

Hillclimbers

Robert P. Adams (Dr. Bob)

Hillclimbers are comparable to the pinewood derby in getting boys interested and for use as a special family event. The competition is done using a pinewood derby track. Building a Hillclimber is a good way to involve fathers (parents). These are extremely light vehicles, so the competition must be held indoors where there is no wind. A gym or community center would be a good place to have this event.

Competition: Race by clubs. Use a pinewood derby track, backwards! Start a hillclimber at the lower end (finish line for pinewood derby cars). Note the upper-most position that the hillclimber reaches, when its forward progress is finished, and mark that position with a piece of masking tape (with the boy's name on it) by sticking the tape to the side of the track. If, on a later try, the boy gets farther 'up the hill', move his tape (name) up to the new spot. After all boys in a club have had 3 (or more) tries, the winner is the one who climbed the hill the farthest. If more than one boy reaches the top (be sure to have a stopping block at the top of the 'hill'), have a final contest for them by taping the same kind of weight (e.g. a quarter) to each of their hillclimbers and have them go again, etc. until the final 3 places are determined. If you are using 2 rubber bands (recommended), then you might limit those tied for the finals to just one rubber band instead of adding weights.

A nice touch in this kind of competition (where one is keeping track of the best 3 finishers) is to attach helium filled balloons (Blue, Red, White) to the 1st, 2nd, 3rd places. As the event proceeds, the balloons are moved up the hill (or away from the starting line). Of course, one still needs to keep a sticker with the boy's name on it below the balloon!

Propulsion: Wound up propeller (pusher prop). You may want to count the number of propeller turns of each winding or give them a time limit or just let them wind as much as they want but only give them one (1) replacement rubber band when they break their first rubber band.

See Hillclimbers in Crafts section for instructions for construction.

Awards: Trophies for speed (1st, 2nd, and 3rd in each division)

Specifications:

A. Width - minimum of 9 1/2" between wheels (to straddle 3 lanes on a track): **Note: You need to check your track to be sure this width is adequate for your track!**

B. Length - 9"

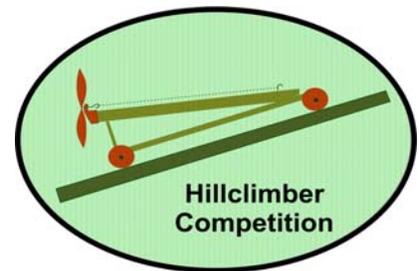
C. Height - no limits

D. Weight - no limits, but they should be as light as possible!

E. Details - additional wood, plastic, string, etc. may be added for decorating as long as the above limits are not violated.

F. Attachments - no device may be added that will offer additional propulsion (except the propeller provided with the kit).

G. Inspection - all hillclimbers will be inspected before the race and a hillclimber that does not meet the specifications above will not be allowed to participate until the hillclimber is brought into compliance.



Hillclimbers Building the Kit

Hillclimbers are comparable to the pinewood derby in getting boys interested and for use as a special family event.

Materials needed:

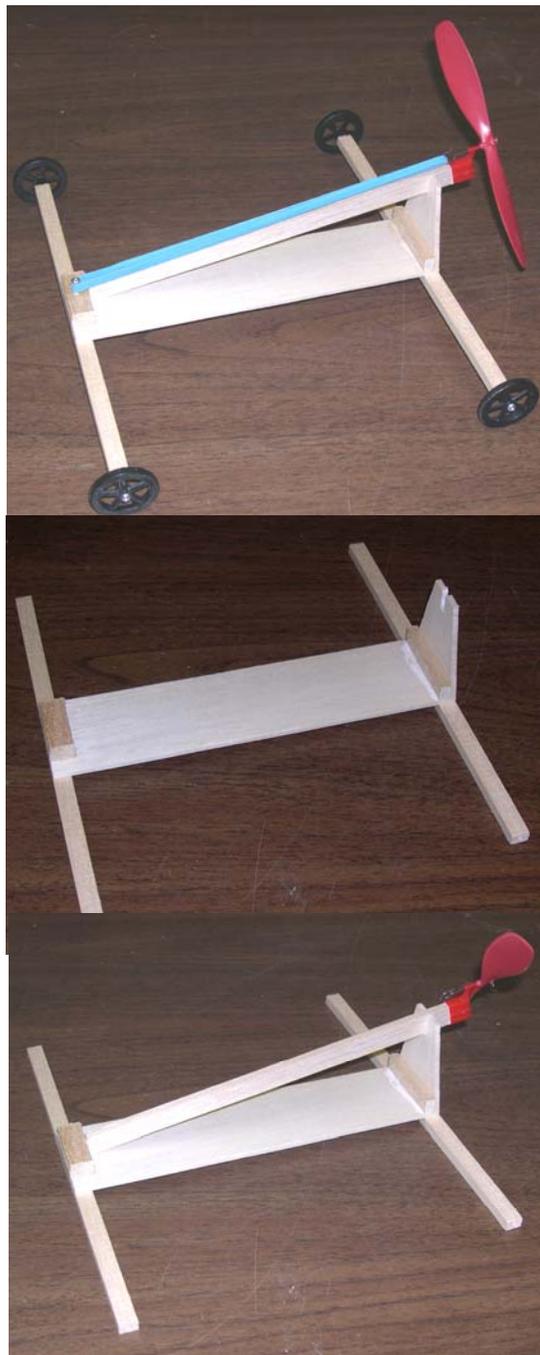
1. 6" Propeller assembly (local hobby store or Guillows, Inc.).
2. Two rubber bands (7") (cf. Guillows, Inc).
3. Four wheels (1 3/8" or larger) (www.kidder.ca, item 19-1015).
4. Five #4 x 1" wood screw, round, Phillips head (boltdepot.com, stock #11581). Use 4 for axles and the fifth to secure the rubber bands.
5. One 3/16" x 1/2" x 9" balsa for center spar for prop assembly.
6. Two 1/4" x 3/8" x 9 1/8" balsa for axles (**check to see if 9 1/8" + the 2 wheel hubs is wide enough to straddle 3 lanes of your pinewood derby track! Adjust as needed**).
7. One 1/4" x 3/8" x 2" balsa to put at base of trapezoid and chassis.
8. One 1/8" x 2" x 8 1/2" balsa sheet for the body (i.e., chassis).
9. One 1/8" x 2" x 2" balsa sheet to make trapezoid support, white glue.

