

Tower Crane

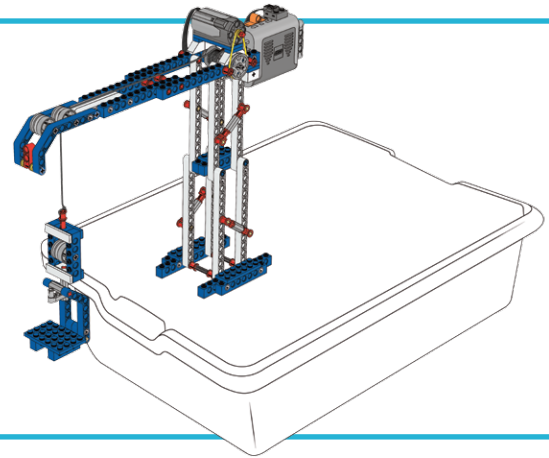
Name(s): _____

Date and Subject: _____

Build the Tower Crane and Load

(Building Instruction 16A and 16B to page 28, step 38)

- Place the Tower Crane on the lid of the blue LEGO® storage box
- Turn on the motor by pushing the battery box switch forward and let the string unwind and then let the motor wind it back up again
- Make sure all pulley wheels turn freely



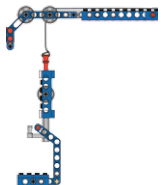
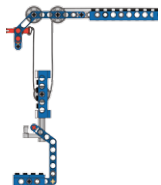
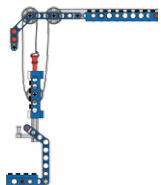
Why do cranes use pulleys?

Cranes use pulley systems because they can pull with less effort than is needed in a direct lift.

First, observe the mechanical advantage and predict with which speed pulley setup A will lift the load.

Then test your prediction. Next, follow the same procedure for pulley setups B and C.

Test several times to make sure your results are consistent.

	Mechanical advantage	My prediction	Length lifted	Lifting time	Speed
A  (page 28, step 38)					
B  (page 29, step 39)					
C  (page 30, step 40)					

Redesign needed?

Tower Cranes are often built to match specific needs. Now redesign the Tower Crane to make it the best in its class. We have highlighted some question you could explore. Choose one area that you would like to investigate.

Then design a test that will help you explore how it functions and possible additional improvements you could make to your new Tower Crane. Remember to record all your test results.

What if you wanted to pick up from one place and put down to the left or right of that place – how would you change the structure where the jib meets the tower?

What if you wanted to lift loads more quickly – how would you change the arrangement for raising the pulley?

What if you wanted to lift heavier loads – how would you change the pulley?

What if you want the crane to lift loads higher – how would you change the tower?

