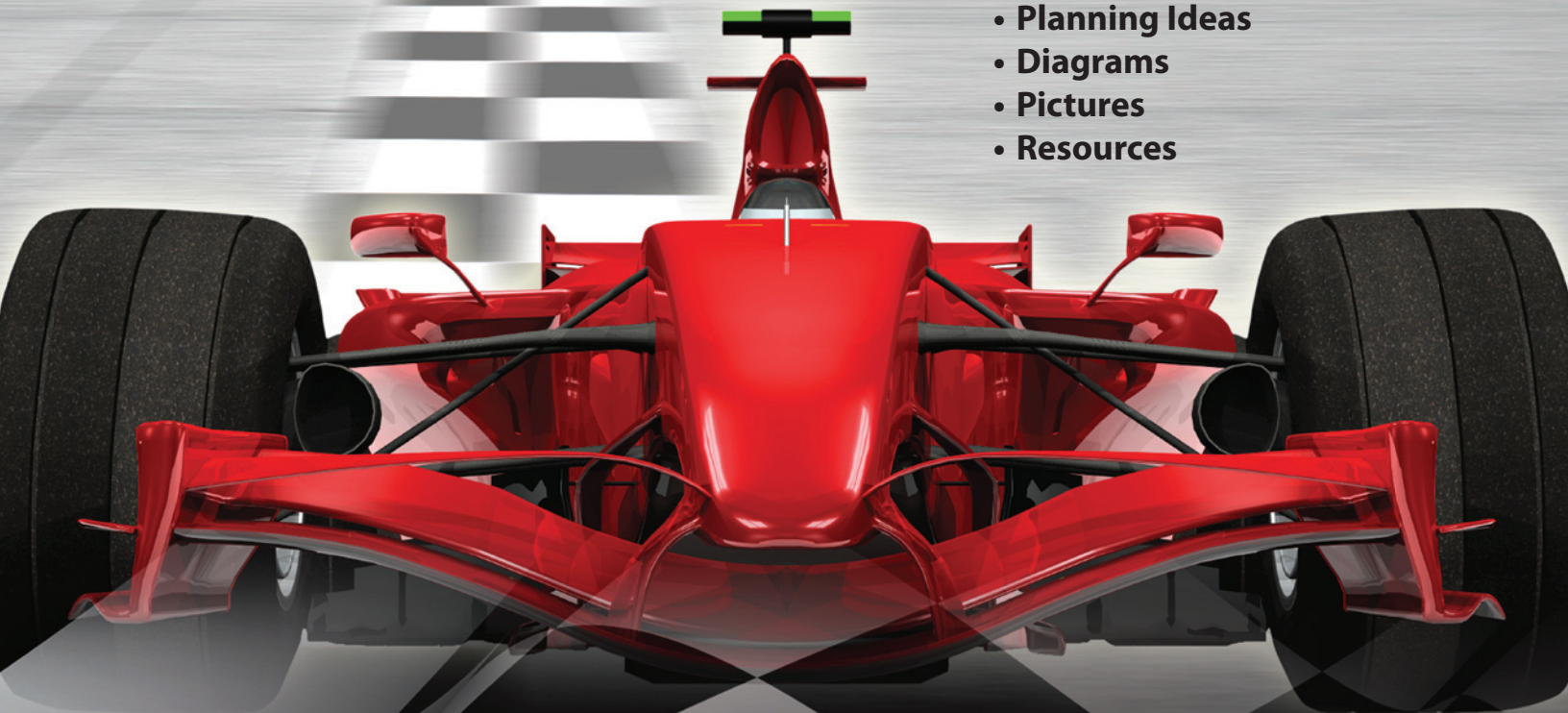


Pine Car Derby Planning Guide

Includes:

- Race Day Ideas
- Suggested Job Descriptions
- Planning Ideas
- Diagrams
- Pictures
- Resources



Running Your Pine Car Derby

What is the Goal/Purpose of Running a Pine Car Derby?

Just like any other ministry or event, the question has to be asked “Why are we doing this?” “What is the end goal of having a Pine Car Derby for our Club?”

- Another opportunity to share the Gospel with those attending the race.
- Promote relationships between the Clubber and their parent (or other adult that is helping them build their car.)
- A further outreach and “bonding” time for the Clubbers, Master Club leaders, and other church members.
- An outreach to the parents and family members of the Clubbers.
- To have fun!!!



A History of the Pine Car Derby

Don Murphy’s idea for the Pinewood Derby began in the Management Club at North American Aviation, where he worked. Mr. Murphy wanted to create a Cub Scout activity he could do with his son. The idea of racing miniature cars came to him while thinking of his company sponsored Soap Box Derby races.



“I’d made models of airplanes, cars, boats, and any number of other structures and remembered the pleasure I got out of doing it,” he said. “I also wanted to devise a wholesome, constructive activity that would foster a closer father-son relationship and promote craftsmanship and good sportsmanship through competition.”

He asked the Management Club at his company, North American Aviation, to sponsor a miniature racing event for his Cub Scout pack that he had named a “pinewood derby.” The Club agreed to pay for the wood and other materials.

Murphy designed a miniature car that could be carved out of soft pinewood and wrote the rules. Originally the block of wood included in the kit was carved down in the forward third to a kind of cockpit. They put the wood, wheels, and nails into a brown paper sack with an assigned number. Some Cub Scout fathers built a 31-foot

race ramp with two lanes and a battery-run finish line made from doorbells. Light bulbs would identify the winner.

Catching on like wildfire, the derby was an instant success and for a time was copied, with the Management Club’s permission, by the Los Angeles County Department of Recreation. Then word reached the national director of Cub Scouting Service, O. W. (Bud) Bennett, who wrote Murphy:

“We believe you have an excellent idea, and we are most anxious to make your material available to the Cub Scouts of America.”

Within the year the pinewood derby was adopted for use in all Cub Scout packs. In its October 1954 issue, Boys’ Life publicized the event and offered plans for the track and a car, which featured “four wheels, four nails, and three blocks of wood.”

Since then, many other organizations have put together their own versions of the Pinewood Derby including the Master Clubs version of the Pine Car Derby at churches across America and the Grand National Pine Car Derby that is held at the Master Club Headquarters in Milford, Ohio.

Running Your Pine Car Derby

Pine Car Construction Rules

The following rules may be modified by your church for your own derby, but these rules are strictly enforced for the Grand National Pine Car Derby. Consequently, we suggest that you follow them at your church so your cars will qualify for the Grand National if you choose to send them.



