

# Land Yacht

Name(s): \_\_\_\_\_

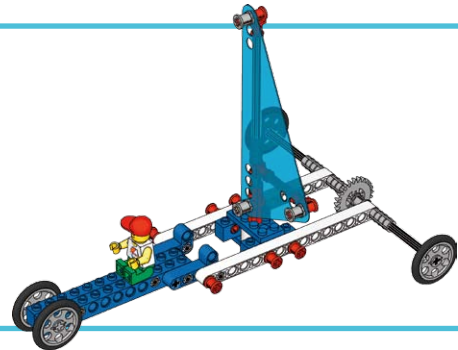
How can you make a safe cart that is powered by the wind and carries at least one person? Let's find out!



## Build the Land Yacht

(All of book 9A and book 9B to page 5, step 12.)

- Use the small sail



## What difference does the size of the sail make?

- Turn on the fan. Predict and test how FAR each model will roll with the same wind speed
- Test at least three times with each sail to achieve a scientifically valid answer

NOTE: FANS and FINGERS! TAKE CARE!

**Tip:**

Choose ONE speed setting to do all the tests. Any speed will do. We used high speed.

	My prediction	Actual distance
<b>Small</b> 40 cm <sup>2</sup> (≈ 15 in <sup>2</sup> ) sail page 5, step 12		
<b>Medium</b> 80 cm <sup>2</sup> (≈ 31.5 in <sup>2</sup> ) sail page 9, step 21		
<b>Large</b> 160 cm <sup>2</sup> (≈ 63 in <sup>2</sup> ) sail page 14, step 30		

## What difference does wind angle make?

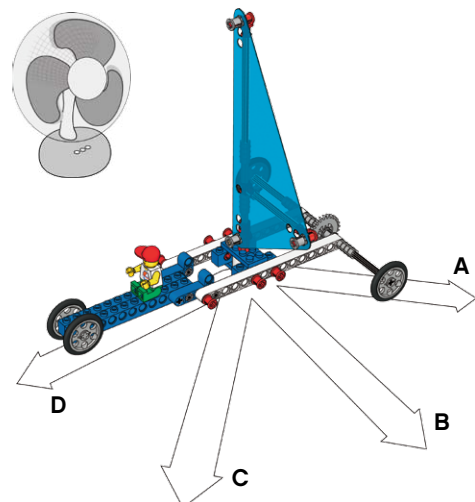
- Launch your yacht at different angles across the wind stream
- How fast does it travel each time?
- Write the words next to the arrows to match what you saw happening

Stopped

Medium speed

Fast

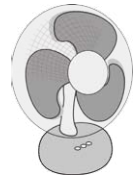
Slow



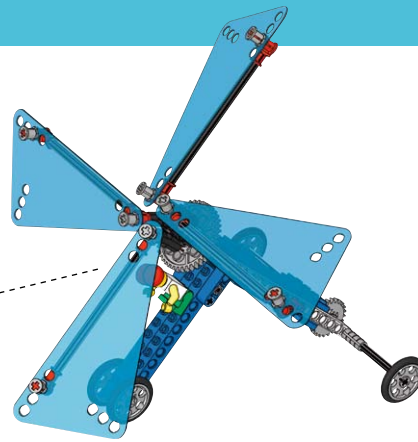
### The Wind Sucker

(Build book 9B to page 24, step 15).

- Hold it 2 m (≈ 2 yds) away facing the fan
- Predict what will happen and then let go



About 2 m  
(≈ 2 yds)  
from the fan



My prediction	Actual distance



#### Also try:

- Fat back wheels
- A weight brick
- Two or three sails
- Facing backwards

#### Did you know?

The LEGO® figure weighs 3 g (≈ 0.1 oz). The yacht weighs about 55 g (≈ 1.94 oz). The weight brick is 53 g (≈ 1.9 oz). Predict and test how the yacht would perform with a weight brick load.

### My Land Sailor

Draw and label your design for a wind-powered vehicle. Explain how the three best parts work.