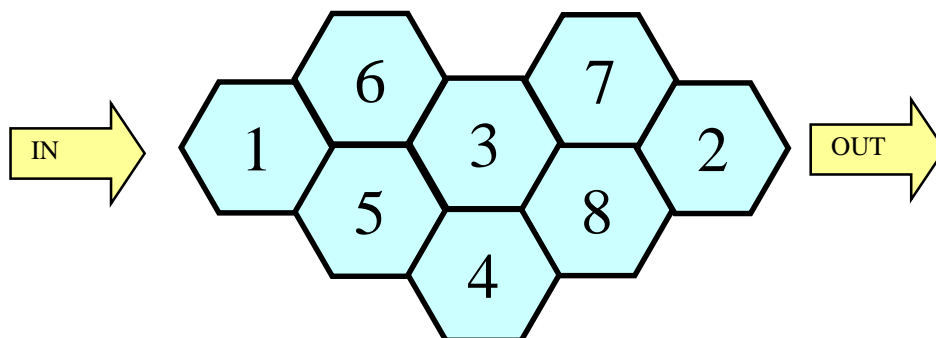




# INVESTIGATION



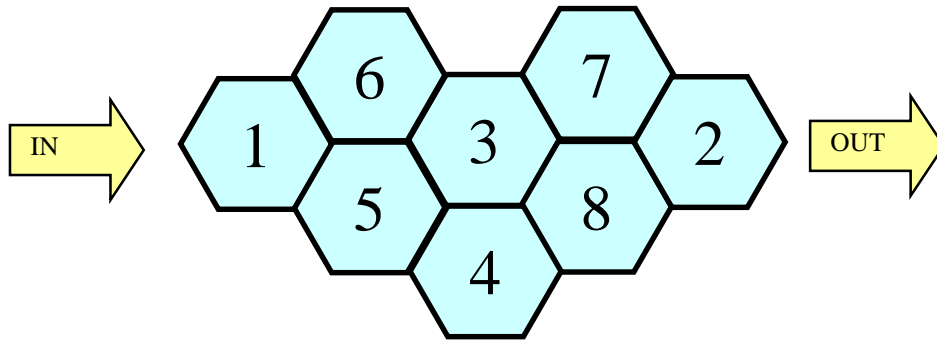
## Hexagon addition



# MathSphere

## Hexagon addition Investigation

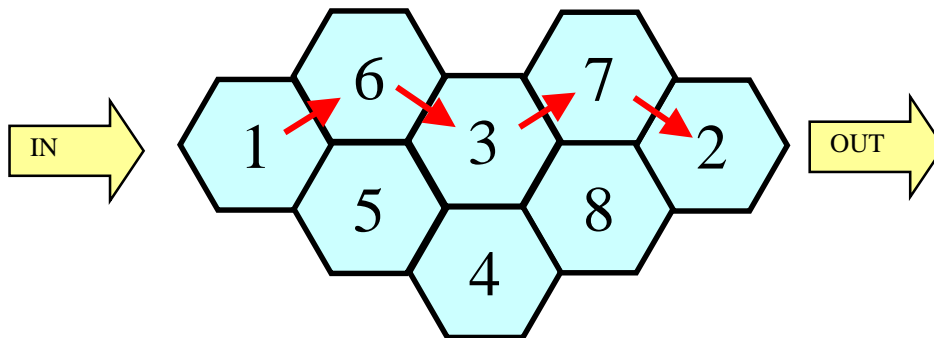
### Starter



**Find a route through the maze from the IN to the OUT without going through any hexagon twice.**

**Add up the numbers as you go.**

**What total did you get?**



**This route goes through  $1 + 6 + 3 + 7 + 2 = 19$**

**Can you find a route through which is less than 19?**

**Can you find a route through which is more than 19?**

**How many different routes can you find?**

**Which route gives you the largest total?