- All cars raced in the Grand Nationals must have been built from the official Master Club Race Car Kit (#81200). (This means that the original Master Clubs wheels must be mounted with the solid axles purchased from Master Clubs in the Pine Car kit.)
- Maximum car size including wheels is 7 inches long and 2.75 inches wide.
- Minimum width between wheels is 1.75 inches.
- Minimum ground clearance between car and track is 3/8 of an inch.
- Maximum car weight is 5 oz. (Metal or wood may be added after the car is complete to maximize this weight.) A postage scale works great for this.
- No wheel or axle bearings, bushings, springs, starting devices, loose or moving weights or parts are allowed.
- Axles made from nails will be disqualified from the competition. Suggestion: glue on the hubcaps to prevent losing them in the race.
- Cars are not allowed to have washers on the axles between the wheel and car body.
- You may buff off extra flashing and/or irregularities off of the tires, and even shape the tire to minimize friction, but do not use any tire other than what is provided in the original Master Clubs Car Kit.
- Cars may not have any power assistance.
- Only dry lubricants such as graphite and dry Teflon may be used, and all excess must be wiped off of the car to prevent fouling the track. You may purchase this through Master Ministries as well (?).
- We recommend the [Go/No Go Box](#) to help you determine whether or not a pine car is eligible for your race. (Item# [81622](#)) See more about the Go/No Go Box on [page 13](#).

Pine Car Construction Suggestions

NOTE: We strongly urge the participation of both parents/guardians and Clubbers in constructing the car. The Clubber should be allowed to do as much of the construction as possible.

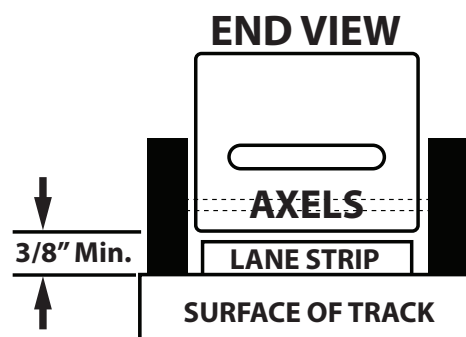
- Draw the car design on paper first. You may draw your own or select a specific design from a magazine, website, brochure, or newspaper. Cars may be built to look like real race cars or another creative design. Design judging will be based on how well your car resembles what it is meant to be, as well as how well it is construct-



Running Your Pine Car Derby

ed and finished. Use your imagination! Some examples of race cars and other designs are shown on the following pages.

- Outline your design on the wood block. Rough cut the shape using a coping saw, jig saw, band saw, knife, or power sander (adult supervision is strongly recommended for this step!). Using successively finer grades of sandpaper, give the car its final shape and then smooth the surface. Before painting, add a couple coats of sanding sealer, let it dry, and sand with very fine sandpaper.
- Cars should be carefully painted to compete for design awards. The quality of the car's finish may be determined by the number of paint coats and proper drying time between coats (hint: don't wait until the day before the race to paint your car). You may also use other commercially available decals to enhance your design. Waxing or coating with a clear, high-gloss overcoat can further improve appearance.
- The track is designed so that the lane strips keep the cars in their proper lanes. Use only the wheels and axles furnished in the kit. The axles may be polished, if desired. The tread surface of the wheels may also be lightly sanded to reduce friction. Be careful when sanding wheels as too much friction can melt the plastic. Slots for the axles have been pre-cut in the wood block. You may use them or cut your own. If you reposition or camber the axles, make sure the distance between the wheels is at least 1 3/4" and the bottom of the car is at least 3/8" above the ground so it will not rub on the lane strip and slow the car. Insert the axles into the wheels and tap them into the slots or holes.
- Winning speed cars usually weigh the maximum 5 ounces or a little less. Once cars are carved, they usually weigh only 2 to 3 ounces (make sure you include wheels and axles). Weight may be added by securely attaching commercially purchased or homemade weights with screws or glue (stay within size limits, including ground clearance). No loose or moving weights are allowed. If a car is a little too heavy, drill out some wood from the bottom. If a little too light, add screw(s) to the bottom (countersunk) or other small weights. These fine adjustments can be made on the day of the race at the pit area. Once a car has been officially weighed and accepted, no additional weight may be added.
- For additional information on how to make a better looking, faster race car, or just to get car design ideas, go online for multiple websites. Here are some of many:



GrandPrix Race Central
Pinewood Pro
PineCar

www.grandprix-race-central.com

www.pinewoodpro.com

www.pinecar.com

Running Your Pine Car Derby

Keys to Winning for Speed

- **Weight** - Winning cars generally weigh the maximum 5.0 ounces. Maximum weight increases the potential energy for the car and will consequently increase its speed.
- **Weight Placement** - The weight should be concentrated as far back as possible, without causing the car to pop a wheelie.
- **Reduce Friction** - Friction slows the car down, so you should try to reduce all possible sources of friction including the axles, wheels, and shape.
- **Axles** - Remove any burrs and polish to a mirror finish. Use a light lubricant like graphite on the axles. (No liquid lubricants are allowed, and they actually will slow your car down.)
- **Wheels** - Trim the plastic stubs from the inside wheel edge and lightly sand. Lightly sand the wheel tread to remove any flat spots and plastic flashing. Be careful not to minimize the size of the diameter of the wheel so much that it lowers the car below the minimum 3/8" clearance. When sanding the wheel, be cautious of overheating and warping the wheel.
- **Wheel Alignment** - Check the axle slots to ensure they are square. Check the wheels on a flat surface before gluing in place. Roll your car and make sure it rolls in a straight line. (Bumping into the sides of the lane will slow your car down and perhaps even cause it to jump the lane and be disqualified if the alignment is off significantly.)
- **Aerodynamic Shape** - Aerodynamic drag is very small, but if you want to reduce all possible sources of friction, then choose a streamlined shape.



Keys to Winning for Design

- **Originality** - Be creative and use your imagination. Your car doesn't need to look like a car. You can make it into whatever you want, as long as it is within the size limits.
- **Shaping** - One of the judging criteria's is how much the design looks like what it was intended to look like. Draw the design on paper first then transfer it to the wood block.
- **Sanding** - Once the car is cut out, fill any gouges or divots with wood putty. Use finer and finer grit sandpaper to remove all visible scratches.

- **Finishing:**

Prime - Use a couple light coats of primer to hide the wood grain and any splotches on the wood. Sand very lightly with very fine sandpaper to remove any small bumps.

Paint - Apply several light coats of spray paint and lightly sand in-between each coat. Make sure the paint is thoroughly dry before handling your car or you may leave fingerprints.

Decals and Attachments - Add your car number and other decals or attachments carefully.

Finish Coat - Apply a clear coat of lacquer or wax to give your car a nice shiny appearance.

