

# 2018 Pack 55 Pinewood Derby Race Rules

(revised January 10, 2018)

Pinewood Derby is an opportunity for boys and an adult to work together on a project. Participants construct a race car in compliance with the Construction Rules and race in Events by Divisions for Awards. Cub Scout participants should have done meaningful work in designing, constructing, and finishing the car. Focus should be on encouraging the scout to “Do Your Best” in line with the Cub Scout Motto.

Pinewood Derby provides each participant the opportunity to learn 1) the craft skills necessary to build a car, and 2) the rules that must be followed. In addition, Pack 55 supports the Pinewood Derby as a venue for Scouts to learn how to act and behave while participating in group activities. Pack 55 encourages all participants to exhibit good sportsmanship while participating in the Pinewood Derby by having respect for others, following the rules, and behaving graciously in victory or defeat.

## 1) RULES AND DISPUTES

- a) The 2018 Pack 55 Pinewood Derby Race Rules (“The Rules”) are contained herein (Sections 1 through 7) and comprise the rules and responsibilities for Participants related to the 2018 Pinewood Derby event sponsored by Pack 55 to be held on February 3, 2018 and March 22, 2018
- b) All rules will be interpreted in consideration of the Scout Oath and Scout Law.
- c) Determinations of the Inspectors, Judges, and Race Committee members shall be final.
- d) Participants are expected to comply with The Rules and conduct themselves in accordance with ethics and manners consistent with Cub Scouting and the Scouting movement.
- e) Ungentlemanly or unsportsmanlike conduct by any Participant or member of the audience will be grounds for expulsion from the competition and/or the race area.
- f) Modifications of the rules related to race formats and sequencing are subject to change by the Race Committee for the purposes of ensuring a smoothly flowing event and to allow for the highest level of participation by the most scouts. By entering the 2018 Pack 55 Pinewood Derby, each participant agrees that changes to the format and sequencing are possible and agrees to accept the determinations of the Race Committee regarding these matters.

## 2) REGISTRATION AND ELIBIGILITY

- a) Races are open to all Pack 55 Cubs and family members and friends, including siblings, parents and grandparents, as well as any Boy Scout serving as a Pack 55 Den Chief (“Participants”).
- b) Participants may enter one car in each Division for which they qualify but should keep in mind that some Divisions’ Events run concurrently and the Participant must be physically present trackside to race their car.
- c) On-site Check-in is required for all Participants competing. During On-site Check-in:
  - i) Each car entered will be assigned a unique registration number based on pre-assigned numbers provided by the Race Committee.
  - ii) Each car entered will be assigned to an appropriate Division and then assigned a series of races for completion in order to qualify for any Awards.
  - iii) Each car entered must pass Inspection in order to compete in its assigned races.

- iv) After passing Inspection, each car's registration number will be attached using a small adhesive-backed label or sticker that shall be located on the rear portion of the car for easy visibility in identifying the car and indicating its proper direction of travel.
- d) Each car entered must have been built by the individual entrant or adult/child team entering the car. Entry of a car that has been purchased from a third-party or made-to-order by a third party is prohibited and, upon discovery, subject to immediate disqualification.
- e) Cars constructed entirely or largely by adults shall be entered in the Unlimited Division.
- f) All cars competing for awards must satisfy the Construction Rules.

### **3) DIVISIONS, EVENTS, & AWARDS**

- a) Separate Divisions will be maintained as follows:
  - i) Cub Rank Divisions: Tiger Rank, Wolf Rank, Bear Rank, Webelos Rank (reserved for Pack 55 Cubs who properly completed On-site Check-in, by the appropriate rank),
  - ii) Open Division (reserved for entries by siblings, friends, and visitors under 16 years old), and
  - iii) Unlimited Division (reserved for entries by participants age 16 and older or for cars designed to exploit the more liberal compliance requirements of this Division, for cars that do not fit in any other Division, or for non-complying cars that are being run for experimental or testing purposes).
  - iv) Additional Divisions may be created at the discretion of the Race Committee.
- b) Events will be conducted as follows:
  - i) Design and Craftsmanship Competition
  - ii) Cub Rank Division Points Series
  - iii) Cub Rank Division Elimination Series
  - iv) Pack Championship Series
  - v) Demolition Derby Series
  - vi) Open and Unlimited Division Elimination Series
  - vii) Additional Events may be created at the discretion of the Race Committee.
- c) Awards will be distributed as follows:
  - i) Awards will be given based on standing within Cubs Rank Divisions and/or by standing overall among all Cub Rank Divisions in each Event. Awards for other Divisions will be at the discretion of the Race Committee and, if awarded, will be based on the number of participants competing.
  - ii) Race organizers reserve to right to limit, substitute, or withhold awards in categories, ranks, or divisions on the basis of too few entries. Generally, there must be at least 3 more cars entered than awards granted in each award category.
  - iii) Awards based on objective criteria (finish order, proximity to target, etc.) may be challenged during the event only on the basis of measurement error or competing car or spectator interference.
  - iv) Awards in certain selected Events and/or Divisions may be based on subjective criteria (beauty, creativity, originality, etc.) As such, they are not subject to review or challenge. The decision of the Judges in such events is final.
  - v) A Participant's car may receive awards only for results of Events in the Division in which it is registered. This does not preclude, however, a Participant's receiving a Division place award and an overall place award for the same car, or receiving multiple awards for the same car in different Events.

