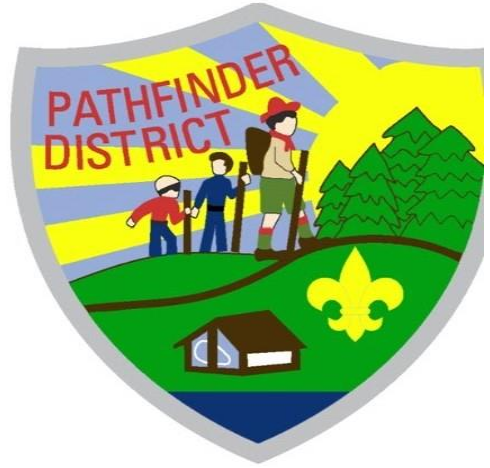




**Hey  
Cub Scouts...  
Get Ready  
to Race!**



**PATHFINDER DISTRICT PINEWOOD DERBY**

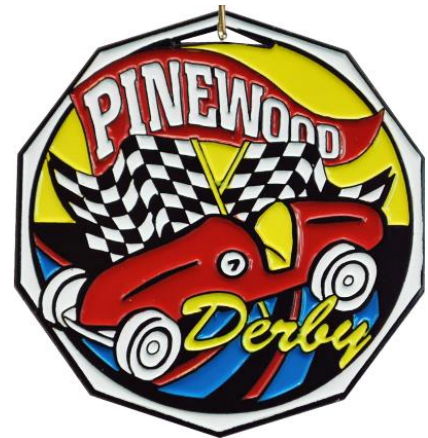
**Celebrating 70 Years of Pinewood Derby!**

**Saturday, March 4<sup>th</sup> 2023**

**Check in 8:30am – 10am**

**Race 10:15am – 2pm**

**Awards – 2pm**



**Streaming on YouTube:**

<https://youtu.be/Nd1eG8VfpP8>



**In Person:**

**Wild Acres Banquet Hall**

**2500 Ashby Road**

**Overland, MO 63114**

# Celebrating 70 Years of Pinewood Derby!

## RACING SPECIFICATIONS

1. WIDTH - OVERALL WIDTH SHALL NOT EXCEED 2 3/4".
2. LENGTH - OVERALL LENGTH SHALL NOT EXCEED 7 3/8".
3. WEIGHT - WEIGHT SHALL NOT EXCEED 5 OUNCES.  
NO LOOSE MATERIALS OF ANY KIND ARE PERMITTED IN THE CAR. THE CAR MAY BE HOLLOWED OUT AND BUILT UP TO THE MAXIMUM WEIGHT BY THE ADDITION OF WOOD OR METAL ONLY, PROVIDED IT IS SECURELY BUILT INTO THE BODY OR CHASSIS.
4. WHEEL BEARINGS, WASHERS AND BUSHINGS ARE PROHIBITED.
5. SPRINGING - THE CAR SHALL NOT RIDE ON ANY TYPE SPRING.
6. DETAILS - DETAILS SUCH AS STEERING WHEEL, DRIVER DECALS, PAINTING, INTERIOR DETAIL, ARE PERMISSIBLE AS LONG AS THESE DETAILS DO NOT EXCEED THE MAXIMUM WEIGHT OF THE CAR.
7. ATTACHMENTS - THE CAR MUST BE FREE-WHEELING WITH NO STARTING DEVICES.
8. LUBRICATION - NO LUBRICANT OR GRAPHITE IS PERMITTED ON WHEELS OR AXLES.
9. INSPECTION - EACH CAR MUST PASS INSPECTION BY THE OFFICIAL INSPECTION COMMITTEE BEFORE IT MAY COMPLETE. THE INSPECTORS HAVE THE RIGHT TO DISQUALIFY THOSE CARS WHICH DO NOT MEET THESE SPECIFICATIONS.

3/32" x 3/32" SAW SLOT  
WOOD AXLE (MAKE 2)  
AXLES - 8-PENNY FINISHING NAILS (4)  
ORIGINAL BLOCK SIZE 1 3/8" x 1 3/4" x 7" (PINE)  
FRONT VIEW  
MAXIMUM 2 3/4"  
ORIGINAL BLOCK OUTLINE  
COCKPIT MAY BE CUT TO THIS OUTLINE OR CUT SQUARE  
21 OFFICIAL RACING NUMBER HERE  
MINIMUM 1"  
Boys' Life  
1/4" DIAMETER PLASTIC WHEELS  
NOTCH BODY FOR AXLE

## PINEWOOD DERBY!

READY... SET... ROLL!!!

