

# Propeller Buggy 50 Pack

## Teacher Instructions



### Kit Contents

Your Propeller Buggy Pack should contain the following components. If anything is missing, call Customer Service at 800-358-4983.

- 50 sheets of balsa wood 1/8" x 3" x 18"
- 50 propeller assemblies
- 100 axles 3-5/8" long
- 200 wheels
- 100 straws
- 50 rubber bands

### Tools and Materials Needed (not included)

- Ruler
- Pencil
- Wood or hot-melt glue
- Hobby knife
- Transparent tape
- Small square

### Activity Description and Options

The kit provides the basic materials needed to construct 50 propeller-driven buggies like the one pictured on the back of this page. You may allow students to use other materials to enhance the basic design.

### Setup and Implementation

1. Make 50 copies of the Student Instructions on the back of this page.
2. Give each student:
  - 1 sheet of balsa wood
  - 1 propeller assembly
  - 2 axles
  - 4 wheels
  - 2 straws
  - 1 rubber band
  - Student Instructions Sheet
  - Tools and materials listed above (may be shared by the students)
  - Other materials to enhance the basic design (optional)

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# Propeller Buggy

## User Guide

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### Your Challenge

Use the materials and tools given to you by your teacher to construct a propeller-driven, rubber band-powered vehicle (as shown in Figure 1) that will travel the greatest distance.

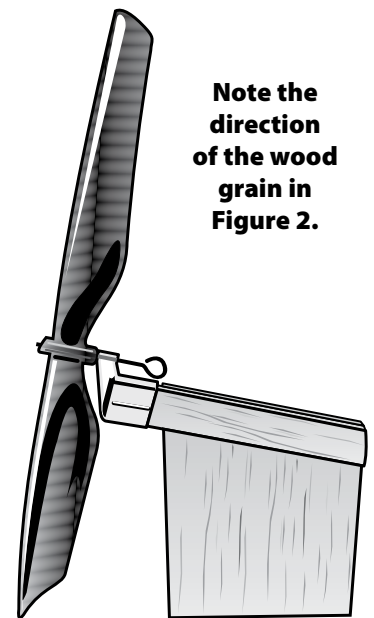
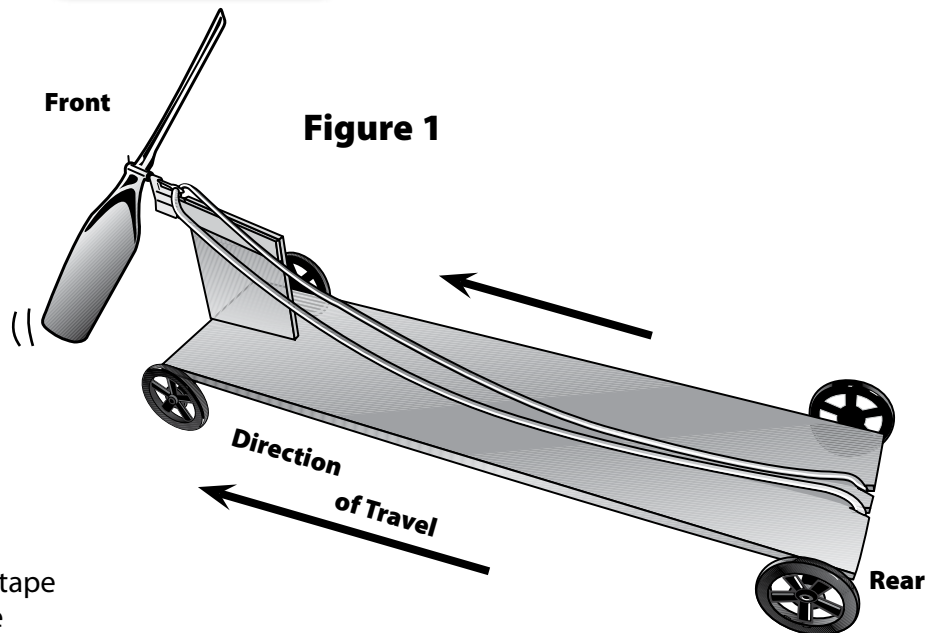
### Before You Start

Make sure you have the following tools and materials:

- 1 sheet of balsa wood
- 1 propeller assembly
- 2 axles
- 4 wheels
- 2 straws
- 1 rubber band
- Ruler
- Pencil
- Glue
- Hobby knife
- Transparent tape
- Small square

### Hints

- Study Figure 2 to see one way to attach the propeller to the buggy. Unless using extra materials, cut off a small piece of the balsa wood sheet (chassis) to make the propeller stand parts. Note how the stand is angled at the top – this is so the rubber band will not catch on the propeller stand.
- When attached, the rubber band should have some slack. Because the rubber band provided is 28 inches long and must be doubled and tied, how long should you make the car body?
- The propeller is a pull propeller and performs best when the rubber band runs in a straight line between the propeller shaft and the notched end of the chassis (you cut the notches).
- To determine the propeller stand height, account for the length of the propeller blades and the height of the wheels. This should prevent the propeller from hitting the floor when it rotates.
- Glue the straws to the chassis as axle bushings to reduce friction when the axles are turning. Before gluing, use the square to make sure the bushings are square to the chassis. With the ruler, make sure the wheels are parallel to each other and perpendicular to the length of the chassis. Draw a line on the chassis as a guide for placing the bushings – put a few drops of glue on the lines, place the straws on the glue, and add more glue for a better hold.
- Before attaching the wheels, you may need to trim off any excess plastic from the hub to make it even and smooth. If you do not, the excess plastic may catch on the chassis.
- When racing, experiment with distance traveled by counting the number of times you wind the propeller. For example, begin with 200 winds, then 300 winds, and finally 400 winds.



**Figure 2**