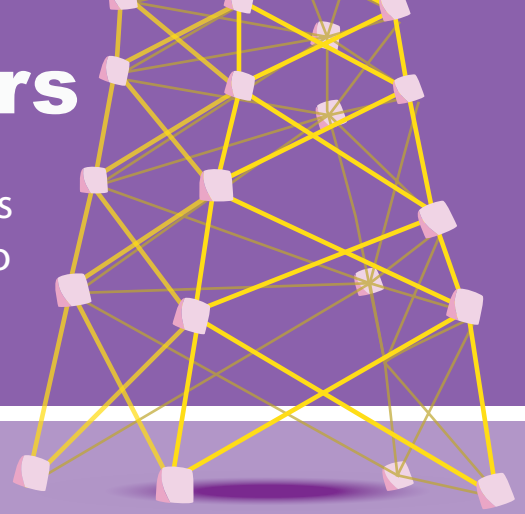


# Spaghetti Towers

**Aim:** This hands-on workshop is designed to challenge students to build the highest tower possible with limited supplies.



## Background Information

When anything is being built – a building, a bridge, a road, or a pier – the architects and engineers have to design it carefully so that it is safe and fulfils the required purpose. This can be quite a challenge!

Have a look at some of these crazy structures.



Today you are going to build a tower using just spaghetti and marshmallows. First, let's look at some famous towers you might recognise. These can give you inspiration for your design.

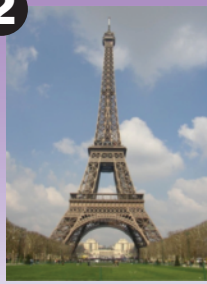
**Can you name these towers? Have a look at the clues to help you.**

1



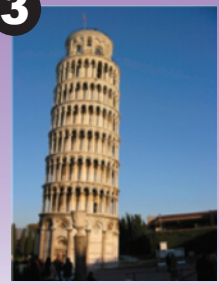
This tower is somewhere in England. It was opened to the public in 1894 and is 158 metres tall. There are lots of activities here including a circus and a dungeon.

2



This tower inspired the design for the first of our three examples. It is somewhere in France and is the tallest building in the city where it stands. It is 324 metres high.

3



This tower is in Italy. It is actually a bell tower for the cathedral. The height of the tower is 55.86m on the low side and 56.7m on the high side. The tower has sunk on one side due to unsuitable foundations.

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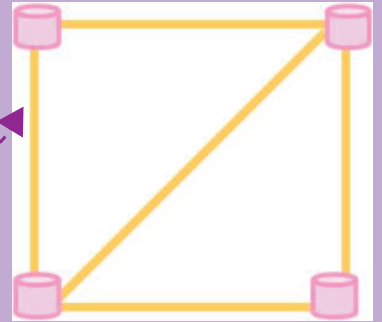
**Now let's have some fun with food and see how tall a tower you can build. See over.....**

## What to do

- 1 You will be put into a team by your teacher.
- 2 You are going to try to build the tallest tower you can. The spaghetti provides the framework and support for the tower and mini marshmallows are used to make the connectors.
- 3 First, practice. In your groups sketch, discuss and try ideas. You can break pieces of spaghetti if you want. **MAKE SURE YOU READ THE HINTS AND TIPS BELOW.**
- 4 You will then be given some more materials and set the challenge of building as high a tower as you can in a limited time.

## Hints and Tips

- 1 The more the marshmallow can grip the spaghetti, the stronger the joint. If there is a heavy load on a marshmallow, it may change shape until the joint fails so be careful!
- 2 Use shorter pieces of spaghetti or put in braces to strengthen squares and rectangles in your structure.
- 3 Where you choose to use shortened pieces of spaghetti, make sure you cut them accurately. If you don't use pieces of equal length on each side, your tower may start to twist and topple.
- 4 There will be most strain on the base of the tower – think about how you can add strength here.



## Afterwards

- 1 ? What do you like and dislike about your current design?  
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- 2 ? What was the biggest challenge you faced? How did you overcome it?  
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- 3 ? If you had an opportunity to redesign your tower, what would you change?  
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- 4 ? How similar is your design to others in the room?  
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- 5 ? What things put a limit on how tall your tower could be?  
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On a separate sheet of paper draw a diagram of your Spaghetti Tower