must pass inspection before racing. If the car does not pass inspection for any reason, it may be modified and re-inspected until the last call for your race time. All inspection points must be passed after the car has been worked on. Come early so you have time.
 - Once a car has passed inspection, it will be impounded. No one other than race officials will be allowed to touch the cars after impounding. No modifications are allowed, including lubrication, after a car has been impounded.
- No one other than race officials are allowed in the impound area.
- If a car cannot be made to pass inspection, or if the car/Scout arrives after inspection time for their rank is closed, the car may be entered in appearance categories, and, optionally the "Outlaw" speed category, but will not be eligible for Rank level and Pack level speed competition.
- Only one car may be entered by the Scout into Rank level racing/appearance judging. This car must have been made explicitly for this race. If the Scout has a second car, it may be entered into the Outlaw race.
- If a wheel falls off during a race, the Scout will be allowed up to 5 minutes to replace the wheel. The car must pass all inspection points again after any work is done to the car. No additional lubrication can be added to any wheel, including the replacement.
- If a car crashes during a race and sustains physical damage, the Scout will be allowed up to 5 minutes to effect repairs. After *any* work is done on the car, it must pass all inspection points again. If, for any reason, the car cannot be made race ready within the allotted time, it may forfeit the current heat.
- If weights or decorations fall off during a race, they may not be replaced. Be sure all weights and decorations are securely attached!
- The first time a car crashes during a heat, the race manager will rerun the heat. Subsequent crashes may result in disqualification of the car.
- Likewise, a car that leaves its lane and interferes with other cars repeatedly may be disqualified.
- The race committee's decisions are final. Remember to practice good sportsmanship.

GENTLEMEN, START YOUR ENGINES!



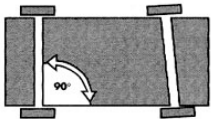
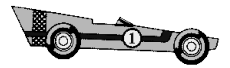
Construction Tips



There are just a few basic steps to building a Pinewood Derby car. The adult should allow the Scout to do as much of the work as the Scout can safely accomplish. It may be best to break the work down into manageable time slices so that tiredness, frustration, and/or wandering attention don't set in.

The following is an outline of the steps to making a Pinewood Derby car:

1. Decide on a design that the Scout likes. Be creative, but make sure that the design is within the scope of your capabilities. A scale reproduction of a Ferrari Enzo may sound cool, but may be difficult for a Scout to create.
2. Sketch the design on a piece of paper cut to the size of the block. Cut this out, tape it to the block and transfer the design to the wood block that came in the kit.
3. Before cutting the block, make sure that your axles will be straight when inserted in the wood block.



The slots in the bottom of the block of wood may not be straight. It is ok to re-saw the slots or re-drill the block for the axles. This is more easily done before the wood is shaped. Once the wood has straight holes/slots, it is good practice to test insert the axles. Once the car is cut, it is much more likely to break when inserting axles, so pre-stressing the wood at this point for the axle will save grief

later. Remove and save the axles.

4. Shape your wood. This can be done with a coping saw, a rasp, or even sandpaper. Power tools may be used, but full safety precautions are the responsibility of the adult advisor. Be sure that you leave the block at, or close to, full horizontal width where the axles will insert, or you may not have enough clearance between the wheels to meet the minimum 1 3/4" spacing when they are finally attached.
5. Decide at this point about how much weight will need to be added to bring the car up to 5 ounces. Don't forget to add in the wheels, axles, and any decorations when calculating weight. Figure out where you are going to put the weight. The car needs to have the balance point somewhere between the front and rear axles for stability. The initial car design should allow for places to put weights.
6. Firmly attach weights. Weights are available from hobby stores, but just about anything can be used. Weights can be screwed or glued on, embedded in recesses, placed in drilled holes, or solidly attached by any other method. Just make sure that the car still meets all rules and the weights won't fall off.
7. You are ready to do the initial decoration of your car at this point. Decorating includes any coloring with markers, painting, etc. Painting is usually better when done with several light coats rather than one heavy coat. Primer/Sealer base coats may make your finish coats easier to apply.
8. It is time to get wheels and axles ready. Look for any imperfections that would keep the wheel from spinning easily on the axle and rolling well down the track. Remove imperfections such as the burr under the nail head with a file or sandpaper. With protection over your work surface, apply lubricant (graphite or similar dry lube) to the bore of the wheel that spins on the axle. Spin the wheels to spread the lube.
9. Once you are satisfied with how your wheel spins on an axle, it is time to insert them into the car. Carefully insert into the prepared axle position (see step 3). Make sure the wheels will still turn when attached. If pushed in too far, they will bind on the body.
10. Align the car. The car needs to be able to roll straight. Find a clean, level area and give the car a gentle shove. It should roll several feet without veering significantly. If it doesn't roll straight, you should correct your alignment by adjusting axle angles.



11. Once your car rolls straight, you need to firmly attach the wheels/axles. If you use glue, be very careful to keep it off of the wheel or any place the wheel will touch on the axle or car body.
12. The last finishing details such as stickers can now go on.
13. Do a final check to make sure the car complies with all rules. Don't be disqualified on Derby day. *If any dimension is off, fix it now.* If the weight is very close to 5 ounces, be sure you have an easy way to remove some weight in case the Official Race Scale indicates the car is too heavy.
14. Admire your work of Pinewood art and get ready to race!



If you would like to help with the race or have questions or suggestions, please contact anyone on the Pinewood Derby Committee or Jim Malcom (phone: 404-663-9338 email: jemalcom@yahoo.com)