Before the meeting:

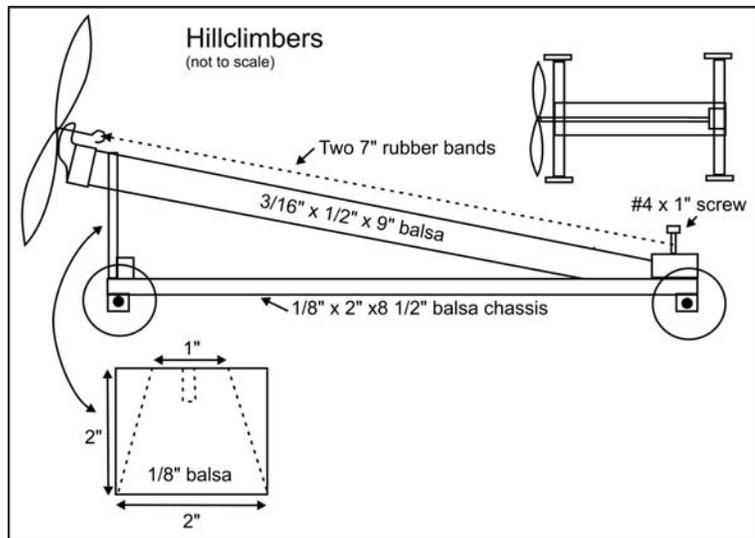
1. Cut trapezoid support as per diagram.
2. Cut balsa parts as per list above.
3. Drill 3/32" hole (3/4" deep) into ends of axles (two 1/4" x 3/8" x 9 1/8" balsa) so #4 x 1" screws won't split the wood when the wheels are put on.

Assembly at the meeting:

1. Glue axles to chassis (see photo).
2. Glue 1 1/4" balsa block to front of chassis (to hold #4 x 1" screw).
3. Glue trapezoid to 1/4" x 3/8" x 2" balsa and thence to the chassis (see photo).
3. Glue center spar to trapezoid and to 1 1/4" block
4. Attach wheels using #4 x 1" Phillips head screws.
5. Carefully attach the propeller assembly.
6. Let dry before attaching the rubber bands (give the boys the rubber bands on the day of the event competition).



Competition: Race by clubs. Use a pinewood derby track, backwards! Start a Hillclimber at the lower end (finish line for pinewood derby cars OR don't use the last section, so they don't waste their rubber band power on the flat section! You need to experiment with this to get the most exciting starting line). Put a piece of tape on the track with the boy's name on it to mark their highest ascent! If they climb higher on the next try, move their name-tape. If they don't go as far, leave the name-tape of their best climb. Hint: you only need to keep the top 3 climbs to get 1, 2, 3rd places, but it may be fun to leave all the boy's names so they can see their current 'best climb'. If you stick their name-tape on the side facing the audience, they can see where they are.



After all boys in a club have had 3 (or more) tries, the winner is the one who climbed the hill the farthest. If more than one boy reaches the top (be sure to have a stopping block at the top of the pinewood derby track), have a 'run-off' contest for them by taping the same weight (e.g., a quarter) to each of their Hillclimbers and have them go again, etc. until the final 3 places are determined.

Propulsion: Wound up propeller (pusher prop). Note: there are several web sites that sell 7" rubber bands. You may want to count the number of propeller turns of each winding or give them a time limit or just let them wind as much as they want but only give them one (1) replacement rubber band when they break their first rubber band.

Awards: Trophies for speed (1st, 2nd, and 3rd in each division).

Specifications:

- A. Width - minimum of 9 1/2" between wheels (to straddle 3 lanes on a track): Note: **You need to check your track to be sure this width is right for your track!**
- B. Length - 9"
- C. Height - no limits
- D. Weight - no limits, but they should be as light as possible!
- E. Details - additional wood, plastic, string, etc. may be added for decorating as long as the above limits are not violated.
- F. Attachments - no device may be added that will offer additional propulsion (except the propeller provided with the kit)
- G. Inspection - all Hillclimbers will be inspected before the race and a Hillclimber that does not meet the specifications above will not be allowed to participate until the Hillclimber is brought into compliance.

Leaders need to provide to each boy: Sand paper, steel wool, spackling, etc. Boys will provide their own paint or shoe wax polish, extra parts, etc. to customize their Hillclimber.