### **4) CONSTRUCTION RULES**

Only B.S.A. Official Pinewood Derby kits nos. 1622, 7610, 17000, 17003, 17006, 17007, or the "Stock Car Kit Special Edition" may be used. Construction of ALL entries (other than entries to the Demolition Derby Series) MUST have begun AFTER last year's Pack 55 Pinewood Derby.

**a) General Specifications** (*applies to all Divisions*)

i) Dimensions:

- (1) LENGTH overall, including any attachments to the car body, shall not exceed 7".
- (2) WIDTH overall, including wheels and axles, shall not exceed 2 ¾".
- (3) HEIGHT overall, including any attachments to the car body, shall not exceed 4" so that car will pass under overhead portion of judging apparatus.
- (4) WIDTH BETWEEN WHEELS shall not be less than 1 ¾" when measured perpendicular to the car's center line so as to allow the car to straddle the track's center guide strip or rails.
- (5) CLEARANCE. Throughout the 1 ¾" wide center area of the car positioned above the center guide strip or rails, the minimum distance between the bottom of the car and the plane of wheel contact with the track surface shall be 3/8". This clearance distance also applies to any protrusions or weights extending from the bottom of the car in this area.
- (6) WHEELBASE may be modified provided that the car's overall length, including wheels and any accessories or extensions from the body, does not exceed 7".

ii) The car must be free-wheeling with no starting device or other propulsion.

iii) The car body must have no moving parts.

iv) No hazardous materials may be used. No magnetic materials may be used. Propellant, incendiary or explosive materials are prohibited.

v) Note: Races finish order may be optically judged. A sharply pointed car may be subject to a slight disadvantage because, at the moment it crosses or trips the sensor, its point may not exactly align with the central location of the sensor used to record the finish order in that car's lane. Similarly, a pointed-car design may not align well with the release gate or pin, which may be rounded.

**b) Weight and Appearance** (*applies to all Divisions*)

i) Weight shall not exceed 5.0 ounces. The readings of the Official Race Scale(s) will be considered final. Cars may be hollowed out and built up to the maximum weight by the addition of other materials or objects provided that such are securely built into the body or attached securely enough to prevent falling off or becoming separated from the car during normal race activity. Mercury shall not be used.

ii) Details such as steering wheel, driver, spoiler, exhaust pipes, roll bars, decals, painting, and other interior and exterior detail are permitted as long as they cannot become separated from the car during normal race activity and as long as the car, together with any detail attachments, still satisfies length, width, clearance, and weight specifications.

iii) Paint and glue must be dry and fully cured to compete as a safeguard to the track, judging equipment, other cars, and facility floors.

**c) Wheels and Axles** (*applies to all Divisions except for Unlimited Division entries.*)

i) The only wheels and axles allowed are those included in Official B.S.A. Pinewood Derby kits nos. 1622, 7610, 17000, 17003, 17006, 17007, or from the "Stock Car Kit Special Edition".

ii) Wheels:

(1) Each car shall have four (4) wheels, arranged such that

(a) two (2) wheels are mounted on each side of the car on axels parallel to the track surface, and such that

(b) they allow for the car to straddle the track's center guide strip or rails with two (2) wheels on each side of the center guide strip or rails.

