



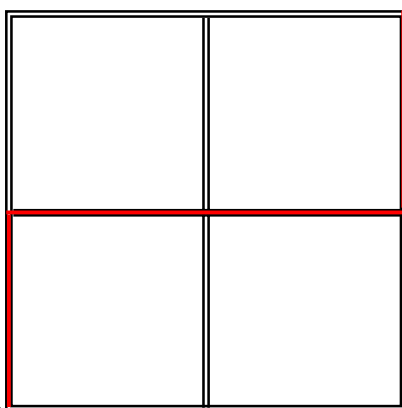
# INVESTIGATION



## Routes



Home



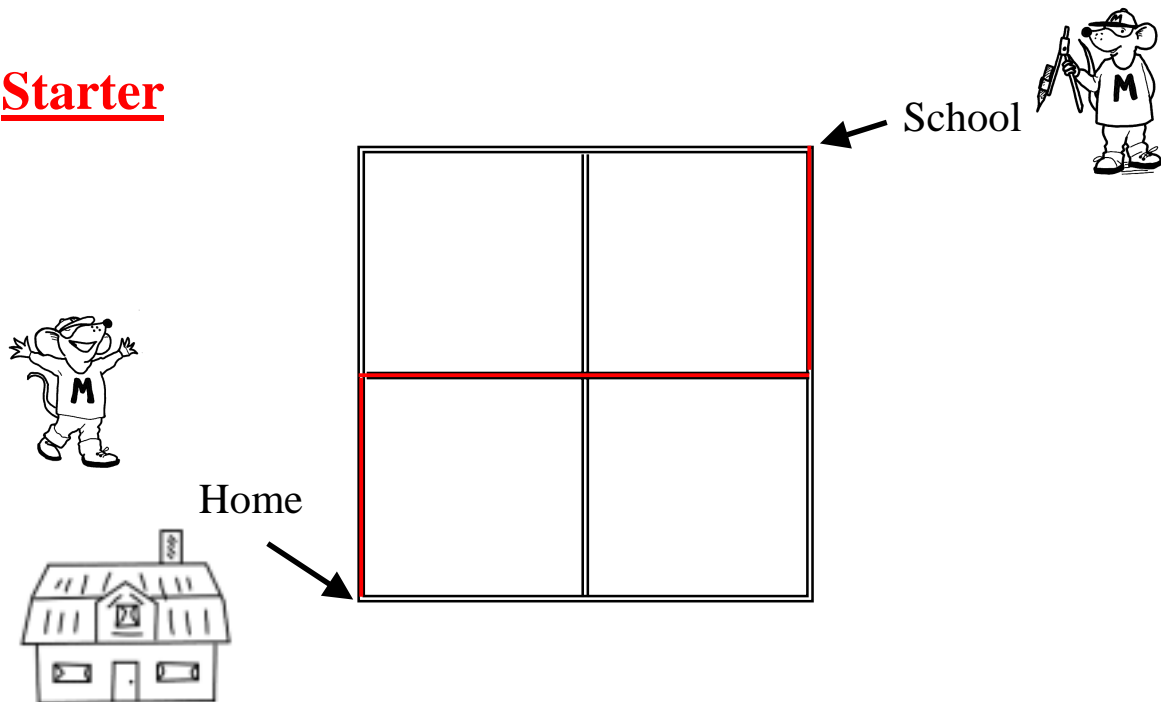
School



# MathSphere

## Routes Investigation

### Starter



Divvy likes to go to school a different way everyday.

Yesterday he went following the red track.

This was 4 moves because he went along 4 sides of the squares.

**How many other routes can you find that take 4 moves?**

Can you find any routes which take longer (without retracing your steps)?

Can you find any routes which are shorter?