Running Your Pine Car Derby

Design Categories

Grand National Awards

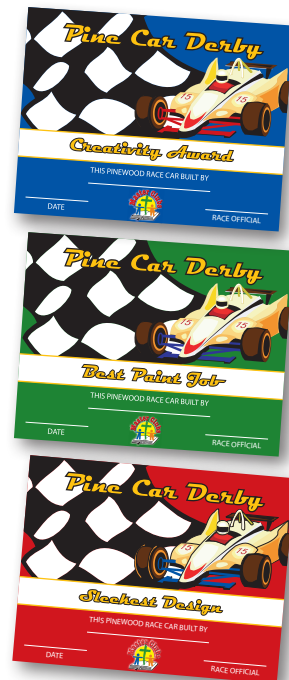
At the Master Club Grand National Pine Car Derby, the following trophies are awarded in each age division

- Most Aerodynamic
- Most Creative
- Most Humorous
- Most Realistic
- Most Detail

Available Awards

You may design your own awards or order certificates from Master Clubs for the following categories:

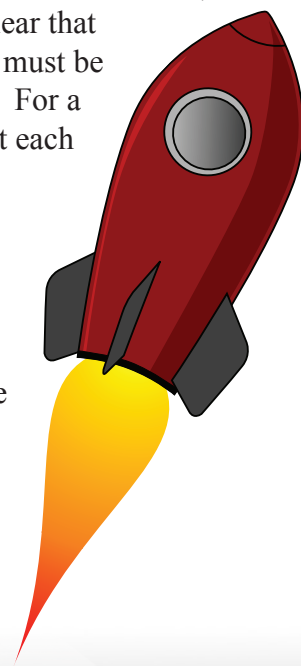
- [Creativity Certificate \(Item 81405\)](#)
- [Best Paint Job Certificate \(Item 81403\)](#)
- [Sleekest Design Certificate \(Item 81404\)](#)



Other Fun Ideas

Most churches only run the Pine Car Derby for elementary children, but some add other races for the benefit of the teens and adults. (These really give competitive dads an opportunity to join the fun without taking over their child's car.)

- **Pop Can Derby**-For this event, adults and teens use the wheels and axles from a car kit, but use a pop can for a body. Basically anything goes, except make it clear that the car must fit on the track without obstructing another lane. A pop can must be used in some way for the body, but other materials may be used as well. For a trophy, consider gluing a pop can to the top of an old trophy and rotate it each year to the annual winner.
- **Funny Car Derby**-Some call this one a Redneck Derby or Crazy Car Derby. This uses most of the same rules as the Pine Car Derby, except you may increase the weight to anything you wish as long as it will not damage the track. Many of these races allow racers to add moving parts or other mechanical and starting devices to the car. Caution: some tracks and electronics have been damaged due to faulty rocket engines!



Running Your Pine Car Derby

Planning for the Event

The Rules

In any event involving competition, a set of clear, concise rules are needed to guide the event and help avoid conflicts. There is no need to “reinvent the wheel” concerning race rules. After more than half a century of racing, nearly every situation that can happen during a race has happened multiple times and these rules have been adapted after years of learning from mistakes.

The key is balance and fairness. In some derby events, more than thirty pages of rules dictate every bit of miniscule potential of the race. This is not only burdensome to follow, but usually creates an environment where the focus is making sure there is no one who is gaining an advantage during the race. The other extreme is to have so few rules that confusion and frustration set in when participants take the spirit of competition too far.

1. Please read the rules on [Pine Car Construction Rules](#) on page 3.
2. Please reference page 12 for detailed rules concerning [Operating Procedures](#) of the Derby.

Scoring Methods

Elimination/Bracket Methods

As mentioned before, the second half of the purpose for rules is fairness. The kids and their parents have put a significant amount of time and, in some cases, money into their cars. We want to minimize the amount that “luck” or chance plays into the outcome of the race events.

A main goal for a race is to provide a fair race for the racers. A good set of rules and scheduling method aims to keep the competition competitive. How fair does it seem to the racer that is out after one or two races, while other racers run many more times?

If you throw in the possibility of a “slow lane” then results are more up to chance than to how fast the car really was. Vehicle performance can change over the course of a race due to a number of factors, which may affect the outcome of the race, but may not be caught by elimination methods.

A fair race method should fulfill these minimum criteria:

- All racers race in every lane.
- All racers race an equal number of times.

Why are Elimination methods still used? For the most part it boils down to one or more of the following reasons:

1. An organization has “always done it that way”.
2. It is a familiar method used in several sports competitions.
3. Concern over the amount of time the race will run.
4. The organization has no electronic timing system.

Running Your Pine Car Derby

Reason number three is a valid concern for races with a large number of competitors. Some non-elimination methods, like Stearns and Round Robin, can produce a large number of heats, but many other methods do not. Let's examine this a little further by comparing the number of heats for some different race scheduling methods.

Based on 64 racers, you can see below that some non-elimination methods do not significantly increase the total number of heats to be run.

Race Method	Number of Concurrent Heats	
	2 Lane Track	4 Lane Track
Double Elimination	125	63 (2 brackets at a time)
Lane Rotation	128	64
Perfect-N Series	128	64
Stearns (1.5 hrs duration)	128	144

Even with a two lane track, each racer can run twice per lane. Racers will get no less than 4 runs, which is better than the "two strikes you're out" with double elimination.

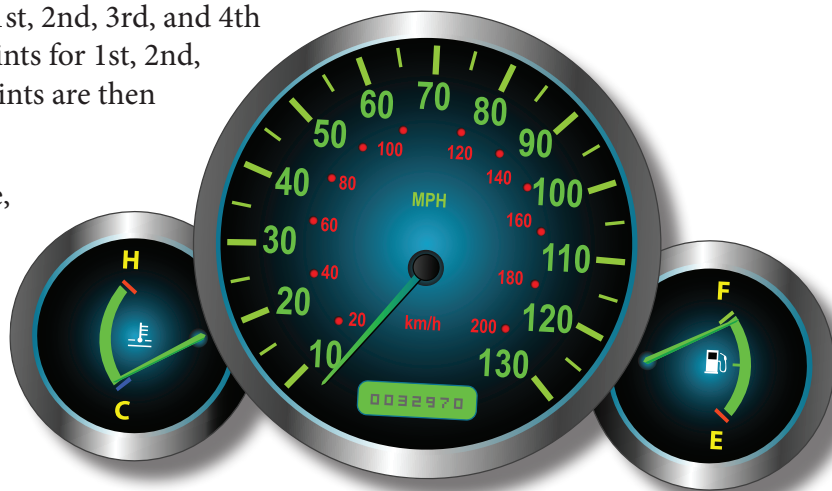
Number four is another semi-valid reason to consider elimination methods. A timing system can be built for under \$100 which is within reach of most organizations. Some or all of this cost can be covered by having materials and electronics experience donated. We recommend using [MicroWizard](#) for all of your electronics needs. They build systems custom fit for a variety of tracks.