(2) The wheels may not be cut, drilled, beveled, or rounded. Only the tread surface and width of a wheel may be altered. The tread surface may not be modified to produce any configuration other than flat and parallel with respect to the axis of the axle bore. The tread width may be altered only from the side facing the body of car and may not be less than

.275". The wheel diameter may not be less than 1.150" nor greater than 1.200". Lightly sanding and/or polishing the tread of the wheel to remove imperfections and/or mold marks will not normally reduce the diameter below this minimum. Should it prove impossible to remove imperfections or true a wheel without reducing its diameter to less than the specified minimum dimension, another approved wheel should be substituted.

- (3) Materials, other than permanent paint decoration or lettering highlights, may not be removed or added to the wheels.

iii) Axles:

- (1) Axles may be polished and/or lubricated as allowed by the Rules. The backside (wheel side) of the axle heads may be ground or filed to remove burs. Axle shaft diameter may not be less than .085" at any point that contacts or could contact the interior of the wheel's axle bore. Simple polishing of the axle should not reduce its diameter below this allowable level.
- (2) No solid axles are allowed.
- (3) The ends of the nail-axles must be visible for inspection purposes. No covers designed to provide a reservoir for lubrication materials may be employed.

- iv) Wheel bearings, spacers or bushings are prohibited. The car shall not ride on any type of springs.

d) **Lubrication** (*applies to all Divisions*)

- i) Only dry powdered lubricants, such as graphite, may be used. Excessive lubrication is prohibited as it may damage equipment or floors.
- ii) All lubrication residue must be wiped clean from any external body or wheel part(s) prior to inspection.

## 5) INSPECTION AND REPAIRS

- a) During On-site Check-in, each car will be weighed and inspected for compliance with the Construction Rules at one or more Inspection Stations.
- b) Each car must pass inspection before it can compete in any Event. Inspectors may disqualify any car that fails to comply with these rules. A Participant will be informed of the specific issues of non-compliance and given an opportunity to modify their car to bring it into compliance. Participants will be allowed to return for re-inspection purposes as long as registration remains open. If a Participant's car cannot be brought into compliance for its intended Division, Inspectors may re-classify the car for entry in the Unlimited Division as long as it is in compliance with the appropriate rules for that Division.
- c) A car suffering mechanical problems which prevent it from completing an official assigned heat in any Event (when it is called to do so) in a condition that is in compliance with the rules shall not be allowed to compete in that heat. The Participant will be given the opportunity to repair the car and bring it into compliance with the Rules so as to compete in future assigned heats. Repaired cars must be re-inspected prior to competing in any assigned heat.
- d) Any car observed to be leaving visible marks on track or guide-strip surfaces or otherwise considered likely by Inspectors, trackside Judges, or Race Committee members to cause damage to track or timing apparatus may be suspended from further race activity.

## 6) GENERAL RACE CONDITIONS

- a) After passing Inspection, each car will be quarantined in a pre-race Paddock area and may not be removed until such time as the Participant has completed the Pre-race Briefing and the appropriate Division's racing has begun. The Race Committee may deem it necessary for the Paddock area to be maintained overnight or over several nights if On-site Check-in is scheduled for a day other than race day – if this occurs, participants will not be given access to the cars until race day.

- b) Only registered Participants are allowed to handle their own cars outside the Paddock area and during any Event.
- c) Events will be staggered throughout the Pinewood Derby to allow for the most racing activity for all Participants in all Divisions. Official Derby Schedules will be posted and individual Events and heats will be announced during the Pre-race Briefing.
- d) It will be the responsibility of each Participant to present themselves with their car at the appropriate track when their assigned heat is called for any Event. In an effort to maximize racing opportunities for all, Participants not immediately ready when their assigned heat is called, and that cause undo delay to the rest of the Event, will forfeit their right to compete in that heat. A forfeited heat will result in a score of zero points (in a Points Series Event), or a result of “eliminated” (in an Elimination Series or Championship Series Event). Track side Judges or Race Committee members will be the final adjudicators regarding any forfeits and their decisions will be final.
- e) Each Participant will be responsible for placing their car on the track, in the appropriate lane, at the start of each heat. However, trackside Judges may assist any Participant if requested to do so and may make minor adjustments to car placement to allow for proper starting gate operation or to position for reasonable alignment of car to track.
- f) During and after each run, cars may not be touched or removed from the track until they have finished moving completely and have come fully to rest.
- g) Electronic Judging Devices may be used to determine the results of any heat; however, final determination of the outcomes of any heat is the responsibility of the trackside Judges.

