



THE 2020 ANNUAL ADVENTURE GUIDE DERBY DAY

SUNDAY – MARCH 8TH AT THE RICHARDSON YMCA

RACE STARTS AT 2:00PM

CHECK-IN BEGINS AT 12:30 PM

Register at The Richardson Family YMCA– 821 Custer Rd

Cost \$15 per child, includes car kit.

Registration Begins February 1st.

What is “Derby Day”? Derby Day is pinewood derby car racing for the whole family to come out and watch! Your child builds a wooden car with plastic wheels that, propelled only by gravity, race each other down a set of tracks. This is a four-race event, with the fastest average overall time coming in first.

The competition itself is only a part of the experience; the construction of the derby car is a special achievement for the child, allowing them to display their creativity, craziness, and style with these unique creations. This is not a “circle-centered” event, but rather a dad/child one. Each competitor races against random opponents, who may or may not be from your circle. Please allow your child to be part of the total process.

When is registration? Registration will run up until Wednesday March 4th. On race day, participants will need to check in their cars by no later than 15 minutes before their race in order for the Race Organizers to establish the schedule. Cars checked in late run the risk of not making it into the normal rotation or potentially being left out altogether. Don’t be late!

Where do we purchase the derby car kit? All derby cars participating in the race **MUST** be purchased at the Richardson YMCA. Cars sold in stores or on-line will not be allowed to race.

The cost is \$15 per registration. This includes the car kit, trophy, patch and place in the races. There is only one derby car registration permitted per person. Additional cars can be raced through our “Outlaw” division.

What are the Rules & Guidelines for derby car construction? The rules and inspection points are contained within this document. All core car components (wood block, 4 nail type axles, and 4 wheels) must be those that were supplied with your kit from the Richardson YMCA.

How much should a dad get involved in the car construction? Obviously, dad must use any tools that common sense dictates children should not use. Adults should take full responsibility for the use of any power tools. Your child should be responsible for the design shape, wood-sanding, assembly, decorating, painting, stickers, etc. to the best of their ability. Cars must be constructed by the child and the adult. This is a chance for you and your child to work together and make happy memories.

What if I do not possess the necessary tools? As of this writing, there is a third party local Derby Car Workshop available for your use at a monetary cost. For more information go to: www.pinewoodderbyworkshop.com

What should a car look like? Whatever your child’s imagination dictates! A small example set of cars we’ve seen in the past are: teepees, fire trucks, race cars, school buses, arrows, pencils, trapezoids, slides, and in some cases, the original block of wood simply painted (or not!) with the wheels attached.

What are the categories for the trophies / medals? All participants will receive a trophy. There will be trophies for the fastest cars in each gender group. There will also be Rabbit Pelts handed out for the most creative car designs. Categories will be: Most Creative Design, Best Paint Job, Best YMCA/Adventure Guides Program Theme and Judges Choice.

What happens on race day? Just like in previous years, we are using the volunteer services of Phil Hanus. He has done many derbies for the Guides, Cub Scouts and several other organizations, and has a very efficient operation. You will check-in no later than fifteen minutes before the race begins and then just sit back and enjoy, his program is all computer based. You can learn more about Phil at www.pwderby.org. The racetrack is professional with electronic timing gates.

Who runs and judges the event? Volunteers predominantly run Derby Day. Basecamp assist in the setup, registration, judging, awards, teardown, etc. Although Mr. Hanus has a great operation, several hundred kids and dads coupled with even the best equipment can occasionally make things chaotic. As such, please be patient. Everyone is trying their best and wants every child (and dad) to be happy.

Where can I get weights? Small weights are typically attached to the cars to increase their overall weight. These special weights can typically be found at craft stores such as Hobby Town USA, Michaels, Hobby Lobby, etc. You can also use washers, coins, and/or fishing weights.



Race Day: Race Day check-in is a two-step process. At Station 1, you may weigh your car on the official race scale(s) provided. If your car is over or not at the maximum allowed weight (5 ounces), you may make final adjustments. There will be limited on-site tools, so it is best to bring your own. Otherwise, you may proceed to Station 2 for official weigh in, inspection and Race Card. Fill in your child's name and Circle on the Race Card. The official race scale shall be considered final.

