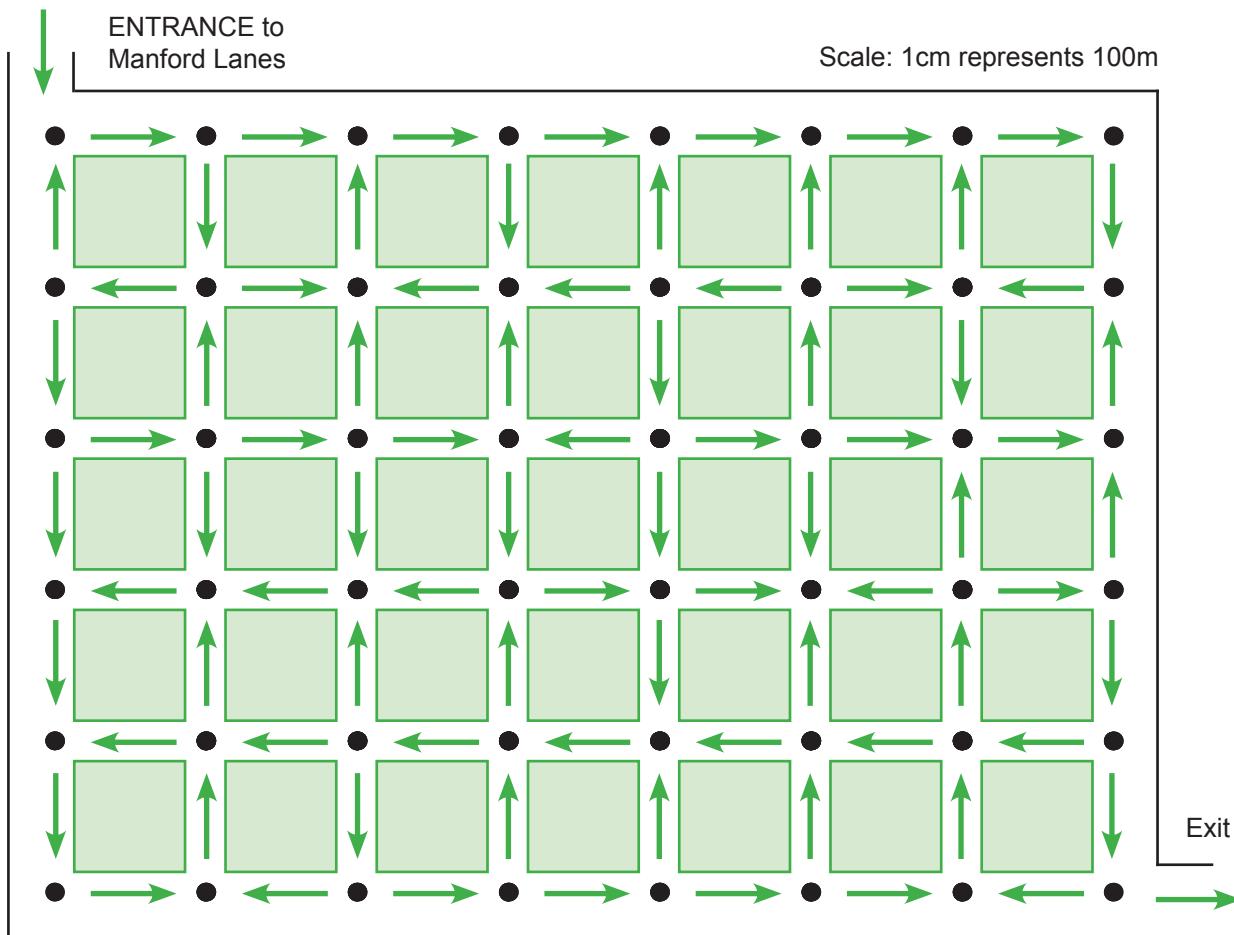


**Supplementary problem 2**

One group in your class has found its way to Manford Lanes. This is an old area on the north-east side of the city. Here the streets are too narrow for a spaceship to land.

The streets in Manford Lanes have got very crowded. It is only possible to walk along them one way.

To escape from the city, you need to find a way to get from the ENTRANCE to the EXIT.



Each street junction is marked by a cone (the dots on the map).

a To escape from The Lanes, how far do you have to walk from the cone by the entrance to the cone by the exit?

\_\_\_\_\_ kilometres

b How long will it take you to walk this distance at an average speed of 3 kilometres per hour?

\_\_\_\_\_ minutes



**Task A**

You need your street map of Manford.

**Remember: 5 miles is about 8 kilometres**

Everyone has made it to the car park where the school bus is waiting.

- 1 The whole class walking together can keep up an average speed of 2.5 miles an hour. How fast is this in kilometres per hour?
- 2 The school bus can travel in the congested streets at an average speed of 10 miles an hour. How fast is this in kilometres per hour?
- 3 Investigate the shortest safe distance by road from the Car Park to the Imperial Hotel.
- 4 How much quicker would it be to get to the Imperial Hotel by bus than by walking?

**Task B**

Two Aliens came out from each of the four spaceships at 10:00 am.

Every hour, each Alien has doubled in size and exploded into two.

Someone has been trying to predict how many Aliens there might be in a few hours time.



Complete this table for them.

Time	10:00	11:00	12:00	13:00	14:00	15:00	16:00
Number of Aliens	8 $2^3$	16 $2^4$	32				

- a How many Aliens do you think that there will be 8 hours after they first came out of their spaceships?
- b How many Aliens do you think there will be at midnight? Explain why.
- c Write a formula to show the number  $n$  of Aliens that there will be  $h$  hours after they first came out of their spaceships.