Historically, Master Clubs has used the double elimination method for various reasons; however, we plan to use the lane rotation method beginning June of 2008.

Defining Points Vs. Times

The points method uses a preset race schedule (many people use Perfect-N), where each car races the same number of times in each lane and races against as many other cars as possible. The results of each heat are recorded, with points assigned based upon finish order. Points can be assigned as 4, 3, 2, 1 for 1st, 2nd, 3rd, and 4th places (high points wins), or 1, 2, 3, and 4 points for 1st, 2nd, 3rd, and 4th places (low points wins). The points are then totaled and winners decided.

The times method uses a preset race schedule, where each car races the same number of times in each lane. Generally, the cars race against as many other cars as possible, but the heat mix does not affect the outcome. The heat times are accumulated and then trophies are awarded based on the lowest cumulative time, or lowest average time.



See the comparison chart on the following page.

Running Your Pine Car Derby

Points Method		Times Method	
Advantages	Disadvantages	Advantages	Disadvantages
Does not require a timer.	More heats are required. With Times, only 1 heat per lane is required to determine the trophy winners. With Points, depending on the number of cars, an additional round (or more) will likely be needed to break ties and accurately give out the trophies.	Fewer heats are required - only 1 heat per lane.	The finish order within a given heat (or set of heats) is largely irrelevant. This needs to be explained clearly throughout the day. For example, if a car is scheduled to race against slower cars, that car can win every heat, and still not win a trophy.
	Heat mix affects the results. If scheduled to race against predominantly faster cars, a given car will be penalized.	Heat mix does not affect the results.	Requires a timer.

For the Grand National, we will use the Lane Rotation method and award our winners based upon the best average time.

Tracks and Other Equipment

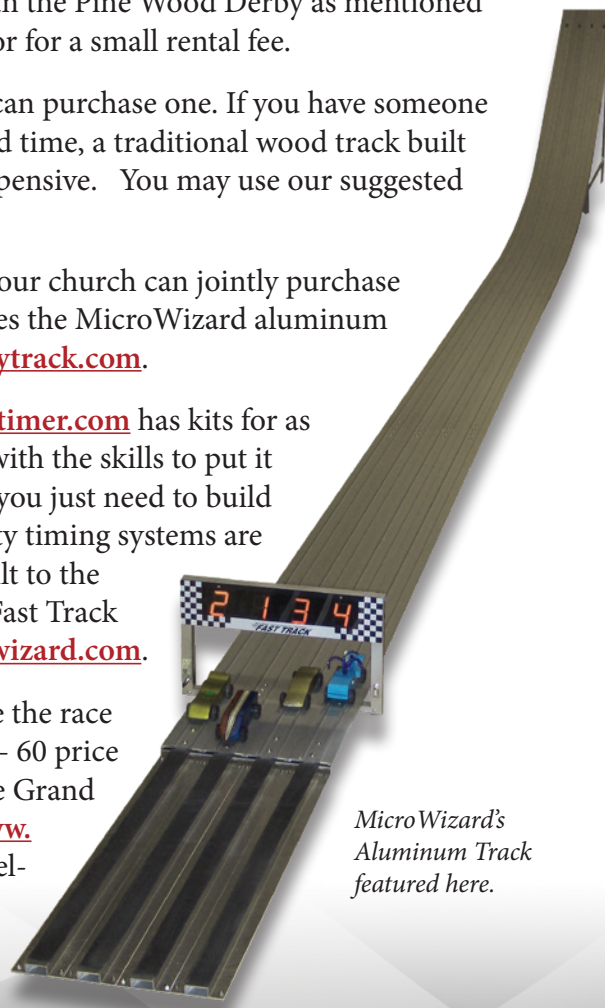
There are many places where you can borrow or rent a track. There may be other churches in the area that have a track, local scouting organizations also run the Pine Wood Derby as mentioned before and may be willing to lend out their track for free or for a small rental fee.

You can also build a track significantly cheaper than you can purchase one. If you have someone (or several people) in your church that have the ability and time, a traditional wood track built with care can be a beautiful thing and comparatively inexpensive. You may use our suggested design on [page 20](#), or design your own variation of that.

If your church has the finances to purchase a track, or if your church can jointly purchase a track with other churches in your area, Master Clubs uses the MicroWizard aluminum track. You may visit their website at www.pinewoodderbytrack.com.

Electronics are not as expensive as you think. www.derbytimer.com has kits for as little as \$59 that just need assembly if you have someone with the skills to put it together and a soldering iron, or fully assembled for \$79, you just need to build the enclosure and add sensors for your track. Other quality timing systems are available for more and come with support and are pre-built to the dimensions of your track. Master Clubs uses the Fast Track timer system which can be seen at www.microwizard.com.

Race Management software can help manage the race from beginning to end and is worth the \$50 – 60 price tag in hassle and time. Master Clubs uses the Grand Prix Race Manager which may be seen at www.grandprix-software-central.com and it is excellent and very user-friendly.



MicroWizard's Aluminum Track featured here.

Running Your Pine Car Derby

Financing Your Derby

The expenses for your derby will vary based upon what is spent for decorations, prizes, trophies, food, equipment, etc. One excellent way to help cover the cost of purchasing tracks and other Pine Car Derby expenses is the “Highest Sponsored Car” award. Racers recruit “sponsors” for their cars and the car with the most sponsors receives an award. One church has reported clearing over \$400 each year after paying for awards and other expenses. If you do not want to make a fund-raiser out of it, you can charge a flat entry fee for each car to cover your expenses.

The Planning Schedule

IMPORTANT NOTE: The most important element of a successful Master Clubs Pine Car Derby is prayer. Remember, the primary purpose of holding a Pine Car Derby is to reach people with the Gospel. PRAYER should begin when the decision is made to have a race and continue until it is over.