## **Some Ideas**

**Work in a methodical way, recording your results carefully as you go.**

**Think about how you know when you have got all the possibilities.**

**Start by finding as many different ways of getting to school using 4 moves.**

**Which is the longest route that you can find?**

**Which length is the most common?**

**What would happen if you changed the position of home?**

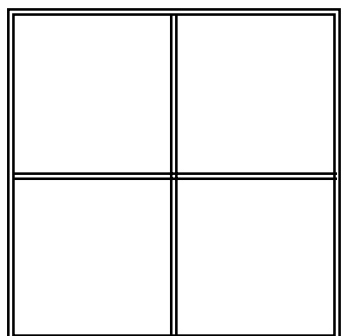
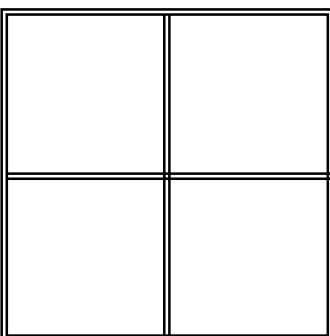
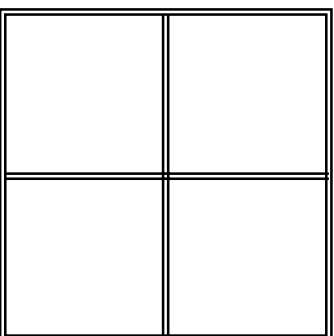
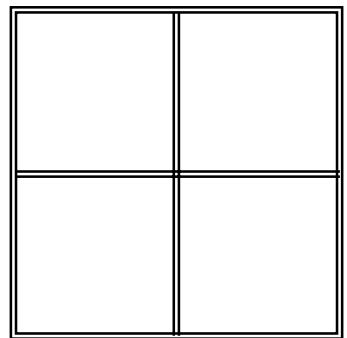
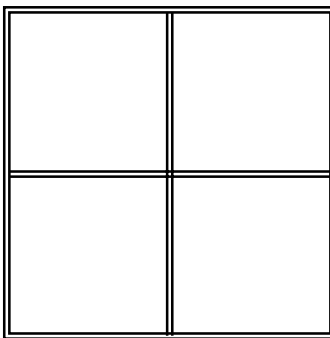
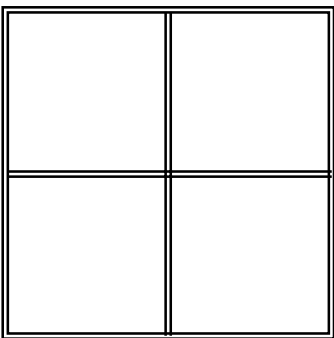
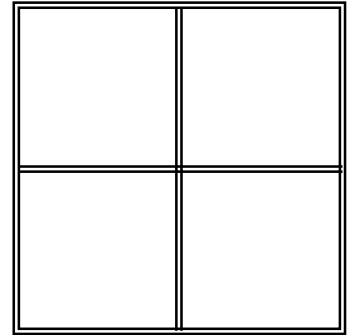
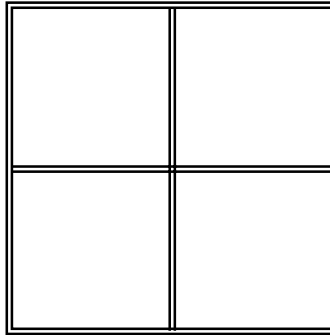
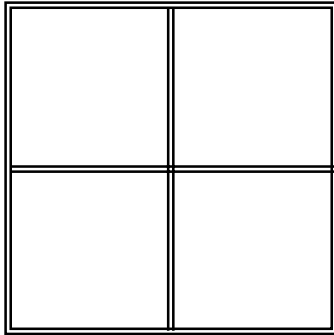
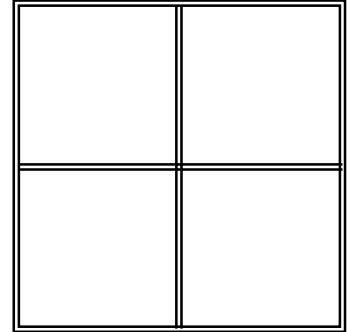
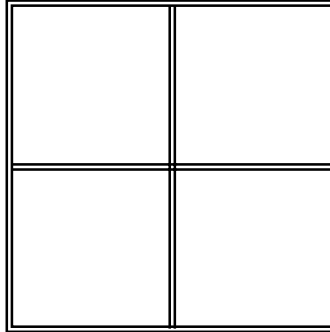
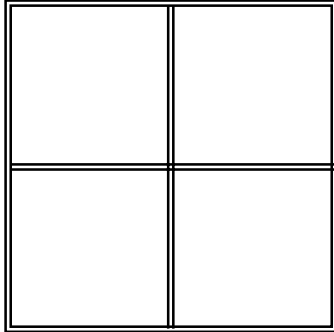
**What would happen if you changed the position of the school?**

