

Windmill

Name(s): _____

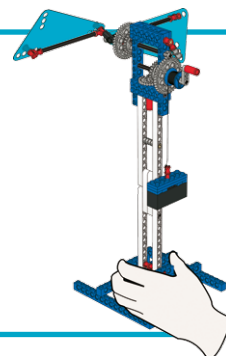
How can you use a windmill and a rope to lift a heavy load?
Let's find out!



Build the Windmill

(all of book 8A and book 8B to page 12, step 17)



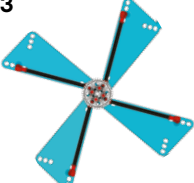
- Make sure it turns smoothly
- If it feels stiff to turn, loosen the axle bushings and make sure all other elements fit tightly together



What difference does the number of sails make?

- Predict and test how fast each design will lift the treasure chest (weight brick). Use some sort of timing device
- Use the same wind speed each time

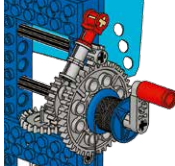
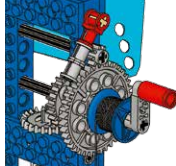
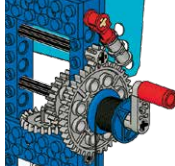
Slow Fast Medium

1 	2 	3 
My Prediction	My Prediction	My prediction
Actual Speed	Actual Speed	Actual Speed

What difference does the ratchet make?

Predict and test what will happen to the treasure chest with each position of the ratchet with or without wind.




Lift Stopped Fall

1: Wind 	2: No wind 	3: No wind 
My Prediction	My Prediction	My Prediction
What happened?	What happened?	What happened?

In a Spin

Build the wind-up top model page 14, step 1 and the three different spinning tops on pages 14, 15 and 16.

- Use the energy from a falling weight brick to power these spinning tops
- How long will each top spin for?

		
My Prediction	My Prediction	My Prediction
Actual Spin Time	Actual Spin Time	Actual Spin Time



Also try:

- Colored spirals on card spinners
- Gears as spinners
- Inventing your own spinning game and making a scoring system

My Magnificent Mill

Draw and label your design for capturing and using wind energy. Explain how the three best parts work.