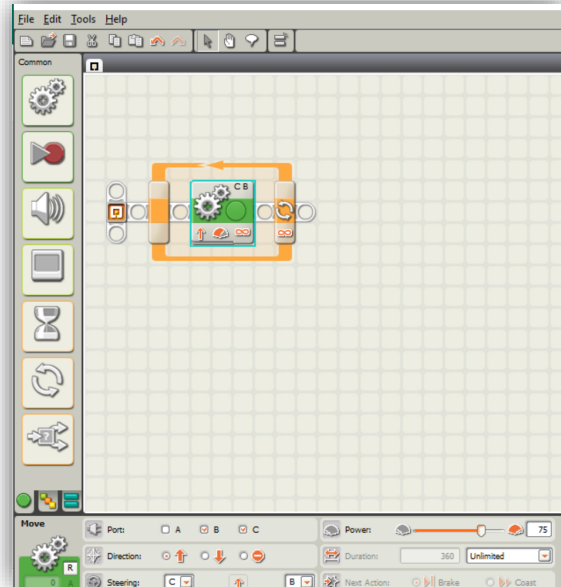


“Junkyard Robots”

EXAMPLE PROGRAM (NXT VERSION)



This program shows both drive motors (B and C) driving forward at 75% power for an unlimited amount of time. All Mindstorms brains that are used in the activity should have the same program preloaded to the brick before the participants arrive. It helps if this is the only program on the robot to prevent confusion. Our program is named “Junkyard Racer.”

EXAMPLE BAG OF “JUNK” PARTS

Make each bag identical to allow for a true engineering challenge. Be sure to include a big handful of connectors in each bag. Parts should allow for creativity in design while still making it possible to drive the robot forward. Some teams choose to elevate one end of the robot. Attaching the motors securely to the brick prevents excess “flopping” as the robot moves.



EACH TEAM NEEDS:

- ◆ LEGO Brick with 2 motors & program loaded
- ◆ Bag of “Junk”
- ◆ Someway to keep LEGOs from escaping (we use cafeteria trays)
- ◆ Race lanes (tables, ramps or tape)

TIPS FOR MAKING YOUR EVENT A SUCCESS

- ◆ If you plan to run tournament style races, print out brackets to fill in with team names. If you have time, a double-elimination is great because it means more racing for everyone.
- ◆ Make or bring awards for the winners. For example, when we do this at our local used bookstore, the winner gets a gift certificate.
- ◆ Choose someone from your team to be the EMCEE. They can do a 3-2-1-LEGO countdown, call the action, pump up the crowd. Remember, robots work better when you cheer for them!
- ◆ Choose someone to be the Head Referee to make sure that all robots start behind the line and watch the finish line to determine a winner at each race.
- ◆ Designate one person per race lane to gently nudge robots back in line if they start to leave the course.

“Junkyard Robots”

AN INTERACTIVE OUTREACH EVENT TO ENGAGE ANY AUDIENCE FROM TODDLERS TO TEACHERS TO CEOs.

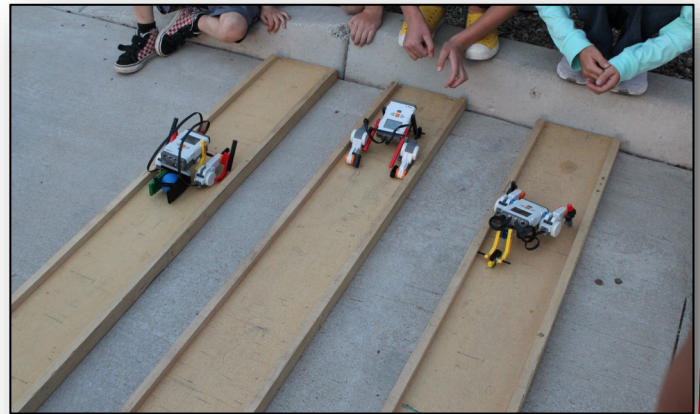
Objective? Build a robot racer using the parts provided to move forward as fast as possible.

The Catch? No wheels are included in the kit!

Junkyard Robots in a Nutshell

This activity is ideal for any team that’s ever been asked to lead an outreach event where participants build robots. It requires minimal equipment and set up, it’s portable, and can be done almost anywhere.

Small teams have a set amount of time to build a robot to race out of identical parts and a LEGO Mindstorms brick with 2 motors. The event concludes with heats and participants cheering on their bots!



EXAMPLE AUDIENCES WITH MODIFICATIONS

Junkyard Robots can be modified for time and audience types.

Young Kids: Get parents to help with each team and assign one of your team members as a mentor. Keep teams small (no more than 3) and allow for more build time.

Older Kids: Teams can be 3-4 with a mentor from your team. Parents can step back a bit, and mentors can give kids more autonomy. Give them suggestions rather than hands-on guidance.

Teachers or FIRST Coaches: This is a great introduction to the philosophy of FIRST (not a lot of time, no directions, project-based learning). Be sure to spend time at the end discussing how to do this in class or with a team, standards addressed, skills learned by doing this activity.

Business Leaders: Junkyard Robots makes an amazing icebreaker or teambuilding activity for corporate retreats. Allow time for team debriefing or words from the event manager for their employees.

EXAMPLE TIMELINE FOR JUNKYARD ROBOTS

Prior to event day:

- Assemble the parts in baggies
- Program the robots
- Pair each brick with a motor and connect with cables
- Test each brick to be sure they all work
- Charge batteries
- Try the activity as a team so you know possible solutions to the challenge (and can help participants on event day)

30 minutes prior to event:

- Pair a robot brick + 2 motors to a bag of parts
- Set up your race lanes (tape, tables or ramps)

Event sequence (Allow 60 to 100 minutes):

- 5 minutes: Welcome, explain task, organize teams
- 30-60 minutes: Build time & testing
- 15-30 minutes: Race heats
- 5 minutes: Declare a winner and awards!
- 5 minutes: Clean up & pass out FIRST information