# OUTBREAK: INFECTION DETECTION

These activities are designed for 60-minute lessons. You may need to adapt the materials for use in longer or shorter lessons.

## INTRODUCTION

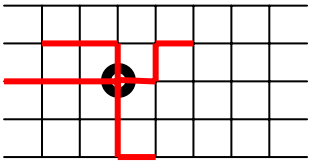
In this activity, pupils are required to locate people infected with a deadly virus. Field scouts have a number of infection detectors they can use, which provide the clues for the pupils.

This activity is mainly ICT based. It has been designed for use with pupils in an ICT suite although it could be adapted for use in a maths classroom equipped with a data projector and whiteboard. It is suggested that pupils work together in pairs or small groups to encourage appropriate levels of participation and discussion.

The activity contains 3 options offering varying degrees of challenge. Different pupil pairs or groups within a class can work at the different options. Alternatively, you may prefer to ensure each group has a mix of pupils. This will help to create appropriate conditions for peer support.

Completing an option unlocks a code which can be used in the map room to reflect the progress individuals or groups have made. **Please note that these codes are not automatically saved if the user logs out**. Remind users to make a note of any codes they receive as they progress.

**Option 1:** Pupils are presented with a map overlaid with a grid. The grid lines represent streets. Pupils are able to drag scouts on to the grid one at a time. Clues at the bottom of the screen tell them the distance of an infected person from the scout. The diagram below shows 4 possible positions for an infected person located 3 km from a scout.



Pupils can drag on ‘markers’ to indicate all possible locations of the infected person from scout A. Pupils can then drag a second or third scout onto the grid and get other clues to help them narrow down the correct location of the infected person. They are then required to enter the appropriate coordinates. This option is for pupils working at **level 4 of the National Curriculum.**

**Option 2:** Again pupils are presented with a map overlaid with a grid. The scout is in a fixed position at the centre of the grid. The locations of the infected people are given as bearings and distances. Pupils will need copies of the grid on which to draw the bearing and distance, using the scale given. Once an infected person is located, their coordinates are entered on the screen. This option is for pupils working at **level 5 of the National Curriculum.**

**Option 3:** This time two scouts are available and the clues just give a bearing to the infected person from each scout. Pupils draw the bearings on their copies of the grid and find the point of intersection. Once an infected person is located, their coordinates are entered on the screen. They are then asked to find the distance from a scout to the infected person. This option is for pupils working at **level 6 of the National Curriculum.**

## OBJECTIVES

**Option 1**
By the end of the lesson, pupils will:

- explore patterns on a grid;

- use coordinates.

**Option 2**
By the end of the lesson, pupils will:
- use a protractor to draw bearings;
- work to a given scale.

**Option 3**
By the end of the lesson, pupils will:
- use a protractor to draw bearings;
- work to a given scale;
- use Pythagoras' Theorem.

## RESOURCES

**Option 2 and Option 3 only**
- A copy of the relevant grid for each pupil
- Protractors, preferably $360^{o}$
- Rulers
- Sharp pencils
- Whiteboard or projector and screen
- Polar graph paper (a single sheet to show as an example in the plenary session)

## DELIVERING THE CASE STUDY

- It is suggested that pupils work in pairs or small groups at a computer if possible for Option 1.
- The activity could be delivered by whiteboard for Option 2 and Option 3 as most of the work is done by pupils on their personal copies of the grid. If they do work in pairs or small groups at a computer it is important that they each do their own drawings.
- Different pairs or small groups of pupils within a class could work on different options.
- If time allows, pupils working on Option 1 requiring more practice in drawing bearings could do Option 2 or Option 3.