**If you have answered all the above questions you could think about:**

**What would happen if you allowed diagonal paths across squares?**

**What would happen on a 3 x 3 square?**

**What would happen on a rectangular grid?**

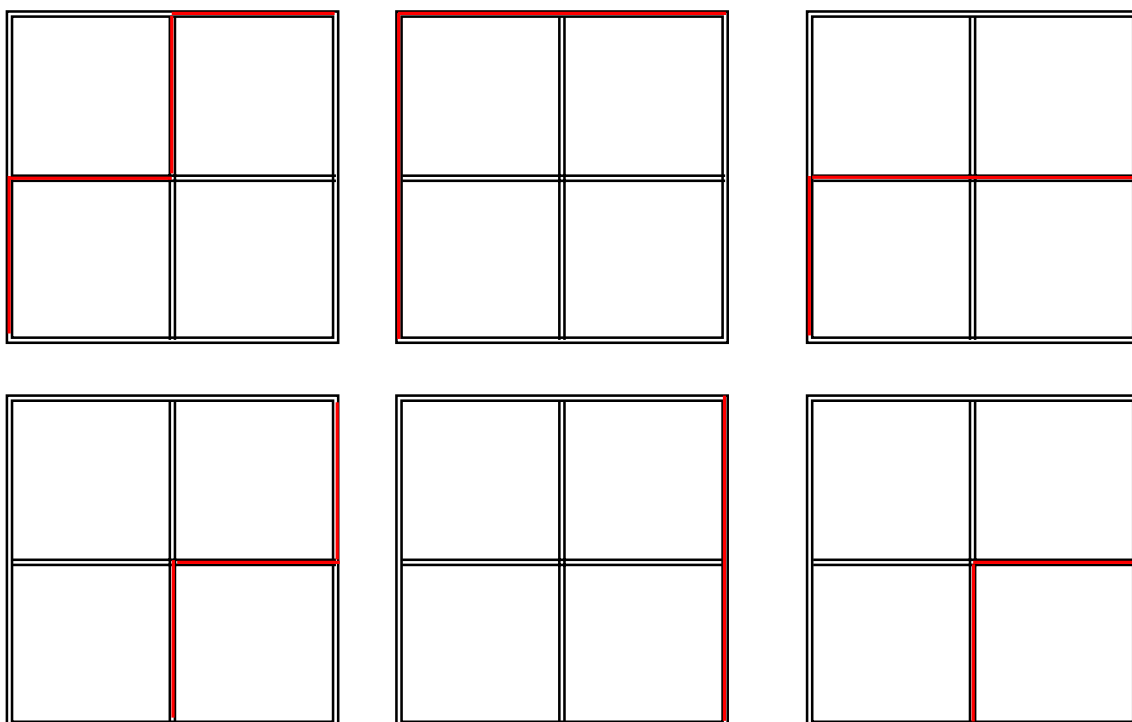


## Answer Guide

Here are some possible answers and notes for guidance.

There are several 4 move answers to this problem.

Encourage children to work in a logical way - perhaps starting with a vertical move (north) and explore all these possibilities and then explore all the possibilities for a horizontal move (east).



Extension:

Is it possible to cross each junction without going along any line twice?

If considering diagonal lines it is important to point out that the diagonal will be slightly longer than the length of a side of a square.

Larger grids could prove difficult because of the large number of possibilities - it could be a good idea to keep the size of grid to a maximum of 3 x 3.