### MATERIALS

- 1/4" x 1/8" PLYWOOD 8' LONG (2) FOR BASE
- 1/4" x 1/8" WOODEN TRIM 8 1/2" LONG (4) FOR TRACK
- 1/4" x 1/8" WOODEN TRIM 18" LONG (4) FOR TRACK
- 1/4" x 1/8" WOODEN TRIM 18" LONG (2) FOR SUPPORT
- 1/4" x 1/8" WOODEN TRIM 18" LONG (2) FOR SUPPORT BEAMS
- 2x2 LUMBER 18" LONG (2) FOR LADDER SUPPORT
- 1/2" PVC PIPE 30" LONG WITH (2) ELBOW JOINTS AND (2) END CAPS
- 1" WOOD SCREWS
- 1/2" FINISHING NAIL

### BUILDING THE TRACK:

MARK A 1/2" LINE DOWN THE CENTER OF EACH TRACK, STARTING 8" FROM THE TOP. DRILL 5/16" HOLES AT THE TOP AND BOTTOM OF LINE. USING A KEYHOLE SAW, CUT THROUGH UNTIL THE WOOD IS REMOVED.

DRILL 2" MACHINE SCREWS ALL THE WAY UNTIL THEY HIT THE OPPOSITE WALL OF THE PIPE, MAKING SURE THAT THEY LINE UP EXACTLY WITH EACH OTHER AND CAN REST ON EDGE OF THE HOLE.

USE 1/2" PIPE CLAMPS WITH 3/4" MACHINE SCREWS AND BOLTS TO SECURE PVC STARTER TO UNDERSIDE OF THE TRACK.

WHEN LOADING THE CARS, KEEP THE PVC HANDLE DOWN TO COUNTERBALANCE THE WEIGHT OF THE CARS.

PUSH THE HANDLE FORWARD, POINTING THE SCREWS DOWN AND RELEASING THE CARS.

### STEP LADDER SUPPORT:

A STEP LADDER IS USED TO SUPPORT THE TRACK AND ALLOWING KIDS TO EASILY CLIMB AND REACH THE PVC PIPE STARTER.

2x2 LUMBER LOCKS INTO LADDER PREVENTING SLIPPAGE

1" x 4" x 16" SUPPORT BEAM

### BUILDING THE TRACK:

GLUE WOOD TRACK DOWN AND REINFORCE WITH 1/2" FINISHING NAILS.

EXTRA BEAMS FOR SUPPORT CAN BE ADDED TO THE BOTTOM OF THE TRACK. THIS CAN ALSO PREVENT NAILS FROM GOING ALL THE WAY THROUGH.

THE 8 FT BOARDS ARE CONNECTED USING 1" WOOD SCREWS. THE SCREWS CAN BE REMOVED FOR EASY STORAGE.

### BUILDING THE CAR:

THIS IS AWESOME! LET'S RACE AGAIN!

#### MATERIALS

- 2x2 LUMBER 8" LONG CUT AND SHAPED
- 3/8" x 1/2" FENDER WASHERS (2)
- 1/4" x 3/4" SCREWS (4)
- 10 x 3/4" SCREWS (4)

DRILL A STARTER HOLE TO HELP ALIGN SCREWS.

DRILL SCREWS IN LEAVING ROOM FOR WHEELS TO SPIN FREELY!

THE FORCE OF GRAVITY PULLS THE CAR DOWN THE TRACK. THE SPEED COMES FROM WEIGHT, WEIGHT DISTRIBUTION, AND AERODYNAMICS. EXPERIMENT WITH THE SHAPE OF YOUR CAR!

GET MORE AT... [HOWTOONS.COM](http://HOWTOONS.COM)

### PINEWOOD DERBY CAR RULES:

1. WIDTH SHALL NOT EXCEED 2 3/4 INCHES.
2. LENGTH SHALL NOT EXCEED 7 INCHES.
3. WEIGHT SHALL NOT EXCEED 5 OUNCES.
4. CARS MUST BE SHAPED FROM THE ORIGINAL BLOCK OF WOOD.

\*THESE RULES MAY NOT MEET NATIONAL STANDARDS.

An important note before starting....

Remember adults.....

It's the Scout's car.....

But don't worry, we have you covered this year! 😊



Dear Scouts and Scouting families!