**

## **Some Ideas**

**Can you find a route through which is less than 19?**

**Can you find a route through which is more than 19?**

**How many different routes can you find?**

**What is the smallest possible total for getting through the maze?**

**Can you go through the maze by visiting all the hexagons once?**

**Is it possible to do this in more than one way?**

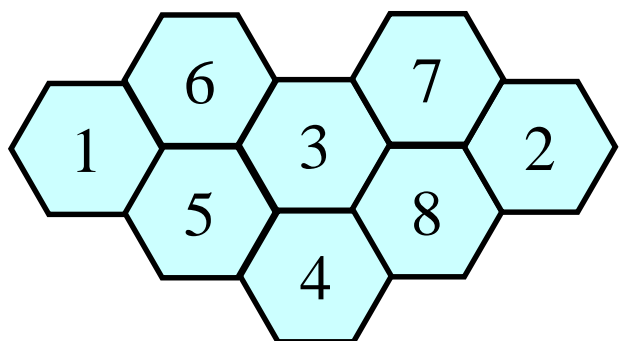
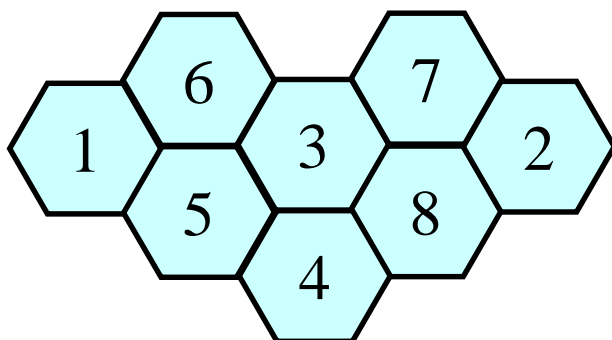
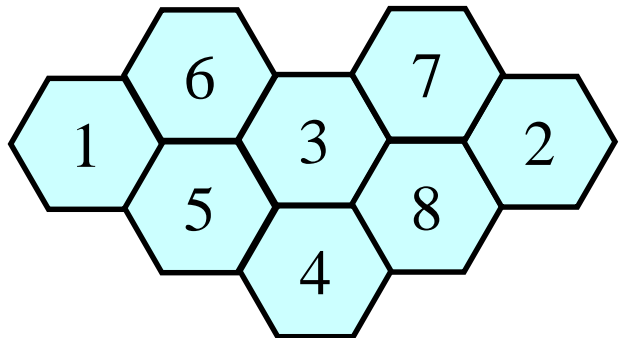
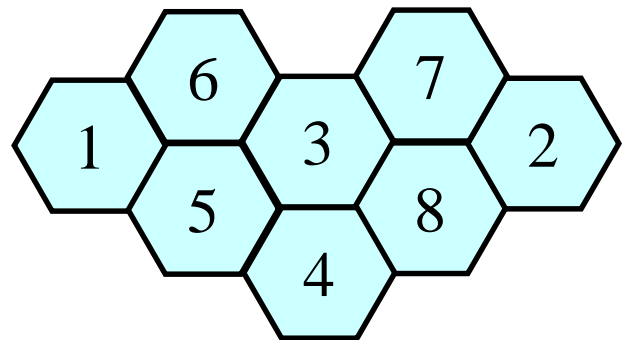
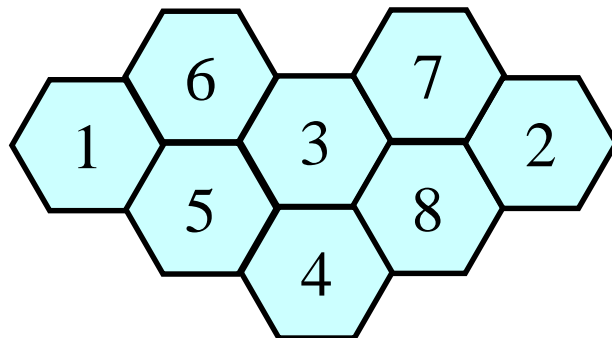
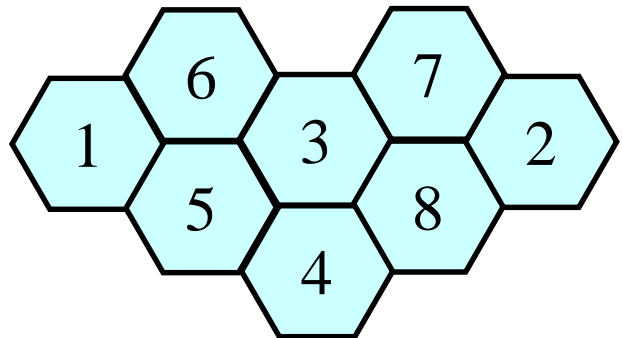
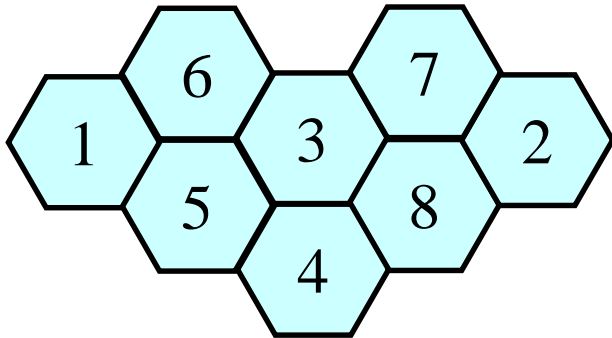
## **Record your results clearly.**