- 1) Once the car has been weighed and passes inspection, the car will be given a race number sticker that will be applied to the car for identification purposes. The car will be placed on a table to await the start of the race. At this point, only the designated Race Organizers and their delegates may handle the cars until after the race. No further modifications can be made to the car after this point. No Exceptions.
- 2) Each car must pass inspection by the Race Organizers before it will be allowed to compete. The Race organizers or their delegates have the responsibility to disqualify those cars that do not meet the specifications as stated in the Rules and Inspection Points. If Race Organizers do see an issue with a car, it is at their discretion to ask parent/child to correct it.
- 3) There are NO practice runs at the race.
- 4) Each heat will be announced by car number and each car in a heat will have been selected by random means and run based on the total number of entrants. This is a four-race event with each car racing once in each of the four lanes, with the fastest average overall time coming in first. The Race Organizers will ensure the cars are properly placed on the track. To that end, NO children/dads are allowed at the starting gates or to interfere with the designated race-track area. You are a spectator.
- 5) The derby software tracks each car's speed performance and then ranks and determines the winners, but the Race Organizer's decisions will be final.
- 6) Boys and girls will race together, but will have separate winners for 1st through 4th place – also design winners for Most Creative Design, Best Paint Job, Best YMCA/Adventure Guides Program Theme and Judges Choice . Winning trophies will be awarded at the end of the race; participation trophies will be presented as participants leave.
- 7) If during a race, a car leaves the track without interfering with its opponents, it shall be considered to have ended its heat at that point.
- 8) If a car leaves its lane, at the Race Organizer's sole discretion, they may inspect the track, and if a track fault is found which probably caused the initial lane violation, then the Race Organizer may order the race to be rerun after the track is repaired.
- 9) If during a race, a car leaves its lane and, in doing so, interferes with another racer, then the car at fault shall be declared to have lost the heat race. The other cars may re-run the heat without the violator at the Race Organizer's discretion.
- 10) Any car losing wheels or any part that prevents it from racing may be repaired after the inspection and weigh-in. The Race Organizer may authorize repairs when damage is caused by a collision with another car or object or if the car is damaged in transport by Race Organizers. The repair must be performed prior to the next heat and on the premises.

Check In will begin at 12:30 pm and close at 1:45pm. Don't be late to Weigh-In.

- *We've done our best to organize this event, race details are subject to change with or without notice...*



The Official Rules and Inspection Points are:

<p>General Car Rules:</p> <ul style="list-style-type: none"> Do not recycle cars. Build a new car for each race day, the experience is building a car with Dad. Car kits must be purchased from the Richardson YMCA. Must use the 4 nail type axles & 4 wheels as provided. The wooden block contained in the kit must serve as the chassis of the car and may be carved in any manner as long as it meets stated car size specifications. Car weight 5 oz. Maximum. The official race scale shall be considered final. Car size (L x W x H) = 7" x 2.75" x 3". If fenders are present, they cannot extend beyond the front or rear car body. Cars must clear the center rail of the track, which is 1 Minimum clearance between the entire bottom of the car and the bottom of the wheels must be 3/ of an inch. NO part of the car may protrude beyond the start gate starting pin. The front edge of the car must not be more than 1 inch above the track surface and be at above the track surface and be at least ½ inch wide at the center of the car to make contact with the starting pin. No part of the car or any attachment to the car may be capable of coming into contact with the track other than the wheels. Cars must clear the center rail of the track, which is 1 5/8 inches wide by ¼ inch tall along the entire length of the car. 	<p>Wheels & Axles General Rules:</p> <ul style="list-style-type: none"> Cannot alter axles or wheels other than polishing and flash removal, respectively. Axles may NOT be bent or canted. Factory axle slots must be used and visible. Axles may be polished, deburred, and dry lubricated, but must be let otherwise untouched. No lubricating oil or liquid lubricant of any kind may be used. Wheels may not be reversed (hub facing away from the car body) and must be mounted in standard position. All lettering/numbering, both inside and outside the wheel must remain complete and be visible. The fluting and other factory markings on the outside of the wheel must remain visible. No wheel covers of any type, inside or outside, may be used. No material may be removed from the inside wheel tread, sidewall, hub surfaces. Each wheel must be mounted and attached on an axle, on the outside of the car, on the side opposite of the relative other wheel. Wheel base (i.e., distance between axle slots) may NOT be altered. No material may be removed from the inside wheel tread, sidewall, hub surfaces. Wheels that have been rounded, thinned, wafered, machined, weight reduced, or otherwise modified will not be allowed.
<p>Going Down the Track Rules:</p> <ul style="list-style-type: none"> Oil based or liquid lubricants will foul the track and are strictly prohibited. Only mode of power: Fall of car down ramp. No force(s) other than gravity may contribute to the forward motion of the car. No car may ride on any kind of spring or use a starting device, propellants, or propulsion systems. The car body must not have any moving parts or moving weights. Decorations or trim that are loose or move back and forth are not to be confused with moving weights. Only mode of power: Fall of car down ramp. No force(s) other than gravity may contribute to the forward motion of the car. The car must be freewheeling. All 4 wheels MUST be in contact with the track at all times. The wheel tread does not have to be flat on the track. NO car may purposely race on three wheels or have one wheel lifted. Wheel bearings, washers, hubcaps, or bushings are prohibited. Dry GRAPHITE is the ONLY lubricant allowed. 	<p>More In-Depth Wheels/Axles Rules:</p> <ul style="list-style-type: none"> Axles cannot be drilled into the car body proper with the exception of into the factory slot. A factory slot may be filled with wood putty or other material and drilled only for axle placement. Outer wheel surface (tread area only) may be LIGHTLY sanded, shaved, or polished to remove minor surface imperfections, mold casting burrs, and correct off center wheel bores; but total diameter must not be reduced below 1.170 inches (29.72mm) Outer wheel surface must not be reshaped or have the contour changed in any way in an attempt to minimize tread contact or alter aerodynamics. No grooving, H or V cutting permitted. Tread surface must be flat and parallel to the wheel bore and have a thickness of 0.036 inches consistently across the tread. The weight of the wheel shall not be increased or decreased. No material such as glue, fingernail polish, or tape, may be added to the inside of the wheel increasing its weight. Wheel bore treatment is allowed including polishing and/or tapping. Wheel bores may not be filled or re-drilled to alter bore diameter or to achieve better fit with the axle. Coned hubs and truing the inside tread edge is allowed, but the beading must be intact. The overall wheel width must not be reduced below .36 inches (9.14 mm) Removal of the out hub step down is not allowed.



Helpful Hints:

There are four major construction principles to follow. These are:

- Maximize potential energy (i.e., how far the weight of the car falls)
- Minimize friction, resistance or drag
- Maximize straightness of car's run
- Make the car strong enough to survive

How to Build a Car. There are many ways to build a competitive Derby Car. However, past experience and the Derby Day rules have produced a few principles that should be followed to make your car competitive. Don't be scared by all the tales you may have heard. You and your child do not have to be engineers or even good model builders to turn out a good competitive Derby car. Only simple tools are required and reasonable attention to the major principles.

Note that aerodynamics may not be a significant factor. Your car will not go fast enough (10 - 12 mph) for drag due to air resistance to be a factor, so any shape, even a blunt one, will work.

Potential Energy - A lot of experience and analysis indicates that the center of gravity (CG) (which is the location of the car body where your car will balance) should be as low to the racing surface and as far to the rear as possible, without causing the front wheels to come up off of the racing surface. This produces the maximum potential acceleration down the ramp, through the rotation at the bottom and into the flat run. The way to control the CG is to:

- Whittle, cut and otherwise remove wood from the front of the car
- Add weight at the rear and below the axles. Lead is the most compact and cheapest material for this.

The starting gate is hinged, so make your car such that it's nose contacts low on the starting gate to obtain as early a release as possible, but not so low that the front end hits at the bottom of the ramp. One other factor is that the length of the car is 7" and you can remove wood from the rear of the block (end with the closest axle slot) and add to the nose to move the car further up the ramp. Maintain a 1/4" to 3/8" clearance.

