

Bridge Building



Congratulations! Your team is a finalist in a bridge design competition. Your final task is to design and build a model of a bridge tower. Your challenge is to build a tower that meets the following criteria using the materials and design guidelines listed below.

Tower Criteria

The structure must

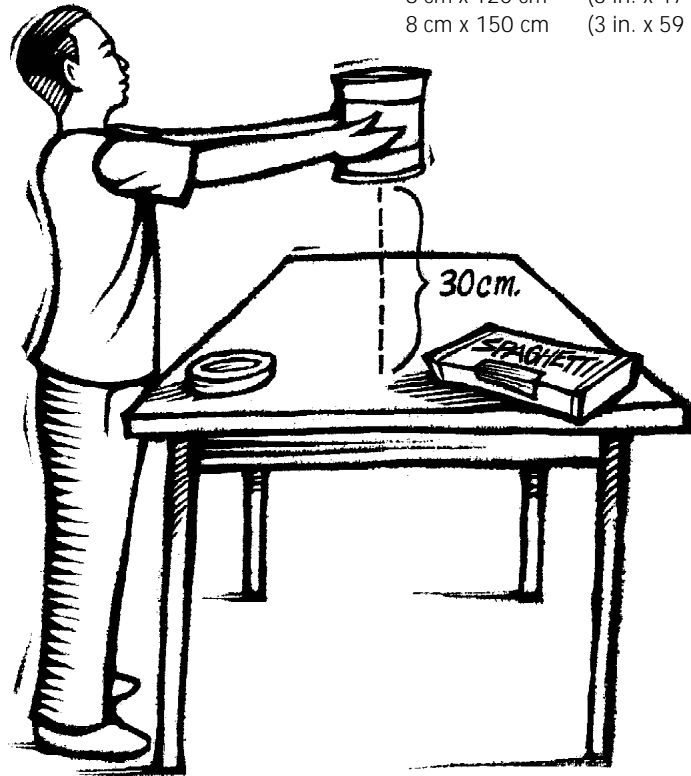
- balance the longest road possible.
- support the most weight possible.
- prevent twists and turns.

Design Guidelines

- The base of the coffee can must be 30 cm (about 1 ft) above the floor or your desktop.
- The base of the structure should be no wider than the diameter of the can.
- The spaghetti can be cut to any length.
- The spaghetti can be taped at the top and bottom only.
- The coffee can must be positioned with the open end facing up so you can add weights to it.

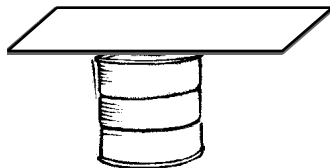
Materials for each team

- coffee can
- 75 uncooked spaghetti noodles
- 2 m (6.5 ft) masking tape
- standard set of weights (fishing sinkers work well)
- 6 strips of corrugated cardboard:
 - 8 cm x 30 cm (3 in. x 12 in.)
 - 8 cm x 50 cm (3 in. x 20 in.)
 - 8 cm x 80 cm (3 in. x 31 in.)
 - 8 cm x 100 cm (3 in. x 39 in.)
 - 8 cm x 120 cm (3 in. x 47 in.)
 - 8 cm x 150 cm (3 in. x 59 in.)



Procedure

- 1 First, look at your materials and think about how you will design your bridge to meet the challenge. Draw your design on a separate sheet of paper.
- 2 Using the spaghetti noodles and tape, build a structure that will support the coffee can. Record the number of noodles used.
- 3 After you have completed the structure, find the maximum length of cardboard road that can be balanced on top of the coffee can. Record the road length.



- 4 Next, find the maximum amount of weight the structure can support. Remove the road and slowly add weights

Number of noodles	Length of road	Number of weights	Length of road with weights

inside the can. Record the maximum weight the structure can support before collapsing. Stop adding weights when it starts to wobble.

- 5 Retest the road with the maximum amount of weight in the can and record your results. Does the length of road, that the bridge is able to carry, increase

or decrease when there is weight in the can? Explain.

- 6 On a separate sheet of paper, sketch your design and point out its strengths and weaknesses. After comparing your design with others in your class, write down two things you would do to improve your bridge.