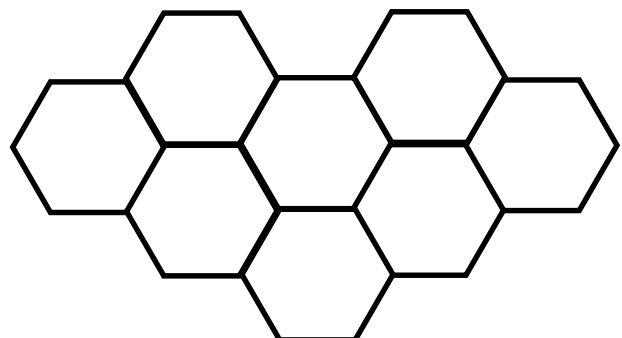
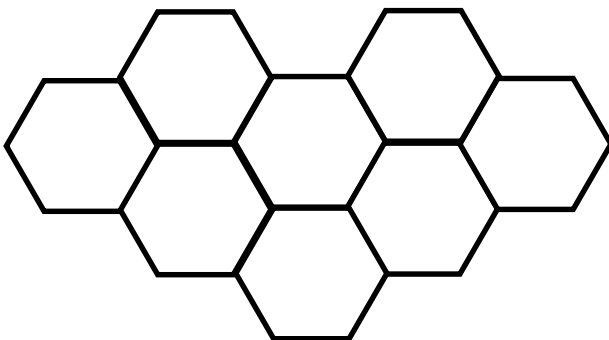
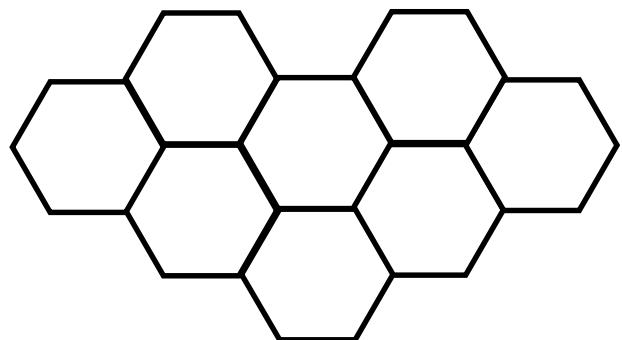
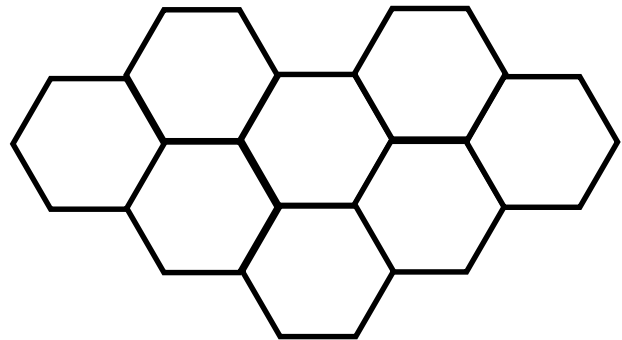
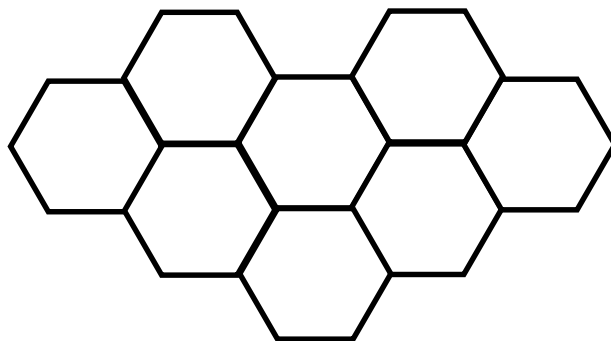
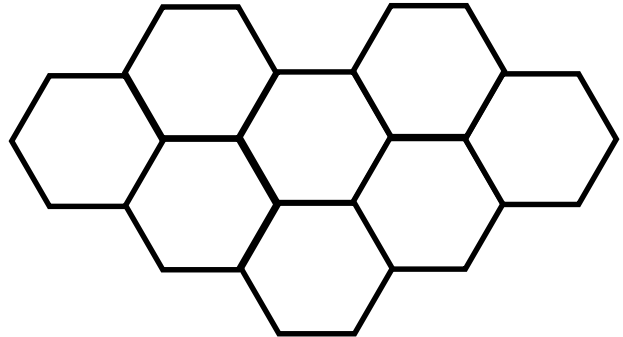
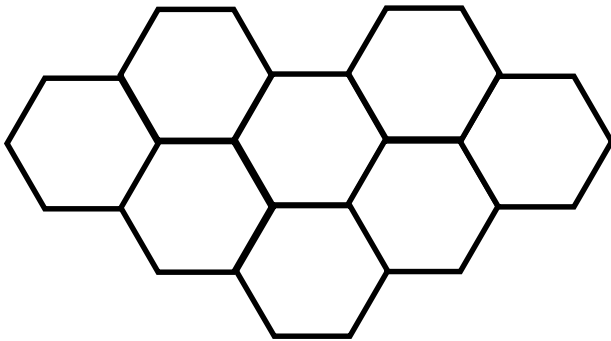
**What would happen if you changed the numbers in the maze?**

**Would the same route still give you the lowest total?**

**What would you happen if you came into the maze in a different place and left from a different place?**

**What would happen if you changed the shape of the maze by adding or subtracting hexagons?**





### **Answer guide**

**This investigation is a development of the caterpillar investigation. The shortest and longest routes can be found, but children also need to be confident enough to add several single digit numbers together, making it suitable for around year 3.**

**The initial task of finding a route through which is less than 19 would be a good way of introducing the investigation to the whole class, perhaps using an OHP copy of the pupil sheet.**

**1 - 5 - 3 - 7 - 2 making 18, being the smallest route.**

**1 - 6 - 5 - 4 - 3 - 7 - 8 - 2 making 36, being the largest route.**

**Working in a systematic way to find all possible routes should be encouraged and children should find their own ways of recording what they have done.**

**Once this has been completed there are a number of extensions which can be considered.**

**The starting point could be changed - can all hexagons still be visited? Similarly, the ending point could be changed.**

**A blank shape has been provided so that children can put their own numbers in - rather than a random selection try to suggest there is a 'theme' to their choice of numbers - all odd, all even, consecutive numbers, prime numbers etc.**

**If hexagonal paper is available children could design their own shapes and investigate the possibilities.**