Minimum Friction - all the effort above goes for naught if you don't reduce friction to a minimum. Remember, the car must coast to the finish line. The friction sources are:

- Wheel / axle head contact points
- Wheel hub/ car body
- Misaligned axles
- Foreign matter between wheel and axle

The ways to combat friction are:

- Polish axles
- Proper wheel alignment
- Use a good DRY graphite lubricant

Straight run - Again, the above two principles will be defeated if the car does not stay on the race course or collides with the other cars. These items may produce non-straight runs:

- Misalignment at the gate
- Wheels and axles not aligned
- Foreign matter between wheel and axle
- Bent axles

Strength - If in trying to accomplish any of the above ideas, you have produced a fragile car, good luck. Keep in mind that children tend to get excited, so make your car strong enough to survive short drops, collisions, and other potential mayhem.

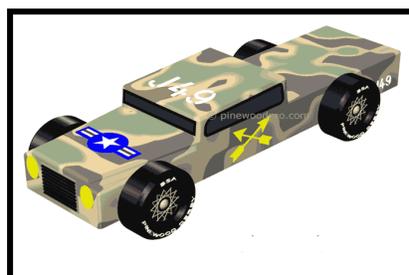
No matter how you achieve them, if you follow the above principles, you and your child should have a competitive car. Racers built as discussed above will only be separated by micro seconds at the finish line and whether you are a final winner will depend a lot on luck.

Please remember that the focus of Derby Day is the time that you spend with your child. It is important that they feel as if they are part of the process, and that both of you have fun.

The Finish Line...

- This is a father/child event. Please allow your child to be part of the total process. Show them the kit and ask for their ideas, color, shape, style, etc.
- This is your child's car and if they want to look like a banana or an Army tank, then you will have to do your best and be proud of your effort. The child should help in the process as much as possible.
- REMEMBER - Your attitude will dictate how your child reacts if their car gets beaten in a race. You will likely not win every race. A smile and a hug go a long way at this point. Sometimes it is the dad that is disappointed and needs a simple smile and a hug.
- Being gracious is more important than winning. Keep in mind, if your child wins, there may be a hundred others who don't. Teach your child how to respect those whose cars may not have performed as well as others.
- Be patient - the race is run by volunteers. While everyone is trying their best, no one works for NASCAR and the track quality is somewhat less than Texas Motor Speedway. Sometimes mistakes happen. The "race crew" will do everything possible to try to correct the situation.
- The goal on Derby Day is for everyone to have a good time. It is a very festive and high-energy day. Another great chance to strengthen the love and trust between you and your child.
- The goal of Derby Day is for a child and father do something fun together. Simply building a car together and watching it roll down the ramp is a victory. Therefore, everyone is a winner and will receive a participant trophy.

Some samples of cars, Courtesy of Google Images...





Quick Facts

Dimensions: & Weight:	The car must weigh no more than a maximum of 5oz. The length of the car must not exceed the original length of the wood block. The width of the car cannot be more than the width of the axles in the kit. The height of the car may be no higher than 3.5”.
Axles:	The four nail type axles in the kit obtained from the Richardson YMCA must be used. Axles may be polished and may only be lubricated with dry graphite. <i>The original axle “slots” that are precut in to the wood block must be used. You cannot increase or decrease the distance between the axles. Bent or canted axles are prohibited.</i>
Wheels:	The four wheels in the kit obtained from the YMCA must be used. The car must have two wheels on the front two axles and two wheels on the back two axles. The wheels must be placed at each end of the axle in such a manner that all four wheels would normally contact the race surface. No other parts which affect the relationship of the wheels to the axles may be used. Outer wheel surface (tread area only) may be LIGHTLY sanded, shaved, or polished to remove minor surface imperfections, mold casting burrs, and correct off center wheel bores; but total diameter must not be reduced below 1.170 inches (29.72mm). You may not affect the width of the wheels, or paint or attach anything to the wheels.
Integrity:	All parts of the car must be used in their proper positions when the car crosses the finish line. It may not have parts that move with respect to other parts of the car when racing (no moving weights). Decorations or trim that are loose or move back and forth are not to be confused with moving weights.
Chassis & Body:	The wooden block contained in the kit purchased from the YMCA must serve as the chassis of the car. No car parts from previous Derby Day cars are allowed.
Race #'s:	Will be assigned when you check your car in.
Energy Sources:	No force(s) other than gravity may contribute to the forward motion of the car. This means no moving parts other than the wheels.
Check-In:	Once your car has been checked in, you no longer have access to the car until all racing has finished.
Decorating:	Only the children in the program should be allowed to paint and decorate the car.