## 7) EVENT DETAILS

- a) Design and Craftsmanship Competition
  - i) During the Pre-race Briefing and/or while the cars are in the Paddock, the Race Committee will determine the winners of the Design and Craftsmanship Competition.
  - ii) Within each Cub Division, Participants will be awarded recognition by the Race Committee for beauty, creativity, and design as well as overall craftsmanship of their entries.
  - iii) Judging will be by visual inspection only.
- b) Cub Rank Division Points Series
  - i) Points Series Events will be conducted separately for Tiger, Wolf, Bear and Webelos scouts.
  - ii) Cub Rank Division Points entries will compete over a series of assigned heats to earn points by finishing first, second, or third in each heat.
  - iii) Cub Rank Division Points entries will be run six-at-a time for purposes of determining points earned in each heat.
  - iv) Judging:
    - (1) After each heat, trackside Judges will assign points to Participants as follows:
      - (a) first place – 3 points,
      - (b) second place – 2 points,
      - (c) third place – 1 point,
      - (d) fourth, fifth or sixth place – zero points,
      - (e) forfeit – zero points.
    - (2) Awards will be determined by total points earned over all assigned heats; however, Participants do not have to complete all heats to earn a total-points score.
    - (3) Points will be recorded on the Participant’s Authorized Scorecard immediately following each heat by the trackside Judges. It is the responsibility of each Participant to keep track of their own Authorized Scorecard for presentation to claim any award.
    - (4) Participants will be ranked by total points scores for Award recognition and for qualification for the Cub Rank Division Elimination Series.

c) Cub Rank Division Elimination Series

Cub Rank Division Elimination Series will be conducted in accordance with the rules described here for both the fastest (“Speed Cars”) and the slowest (“Turtle Cars”) cars.

- i) The 16 entries with the highest/lowest total points scores from the Cub Rank Division Points Series, who are present, willing, and able to race, will be invited to compete in the appropriate Cub Rank Division Elimination Series. If more than one entry qualifies as the 16th highest/lowest point total due to ties, then all who would have qualified but for the ties will compete in a single elimination run-off to determine who will be invited to take the 16th spot.
- ii) Cub Rank Division Elimination entries will compete over a series of single-elimination bracketed heats to determine an overall Elimination Series Champion.
- iii) Cub Rank Division Elimination entries will be run two-at-a time for purposes of determining winners in each heat.
- iv) Single elimination bracket match-ups will be randomly generated by the Race Committee prior to the start of the Elimination Series heats. The brackets will not be seeded as a result of total points scores from any previous Event or based on any other criteria.
- v) Cars will be raced side-by-side in adjacent lanes designated by the trackside Judges. Lane assignments for each heat will be random and determined by lot immediately prior to the heat.
- vi) Judging:
  - (1) After each heat, trackside Judges will assign results to Participants as follows:
    - (a) For Speed Cars:
      - (i) first place – “advance,”
      - (ii) second place – “eliminated,”
      - (iii) forfeit – “eliminated.”
    - (b) For Turtle Cars:
      - (i) last to cross the finish line – “advance,”
      - (ii) do not cross the finish line – “eliminated,”
      - (iii) forfeit – “eliminated.”
  - (2) Awards for the Elimination Series will be determined based on the outcome of the single elimination bracketed heats.
  - (3) Participants will be ranked based on the outcome of the single elimination bracketed heats for qualification for the Pack Championship Series.

d) Pack Championship Series

Note that the 2018 Pack Championship Series is scheduled for the March Pack Meeting to be held on March 22, 2018. Qualifying racers will be invited to the Pack Championships based on results from the February 3, 2018 competitions.

- i) Each Cub Rank Division will send four Participants to the Pack Championship based on the results of the Division Elimination Series. Invited racers with cars properly completing On-site Check-in on March 22, 2018 and meeting the design criteria will race in this Series.
  - (1) The 4 entries competing in the semi-finals of each of the four Cub Rank Division Elimination Series, who are present, willing, and able to race, will be invited to compete in the Pack Championship Series.
  - (2) If one or more semi-finalists from any Division do not accept the invitation, then the invitation will be extended to the quarter-finalist(s) from that Division’s Elimination Series with the highest total points score(s) from that Division’s Point Series.
  - (3) If more than one entry qualifies due to ties, then those Participants will compete in a single elimination run-off to determine who will be invited to take the 4th spot.
  - (4) Based on this process, if no Participants from a particular Division can be identified to participate in the Pack Championship Series, then that Division’s unfilled positions are forfeits.