Timeline	Items to Complete
Six months before the race	<ul style="list-style-type: none"> • Set the date • If you don't own your own track, confirm arrangements to borrow one. (Actually, do this much earlier if at all possible. You don't want to plan a race and then realize that you can't get a track for that day!) • If inviting other churches, send the invitations and race details • Announce the date in Club and get it on the church calendar • Designate Race Commissioner/Organizer and hand over planning guides
Three months before the race	<ul style="list-style-type: none"> • Prepare Budget and determine Entry Fee • Determine Classes you will use for the race • Sign up Construction Supervisor to run construction workshops • Sign-up Registrar to assist with entrant sign-ups • Create initial flyers and registration forms. Master Club sells promotional posters to help with this part. (Poster: Item# 81601 Flyers: Item# 81625) • Pre-order cars. (Item #81200) • Meet with contacts from other participating churches to review all rules, deadlines, etc.
Two months before the race	<ul style="list-style-type: none"> • Pass out the initial flyer and display promotional posters. • Begin taking registrations. Order car kits every two weeks according to the number of registrants; try to keep 5-8 kits on hand at all times. • Promote the race heavily EVERY night of Club. • Plan an initial short announcement for the church bulletin with the Registrar's name. • Construction Supervisor starts workshops
One month before the race	<ul style="list-style-type: none"> • Sign-up remaining volunteers • The Refreshment Coordinator should begin sign-ups • Ask people to donate refreshments • Obtain number of participants from each Club • Order Trophies/ribbons and programs. Some churches only have awards for the basic 1st, 2nd, and 3rd places. Others offer awards based upon the design and paint of the car such as: Creativity Award, Best Paint Job, etc. Master Clubs sells some of these on our website. • Select speaker for devotion • Place an announcement in bulletin and announce from the pulpit

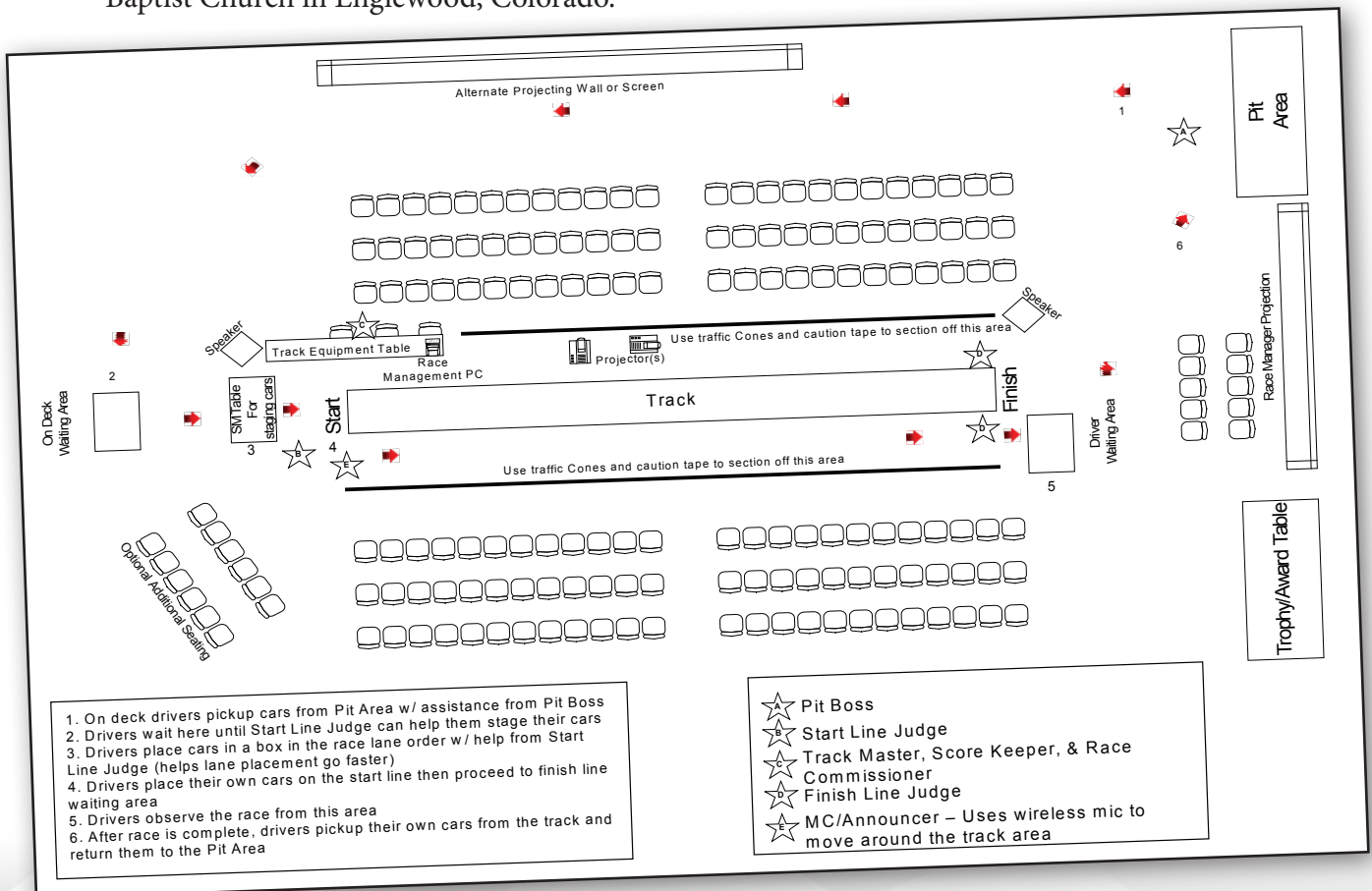


Running Your Pine Car Derby

Timeline	Items to Complete
Two weeks before the race	<ul style="list-style-type: none"> • Prepare & distribute invitations for Clubbers to take home, give to relatives, friends, neighbors, etc... • Complete the Detailed Order of Events • Draft the Program • Follow-up with other Clubs to confirm details, times, number of entrants, etc...
One week before the race	<ul style="list-style-type: none"> • Make final changes and print the Programs • Print Score Sheet, Race Slips, Blank Rosters, Inspection Sheet, Design Judge Forms
The Sunday before the race	<ul style="list-style-type: none"> • Place an insert in the bulletin (use the invitation) and announce race from the pulpit
Two to three days before the race	<ul style="list-style-type: none"> • Setup the track and test the lanes for alignment • Hold time trials and pre-weigh cars • Confirm availability of volunteers • Remind people providing refreshments • Train key people (Scorekeepers, Starter, and Inspectors).
One Day Prior to Race	<ul style="list-style-type: none"> • Setup room • Do a final alignment and test of the track • Test the PA system

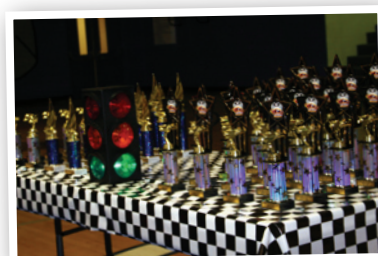
Decorating and Set-up Ideas

- Here is a suggested way to set up your racing area submitted by Ken Gebhart from Englewood Baptist Church in Englewood, Colorado.



