

Introduction

Operational research - KS4 students

The activities in this unit of work are produced by the Operational Research Society.

Operational Research (O.R.) is a branch of mathematics which is all about using algorithms to improve decision making. Many companies have O.R. departments to help them analyse data and make decisions which will impact on profits and efficiency. This area of mathematics is called Decision maths and often does not appear on the curriculum until A Level Maths, although some elements can be introduced earlier as individual problems.

The link below shows a video to explain more about OR

<https://youtu.be/0oMVVx81kCs>

The tasks in this unit are:

Bin packing problems – the bin packing algorithms are used to find the optimum solution where items are packed into fixed size containers. In this problem you are asked to arrange groups of different sizes into a theatre.

SwedeBuild – this task asks you to find the optimum solution for a company who are building chairs and tables with limited resources. What combination of tables and chairs will give the company the most profit? The original problem is accessible to all students, the shared solution looks at an algebraic approach which is more complex.

Theme park – This problem is based on the travelling salesperson problem. You need to visit all of the attractions in a theme park by finding the most efficient route between them. You will be introduced to the nearest neighbour algorithm in this task.

Courier problem – As with the theme park problem above, you need to deliver parcels to several different towns, the task is to find the shortest route.