



# TOWER-BUILDING

Discover the secrets behind some of the world's amazing feats of engineering and build your own – out of spaghetti and marshmallows!

**HAPPY  
10 YEARS OF  
PARTNERSHIP  
WITH ROLLS-  
ROYCE!**

## Suitable for all

### You will need

- Paper and pencil
- 50g spaghetti per team
- Mini marshmallows per team
- 4 large marshmallows per team (optional)

**1** Encourage your teams to plan their towers by drawing sketches first. A well-planned tower will look better and be stronger than one that isn't sketched out first. A good tip is to use a combination of triangle and square shapes, this will help them to build a tall tower that is strong too.

**2** Referring to their sketches, cut spaghetti pieces to the sizes they

need, making sure you cut shorter pieces exactly – failure to use pieces of equal length will cause your tower to twist and topple.

**3** When it comes to using the marshmallow pieces, decide when it is best to pass the spaghetti all the way through or partially through the sweet. The strength of the joints is dependent on it. To make the tower-building easier, tell your section they can use the four large marshmallow pieces for the base of the tower.

## WOGGLEBOX

### Finley says:

'This is great! The hardest thing is that you have to make sure all the pieces are the same size. And it was really hard not to eat all the marshmallows!'



**ShAre.**  
Send us photos of  
your towers. Turn  
to page 3 for  
details

Photography: Phil Sowels



# 3 OF THE STRONGEST MAN-MADE STRUCTURES!



## EIFFEL TOWER

Built in 1889, over 5,300 drawings were made of this 324-metre-high tower in Paris. Gustave Eiffel deliberately designed the legs of the tower at 54-degree angle for maximum wind resistance and to create perpendicular thrust for additional strength.

## THE GREAT PYRAMID OF GIZA

The oldest and largest of the pyramids in Egypt, this 2580 BC construct is also the oldest of the Seven Wonders of the World. Pyramids have a wide base and a narrow top, creating an extremely sturdy and rigid shape.



## THE GOLDEN GATE BRIDGE

Opened in 1937, this suspension bridge over San Francisco Bay has a span of 1,300 metres and cost \$35 million to make. Suspension bridges work by transferring the weight of the bridge deck and vehicles up through the suspender rods to the main suspension cable, which then transfers the weight to the bridge towers and anchor rods.



## TIME NEEDED

10–15 minutes

## BADGE



Rolls-Royce partners the Cub Scientist Activity Badge.

## PARTNER



Rolls-Royce®

## OUTCOMES

Your Group will think about which shapes make a strong structure and about compression and tension – how the individual parts of a structure are always pushing and pulling on each other. Introduce Scouts to three of the strongest man-made structures on Earth (see left) to spark a discussion about what makes a structure strong.

## MORE INFORMATION

Rolls-Royce partners the Cub Scientist Activity Badge to inspire young people about science, technology, engineering and maths. Fun and educational activities like this aim to take the fear out of science for Cub Leaders and support Cubs in achieving their Scientist Activity Badge. See [scouts.org.uk/rollsroyce](https://scouts.org.uk/rollsroyce).