Running Your Pine Car Derby

- You can purchase pre-made banners from party type stores and magazines like Oriental Trading and Kipp.
- Try to organize the racing area/gym so that spectators may view the cars in the Pit Area as they come in, but they should not touch the cars.
- Use checkered tablecloths on the tables. Or, use checkered skirts and a solid black tablecloth. You can then use white or yellow electric tape to make lines and your table now looks like a parking lot. To help with organization, number the parking spots to coordinate with the car numbers.
- Some of the party stores have race car piñatas, electric stop lights, and other inexpensive items that will add to the excitement of Race Day.
- If spot lights are available, you could put lights on the track and turn off the other lights in the room or gym.
- If the equipment is available, set up a video projector to project onto your own “JumboTron.” Attach a video camera which will allow your audience to get close shots of the cars and kids. Swing the camera around on the audience and have a “Fan Cam.”
- If using computer software to manage your race, that can be projected on the JumboTron as well.
- If time allows, take a digital picture of the “driver” with their car and design your own “Driver’s Permit” for the day. Print it on a color printer and laminate it. These can be awarded in the Awards’ Ceremony as a souvenir of their day. (This is another good reason to have Clubbers register their cars the day before the race.)



Operating Procedures

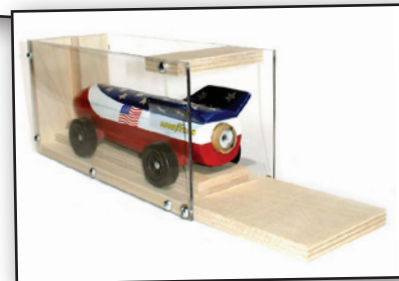
Procedures must be set concerning registering, weighing, racing, and handling the cars. Consider the following suggestions:

Registration

- All cars must be registered the night before the race.
- As Clubbers enter the racing area, test the weight of their car on the official scale. If adjustments need to be made, have a “Pit Stop” designated area (a table) where they can make those adjustments. It would be great to have a drill there (in case they need to remove weight), some graphite (for lubricating wheels), glue (for attaching extra weight) and needle nose pliers are always handy.

Running Your Pine Car Derby

- All cars must now be checked for size. Our **Go/No GO Gauge** (Item #81622), which has been developed by Grandprix Software Central, is an easy way to check that everything on the car fits within the parameters of the rules.
- Once the weight and size have been pre-approved, allow racers to test their car on the track. There should be a race official there to monitor the track and ensure that Clubbers are not racing cars against one another. That could ruin some of the anticipation of race day or possibly even wreck a car rendering it unable to race. At this time, Clubbers may make final adjustments to the wheels and axles.
- When the registrar receives the car, he will measure and weigh it once again. If it passes all requirements, he will ensure that the car is properly labeled and assigned a car number. You could design a form for each age group similar to the one below:



Derby Registration Form

Car #	Child's Name	Car Name	Amount of Sponsors
10	Sally Smith	Sweet Lightning	\$12
11	Goober Brown	The General	\$35
13	Buster Jones	The Monster	\$10
15	Elrod Smith	The Sticks	\$75
18	Johnny Jenkins	Old Yeller	\$18
25	Sarah Crow	Kreaper	\$42
62	Jason Mitchell	The Fluke	\$36

- After Registration, qualified cars will go to the “pit” where they will remain until it’s time for them to race their car. Once it is in the pit, no more work may be done on the car. This includes while the race is in progress. The only work done during the race is wheel adjustments and to secure wheels that may have fallen off. **No additional lubricants may be added at any time.**
- Cars should be displayed in numerical order, yet divided into the various racing divisions.

Running Your Pine Car Derby

Race Procedures

- As Clubbers and families arrive, have the cars displayed in an area so they can be seen, yet not touched. Play racing sound effects over the PA system. Master Club sells a Sound Effects Player for \$20 which would be helpful for this called **Race FX** (Item# 81624).
- Before the race begins, play the National Anthem, or say the pledge of allegiance to the flag; then ask prayer.
- Clearly explain your racing procedure and other rules of the day.
- Sometime during the day, either at the beginning, half way through the day, or at the beginning of the award presentations, have a Bible devotion with a racing theme, yet clearly present the Gospel.
- Depending upon the number of lanes used, call the first set of Clubbers to the track and give them their lane assignments. Some of the software will make these assignments for you. Allow the Clubbers to retrieve their own car and set it on the track. They should then go to the finish line and wait for their car. Have a designated place for them to stand so they do not block the view for the audience.
- While one group is setting their cars in place call another set to a designated area, we call that “On Deck.” Those Clubbers retrieve their car and go to the designated area close to the starting gate so they are ready to set their cars on the track after the current race. This “On Deck” system will shave many minutes off of your race day, and gives a very professional appearance. It also keeps the Clubbers from feeling so rushed.
- You must set a rule of what you will do if a child is not present to race. We suggest that parents should not be allowed to set the cars on the track. If a child is not there, a racing official will do those honors.
- What will you do if a tire falls off? If you allow the child to repair their car and re-race, this could cost you more time than you want. If you start that way at the beginning of the day, you must be consistent. We suggest that if a tire falls off in the middle of a race, that car loses that race (or is designated a specific time if using a timer like 30 seconds) and go to the pit stop for repairs before the next race. If the car is not ready to race when called again, it must forfeit that heat.



Construction Workshops and Safety

- Have a minimum of three workshops. The first two concentrating on cutting, and sanding, and the last one on painting, wheel and axle preparation, and weight calibration.
- Having the right tools will make the work go faster and be safer. Using a scroll saw or band saw is more efficient than a jigsaw and a power sander (belt/disc combo) really cuts the sanding time tremendously.



Running Your Pine Car Derby

- Allow a wide margin of time. Kids are busy with other things like soccer, baseball, etc., and their parents are as well. Holding the workshops from 10 AM- 4 PM works well.
- Require a parent (or an adult of the child's choosing) to attend the workshops. One of the purposes of the Derby is to promote the interaction between the child and the adult; it should be a memory building experience. The job of your construction workshop coordinator should be to act as a consultant on how to build a car, not as a baby-sitter.
- Don't forget about the Gospel! This is a great opportunity to talk to the adults about the good news of Jesus Christ.
- Ensure that the kids do as much of the work as is possible considering their age and abilities. Safety is a priority.
- Make the official weigh scale available, so weight can be adjusted before race day.
- Either purchase some weights or make some with large washers, lead fishing weights, or other heavy objects.



Race Day – Start your Engines!

- Arrive early and check setup. Test the track.
- Construction Supervisor should ensure repair table is ready.
- Place ushers at doors to distribute programs and guide entrants to registration area.
- Show energy and excitement! This could be a child's best or first memory of your church. How will they and their parents remember it?

After the Event / Evaluating for Next Year

- Tear down track. Clean up area (be careful of residual graphite)
- Return materials
- Develop Photos, share with the rest of the church
- Race Commissioner – Receive feedback, note lessons learned.