My name is Bill Morillo and I am your new Pathfinder District Pinewood Derby (PWD) Chair for the next few years! Please allow me to be the first to welcome you to our 2023 Pinewood Derby race season! Since the first Pinewood Derby in 1953 the purpose of the Pinewood Derby has been to help the Cub Scout build a team relationship with their parent or helper, experience the sense of accomplishment and the excitement of competition, learn Win/Lose good sportsmanship, and to have fun. It is my goal for every scout to be able to participate in a Pinewood Derby each year. To help with that, I'd like to thank Scouts BSA Troop 283 for volunteering to help in a few ways this year. They are:

- Staffing and running the District Pinewood Derby Race on their track.
- Streaming the District Pinewood Derby Race to YouTube for all to watch from near and far.
- Putting on a free donation-based **Pinewood Derby workshop** for ALL scouts Saturday, January 7, 2023
  - See their website for registering: "Register.Troop283STL.com"
  - Come with your Pinewood Derby car kit and leave with a Pinewood Derby car.
- If your Pack doesn't have a Pinewood Derby track, they could even run your Pack's pinewood derby.

As I said before, it is my goal for **every** scout to be able to participate in a Pinewood Derby each year, if your scout is unable to participate for ANY reason in a Pinewood Derby race please reach out and let me know so we can see how we can get your scout in a race.

**New this year:**

- This manual is completely revamped, please take time to read through it entirely.
- 1 Adult made car from each Pack. Let's call it the leader faceoff race. In addition to each Pack entering a car, our District PWD Chair, District Executive, and District Chair will be allowed to enter a car into this race as well. May the best adult car win. 😊
- STEM - 3D printed cars! Each unit can enter 1 per rank per Pack for race and 1 per show category.
- Lone Scout race entries, if you did not qualify for districts or your Pack is not running a PWD race this year to qualify for districts then this is your category, still come race and have fun with your fellow scouts from around the district.

## Pinewood Derby Rules (Scouts, Lone Scouts, and Adults):

- Each Pack can enter 1 race car **for each scout rank** for speed.
  - A car cannot be entered for both show and race.
- The current BSA Cub Scout Pinewood Derby kit from the Scout Shop must be used.
- A **NEW** car must be made **by the scout** for the current program year
- The maximum overall dimensions must not exceed (in inches):
  - Width: 2.75"; Length: 7"; Height 4"; Clearance under car 3/8"
- The maximum overall weight of the car shall not exceed 5 ounces.
- Nose of the car must be flat in the center to rest against the starting block.
- No pre-made/pre-cut or hobby shop car kits may be used.
- No loose material of any kind is permitted on the car.
- Wheels – Must be BSA wheels from BSA car kit or BSA approved set.
  - NO alterations are allowed. Wheels found to be modified in any way will be disqualified.
  - Must be mounted with BSA Nails as intended, no inside out.
  - Must be visible, no hubcaps or covering the wheels in any way that prevents inspection.
- Nails – Polishing **is** allowed, must be official BSA nails.
  - No bearings, washers, or bushings.
  - May be mounted using the pre cut slots, drilled in, or glued on.
- Lubrication – Powdered Graphite Only
  - No oil, grease or silicone spray should be used on axles or wheels.
  - Must be applied **prior to entering** the building to submit the car through the inspection process.
- Scouts Name, Pack, and Phone number should be written on bottom of car.

## STEM – 3D Printed Car Rules:

- Follow the same size, weight, wheel, nail standards as regular cars
- 3D printed cars may be made from any commercially available printing material.
  - 3D printing services are provided for a small fee at several local libraries (e.g. University City, Kirkwood). Survey your pack families, charter organization, and local schools to determine other 3D printing capabilities available to your Scouts.



## Show Car Rules:

- Each Pack can enter 6 cars for the show car competition.
  - A car cannot be entered for both show and race.
- The current BSA Cub Scout Pinewood Derby kit from the Scout Shop must be used.
- A NEW car must be made **by the scout** for the current program year
- The maximum overall dimensions must not exceed (in inches):
  - Width: 2.75"; Length: 7"; Height 6"
- No pre-made/pre-cut or hobby shop car kits may be used.
- Wheels – Must be BSA wheels from BSA car kit or BSA approved set.
- Nails – Polishing **is** allowed, must be official BSA nails.
- Scouts Name, Pack, Phone Number should be on the bottom of the car.

You do not have to determine the category of the car. The judges determine the best category for the cars. If you have a desired category, please notate this during registration.

Show car entrants do not have to stay for the race, if you choose not to stay **it is essential that someone from the pack picks up the show car entries after the award presentation.** It will be up to the Cubmaster or the parents to plan to have the car picked up. Show car awards will be presented following the championship races at about 2:00pm.

