LegoEngineering.com



Things That Go Bump - NXT

60 minutes
8 - 13
In this activity, design and construct an NXT car and program it to travel in a straight line until it hits a wall. Once it hits the wall, program the car to reverse direction and continue until it hits another wall at which point it stops.
Touch Sensors
Engineering & Technology
Motor Forward, Motor Backward, Wait for Touch
 Gears Wheels and Axles Acceleration Velocity
 NXT Car Assortment of LEGO pieces Tape Measure 2 Parallel Walls (can be built with LEGO bricks)

LegoEngineering.com

1. Take an NXT and attach a wheel base and motors.



Center for Engineering Education and Outreach

2. Build two bumpers to control the touch sensors.



3. Wire the motors to the outputs and the touch sensors to the inputs of the NXT.



Hint: Since the surface area of the touch sensor is small, build bumpers to increase its sensitivity.

Building Instructions



1. Choose whether to use ROBOLAB or the LEGO NXT-G **Programming** software to program (follow step 2 for ROBOLAB; follow step 4 *Instructions* for LEGO NXT-G software). 2. Using ROBOLAB Inventor 4, program the car to drive between two walls, reversing its direction when it hits a wall. 100 B 203 2.9 3. Using the LEGO NXT-G software, program the car to drive between two walls. B 4. Set controls to reverse direction when it hits a wall. Port Control: 01 02 01 04 Sensori Actions () 15 Pressed Touch Sens O + Released O 1 Run the car between two walls, in a hallway or between two constructed In Action walls. The car should hit one wall, reverse into the other, and stop moving. Sturdy Car: The Drop Test • **Related** Activities Bulldozer ٠ Platform 9³/₄ Fan-tastic Maze Competition •

LegoEngineering.com	Things That Go Bump - NXT
Building and Programming References	 Building With Bricks Building With Plates Building With Beams Axle Uses Connector Pegs and Bushings Hubs and Tires The NXT NXT Motors and Wires NXT Touch Sensors
Classroom Management	Activity Extensions: • Modify your bumper-car program (Things That Go Bump) using Jumps and Lands so that the bumper car will keep bumping and reversing indefinitely, until you push the Run button to stop the program. • Instead of reversing after it hits a wall, program your car to turn 90° and then continue forward until it hits another wall. (Hint: you'll need two motors for this one.)