Running Your Pine Car Derby

Pine Car Derby Staff Responsibilities

Race Commissioner (1)

- Develop plan and budget
- Supervise all aspects of the Pine Car Derby
- Coordinate with other clubs, if applicable
- Arrange for other volunteers
- Announce Pine Car Derby events at meetings
- Train construction supervisor, scorekeepers, design judges, finish line judges, starter, and sound man
- Explain the race rules
- Monitor the progress of the racing
- With Master Clubs Director/Captain, present participation ribbons and trophies at the race
- Write “Lessons Learned” report and update turnover binder

Master of Ceremonies (1)

- Be the announcer during the race
- Lead entrants and spectators in the National Anthem during the Opening Ceremony
- Announce lane assignments and race results

Construction Supervisor (1)

- Explain construction rules to entrants
- Coordinate/conduct workshop(s)
- Make materials list and obtain materials
- Train check-in judges and pit crew
- Help Track Master with Assembling and testing of track
- Determine room layout and setup for the race
- Supervise setup/tear down crews

Running Your Pine Car Derby

Track Master (1)

- Assemble and test track
- Setup and test track electronics (if needed)
- Run race management software

Registrar (1)

- Handle race registrations
- Collect entry fees
- Order cars or arrange to have them ordered
- Order trophies or arrange to have them ordered
- Bag the car kits, when received
- Pass out car kits to entrants
- Prepare pre-registration race roster
- Man registration table on race day
- If more than one registration table on race day, use assistant registrar at each table
- Fill out race roster and provide to Master of Ceremonies, Scorekeeper and Official Starter

Refreshment Coordinator (1)

- Sign up volunteers to bring refreshments
- Purchase refreshments not donated
- Prepare refreshments (e.g., drinks)/set up refreshment serving area on race night
- Arrange for clean up of kitchen area

Check-In Judges (2 Per Registration Table)

- Inspect cars on race day for rule compliance
- Weigh cars on race day for weight limit compliance
- Ensure registered cars are placed in the “Staging Area”, by the clubber, until the races start
- Protect cars from unauthorized handling before and during race
- Assist clubbers in getting their cars from the Staging Area at the beginning of their heats and returning them once their heat is concluded

Running Your Pine Car Derby

Pit Crew (1 Per Pit Area)

- Man “Pit Area” before and during race to assist entrants in car repair (on-call)
- Assist entrants at registration to modify cars to meet race rules
- Supervise entrants lubricating their cars to prevent excessive use of lubricant and messes at the lubrication table
- Wipe excess lubricant from cars before sending to the Check-In Area for inspection

Design Judges (At Least 3 Non-Entrants/Not Parents of Entrant)

- Judge cars for the design awards using Design Judging Sheet
- *NOTE: It usually helps if at least one of the judges is excellent at math (Math Teacher, accountant, etc...)

Finish Line Judges (2 Per Track or 1 If Using Electronic Finish)

- Sit one on each side of track at finish line and declare heat winners
- If electronic finish line is used, monitor finish line results, in case of a malfunction
- Keep spectators back behind the cones

Official Starter (1 Per Track)

- Check car numbers against lane assignments at the start of each heat
- Assist entrants in placing cars on track
- Monitor heats for track problems
- Operate starting gate

Scorekeeper (1 or 2 Per Track)

- Test electronic finish line and software with Track Master, if used
- Fill out racing chart from race rosters (in case of electronic system or computer malfunction) and provide to the Master of Ceremonies and the Starter
- Racing chart should include the list of heats and lane assignments
- Record heat results on racing chart (or using race software)
- Record results on Results Board (optional–need second person for this)
- Provide Speed Winner results to the Master of Ceremonies after each class has completed racing
- Reset electronic finish line software, if used

Running Your Pine Car Derby

Photographer (1 Still And 1 [Optional] Video)

- Take photos at workshop(s), time trials, and race night
- Have film developed and put together photo pages for Pine Car Derby Album
- Video photographer take videos of race, if desired

Sound Man (1)

- Setup and test sound system prior to race
- Operate sound equipment during race, including Pine Car Derby sound effects

Ushers (1 Clubber at Each Entrance)

- Pass out programs as people arrive
- Direct entrants to proper registration table
- Direct spectators to proper track viewing area

Color Guard (2 Or 3 Clubbers)

- One Clubber carries each flag (country and Christian)
- One clubber can give flag ceremony commands or an adult can

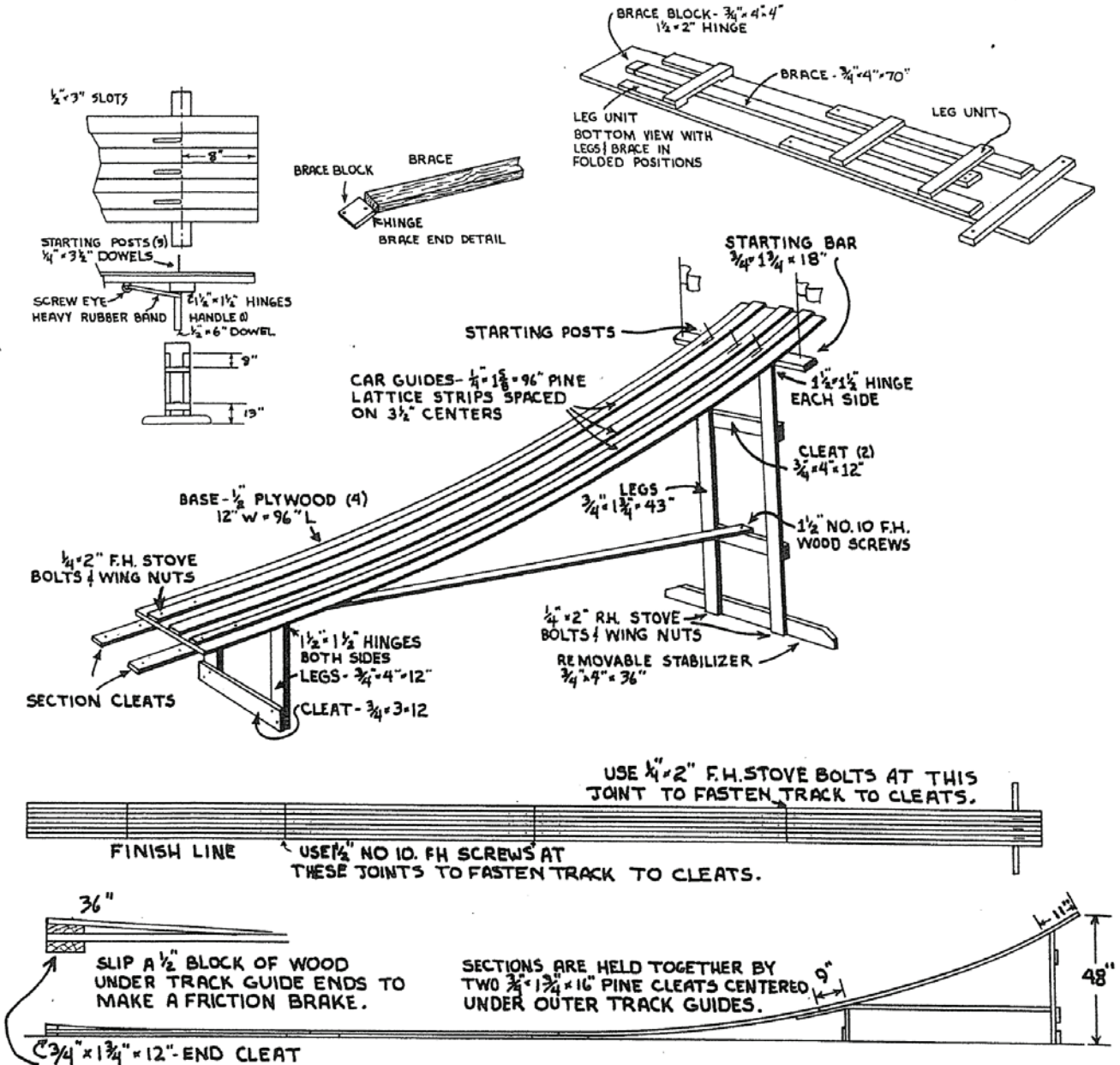
Speaker (1)