- ii) The 16 Pack Championship Series entries (4 from each Division) from both the Speed Cars Series and the Turtle Cars Series will compete over a series of single-elimination bracketed heats to determine an overall Pack Champion.
- iii) Pack Championship Series entries will be run two-at-a time for purposes of determining winners in each heat.
- iv) Single elimination bracket match-ups will be randomly generated by the Race Committee prior to the start of the Pack Championship Series heats. The brackets will not be seeded as a result of total points scores from any previous Event or based on any other criteria.
- v) Cars will be raced side-by-side in adjacent lanes designated by the trackside Judges. Lane assignments for each heat will be random and determined by lot immediately prior to the heat.
- vi) Judging:
  - (1) After each heat, trackside Judges will assign results to Participants as follows:
    - (a) For Speed Cars:
      - (i) first place – “advance,”
      - (ii) second place – “eliminated,”
      - (iii)forfeit – “eliminated.”
    - (b) For Turtle Cars:
      - (i) last to cross the finish line – “advance,”
      - (ii) do not cross the finish line – “eliminated,”
      - (iii)forfeit – “eliminated.”
  - (2) Awards for the Pack Championship Series will be determined based on the outcome of the single elimination bracketed heats.

e) Demolition Derby Series

Note that the 2018 Demolition Derby Series is scheduled for the March Pack Meeting to be held on March 22, 2018.

- i) Racers from all Divisions (Tiger, Wolf, Bear, Webelos, and Open), with cars properly completing On-site Check-in on March 22, 2018 and meeting the design criteria will race together in this Series.
- ii) Cars should be entered in Demolition Derby only with the understanding that substantial damage to the car is quite likely. Most cars entered in the demolition derby will suffer damage.
- iii) Demolition Derby entries must satisfy the Construction Rules as specified for Cub Rank Divisions. Demolition Derby entries are not required to participate in other events.
- iv) Demolition Derby entries will be run two-at-a time for purposes of determining the winner of each challenge pair.
- v) During and after each run, cars may not be touched or removed from the track until they have finished moving completely and have come fully to rest. The Demolition Derby Track is designed to be just wide enough so that in some cases cars can narrowly pass by each other and then collide in reverse as they come back down off the slope pairs.
- vi) An entry must survive a challenge run in rolling condition sufficient to make it to the impact zone on a subsequent run in order to be considered in race worthy rolling condition and to participate in further challenges.
- vii) Eliminated cars may be marked (typically with a spot of liquid paper on one of the wheels) so that they can be readily identified as having already been eliminated.
- viii) Judging:
  - (1) If one car is disabled (i.e. no longer in race-worthy rolling condition) and unable to run again, it loses that challenge run and is eliminated from further competition.
  - (2) If both cars in a given challenge run are disabled, both are eliminated from further competition.

- (3) If both entries survive a challenge run in race-worthy rolling condition, the car that comes to rest with at least one wheel in contact with the track (not counting wheels that have become completely separated from the car) shall be declared the winner.
  - (4) If both cars survive a challenge run in race-worthy rolling condition and BOTH cars come to rest with at least one wheel in contact with the track (not counting wheels that have become completely separated from the car), the car that came to rest closest to the marked midpoint of the track shall be deemed to be the winner.
  - (5) If both cars survive a challenge in race-worthy rolling condition and BOTH cars are completely knocked off the track (neither car comes to rest with at least one wheel touching the track), the race shall be run again to determine a winner. Re-runs continue until a winner can be clearly determined by application of rules 1 - 4.
  - (6) Winners of challenge pairs will be set aside until enough winners are available to run against each other in second, third, and further pairwise challenge runs in tournament-style elimination. The object at all times shall be to match up cars with similar collision “experience” so that cars that have been weakened in prior successful challenge runs are not put up against fresh cars.
  - (7) Entries that have survived the greatest number of completed challenge runs (not counting re-runs required to determine winners of equal-outcome or inconclusive runs) will be ranked as Champion.
- f) Open and Unlimited Division Elimination Series
- i) Open and Unlimited Division races will be conducted in a manner consistent with the Cub Division Elimination Series races; however, at the Race Committee’s sole discretion, the Open and Unlimited Division races may be modified based on the number of participants to allow for maximum participation by cars having properly completed On-site Check-in.