## Show Car Categories:

<b>HAPPY BIRTHDAY</b>	The car focuses on the 70th anniversary of the Pinewood Derby
<b>MOST REALISTIC</b>	Represents the balance, shape, proportion and finish of an actual racing car.
<b>NOVEL DESIGN</b>	The car reflects a novel/unique approach to shape, motif, and design that departs from the expected car.
<b>PATRIOTIC SPIRIT</b>	The car reflects the best use of Red, White and Blue colors and Patriotic symbols.
<b>KID DID</b>	The car in the view of the judges deserves special recognition for it demonstration of a Cub Scout skill level
<b>CLASSIC DESIGN</b>	A car that reflects a representation of an American Classic car design from the past years.
<b>SCOUTING SPIRIT</b>	Best use of scouting insignia or scouting themes
<b>JUDGE'S SPECIAL</b>	The car in the view of the judges deserves recognition but the car does not fit into a specific category.

## What can I expect on the day of the race?

### Check In:

- You will enter at your Pack's scheduled time with your scout and check in your car.
  - Check in will end promptly at 10am
- The official district race scale at check in is the official scale.
  - There will be zero arguing with the results, they are final... even if not what you expected.
- The scout must personally present their car for check in. (not the parent) This means the scout has their car in hand and presenting it to the check in officials, not the parent or other akala.
- Once the car makes it through check in inspection each car will be given a unique participation number and will then be placed immediately in the pit area.
- Cars will not be allowed to leave the pit area for adjustments after it has been checked in. Cars will not be touched by anyone other than the race officials until it is time for the Scout to race.
  - No work may be done on the cars once they are checked in, except in an emergency such as a wheel falling off if it loses the wheel during the race. The Cub Scout and one adult will be permitted 3 minutes to try and fix the car in the pit area while supervised by race official.



### After Check In:

- Check out the concession stand, relax, and mingle with fellow scouts and families until race time.
- Races should start approximately 10:15AM
  - There will be 3 races: Scouts, STEM, Adult
  - Scouts will sit on the floor around the track.
  - Scout Races
    - There will be 4 heats with 30 minute break after the 2<sup>nd</sup> heat for bathroom breaks, some announcements from special guests, show car viewing, and of course some concessions drink and food runs.
    - When it is a scout's turn to race they will go to the end of the track and cheer on their car and carry their car back to the starting line.
    - After the final heat there will be a 20 minute break for setup for next races.
  - STEM Races
    - There will be 4 heats run back-to-back.
    - After the final heat there will be a 20 minute break for setup for next races.
  - Adult Races
    - There will be 4 heats run back-to-back.
    - This is where everyone gets to cheer on their Pack's adult car entry!
- The awards will be announced at approximately 2pm. Please have a representative from your unit prepared to take any cars that are not claimed at the end of the event.

## I have absolutely NO clue what I'm doing... a Pinewood whaaat!?

Bill here again... LoL don't worry, there are resources. If you've never done this before this is a great time to talk to and get to know your fellow more tenured scouts and scout parents in the Pack. Many many have come before you. I mean, we are celebrating 70 years of Pinewood Derby Races this year!

So my first recommendation would be to ask my good friend, the Googles. A quick Google search will send you on a research rabbit hole that can be quite... long. Really though, sit down with your scout, look at some designs, an image search can really get your scout's attention on some cool ideas.

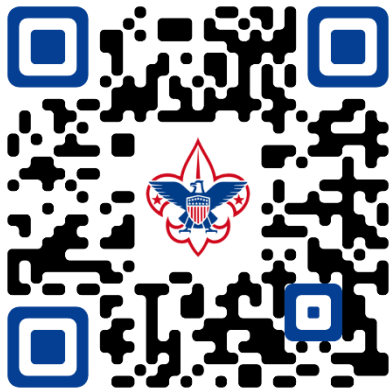
My second recommendation would be to attend the Pinewood Derby Workshop in January. They will have everything you need for your scout to design, cut, sand, paint, etc. their car and really take the heavy lifting off of you.

Lastly, the secret, in fancy science language, is to reduce friction and maximize the available potential energy.

(PS. There are some great YouTube videos explaining what I just said up there, start with Mark Rober below.)

### Some fun resources for you and your scout:

Old Pathfinder How to instructions:



Mark Rober YouTube video about making PWD cars:



A fascinating look at the history of the pinewood derby:



### How do I register for the District Pinewood Derby?

- Registration should be entered as a collective Pack. If your Pack is not participating and you want to, please feel free to register your scout so they can participate.
- Registration can be found here: ----->
- Registration cost is \$7 per car.
- Early Bird Registration is \$6 per car and ends February 12 at 11:59p
- Late Registration is \$8 per car after February 25th.
- Registration closes March 1<sup>st</sup>.