- Presents a short (10-15 minute) gospel message before the race

Running Your Pine Car Derby

Wood Track Building Instructions

Use these instructions to build your own Pine Car Derby Track.

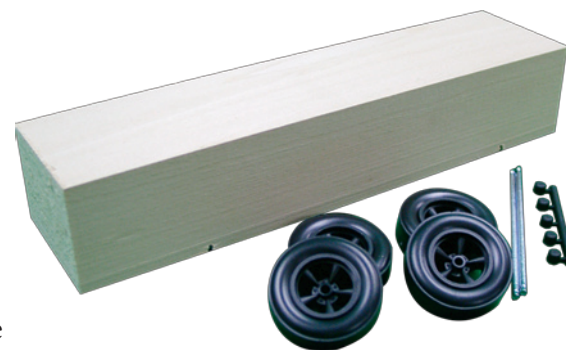


Running Your Pine Car Derby

Pine Car Building Instructions

Use these instructions to build your own Pine Car.

The contents of the Master Clubs Pine Car kit include a wood block, wheels, axles, hub caps, and complete instructions.



Pine Car Racing Specifications

- All cars raced in the Grand Nationals must have been built from the official Master Club Race Car Kit ([#81200](#)). (This means that the original Master Clubs wheels must be mounted with the solid axles purchased from Master Clubs in the Pine Car kit.)
- Maximum car size including wheels is 7 inches long and 2.75 inches wide.
- Minimum width between wheels is 1.75 inches.
- Minimum ground clearance between car and track is 3/8 of an inch.
- Maximum car weight is 5 oz. (Metal or wood may be added after the car is complete to maximize this weight.) A postage scale works great for this.
- No wheel or axle bearings, bushings, springs, starting devices, loose or moving weights or parts are allowed.
- Axles made from nails will be disqualified from the competition. Suggestion: glue on the hub-caps to prevent losing them in the race.
- Cars are not allowed to have washers on the axles between the wheel and car body.
- You may buff off extra flashing and/or irregularities off of the tires, and even shape the tire to minimize friction, but do not use any tire other than what is provided in the original Master Clubs Car Kit.
- Cars may not have any power assistance.

Cars that do not meet specifications may be disqualified. Local rules may vary. Wheels and axles should be the same on all cars in a race.

Remember, as you build your car, most local Derby Officials present separate craftsmanship awards for the best-looking car entries!

Assembly and Finishing Instructions

Assemble and Fit Axle Assemblies (see figs 1 and 2).

Make two axle assemblies (see fig. 1). De-burr parts if necessary, be sure wheels face correct direction before installing the hub caps. Center the axle assemblies in the axle slots on the bottom of the wood block. Both wheels should clear the block enough to spin freely. If they do not, sand sides of block until they do. Make slots the correct size by gently tapping axles into slots with a hammer. Be careful to not bend the axle (see fig. 2). Remove axle assemblies and set aside.

Running Your Pine Car Derby

Design Car Body

- Draw your favorite design on the wood block as shown in fig. 3.
- Use your own design. You are not limited to the wedge-design example.
- Plan the location of details such as fins, engines, exhaust pipes, wind shields, and rub-on decals as you design your car. It is a good idea to carefully draw your design on all side of the block.

Shape Car Body (see fig. 4)

Cut out the basic car shape with a band saw or coping saw. We recommend adult supervision for sawing. If you use a coping saw, maintain an even cut by following pattern lines on both sides of the block (see fig. 4). Finish shaping body with coarse sandpaper. Sand body smooth with medium and then fine sandpaper. You may wish to build in weight at this time. See Speed Preparations.

Seal and Paint

Apply several coats of sanding sealer and allow to dry thoroughly. Sand the entire car with fine sandpaper (#220 grade). Apply two coats of fast drying paint in any color you prefer. allow to dry. Sand lightly. Paint final coat and let dry thoroughly.

Adding Details (see fig. 5)

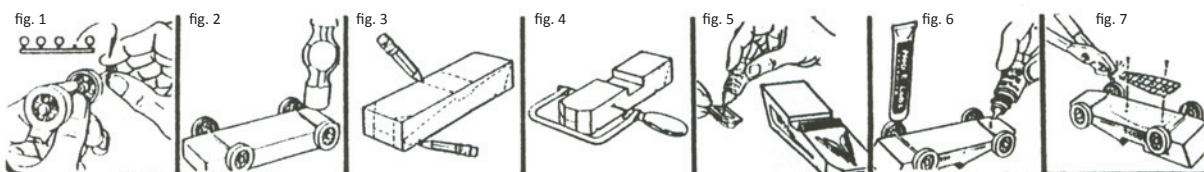
Detail painting and accessories such as fins, engines, exhaust pipes, roll bars, windshields, drivers, and rub-on decals should be added now.

Attach Wheel and Axle Assemblies (see fig. 6)

Pre-lubricate axles where wheels rotate (by hub caps only). Use a dry powdered graphite because liquid lubricants may damage plastic wheels, press axle assemblies into axle slots. Place car on flat surface and adjust axles so all wheels touch the surface. Be certain wheels spin freely. Glue axles with super glue.

Speed Preparations (see fig. 7)

The heavier your car, the faster it will go. Add weights to make your car weigh the maximum that the rules allow. It is best if your weight is adjustable. Then, if your car is too heavy, you can adjust it at the official weigh-in. Be careful: if your car is too heavy, the race officials will disqualify it.





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A ministry of First Baptist Church in Milford, Ohio