



OR in Education Workshop Outlines

Our workshops are designed to be fun, interactive and engaging to showcase the usefulness of maths and operational research (OR) in the real world. They can be downloaded free of charge from our website and the TES website.

How long do the workshops last?

Most workshops last an hour to an hour and a half depending on the ability and age of the students. We recommend booking at least an hour and 15 minutes for workshops with the exception of the Theme Park Trip workshop which requires up to two hours. If students are a low ability group we have supporting material to aid them; however please be aware that additional time may be required to incorporate this.

What do the workshop packs contain?

The workshops are designed to be very easy to use. The downloadable packs contain the PowerPoint, teacher notes, student worksheets and answer sheets, along with any supplementary documents needed. If you are running the workshop for us, we will post a box of materials containing the student worksheets and any other materials needed, such as Lego.

Workshop 1 – Lego Furniture Factory: Can you help furniture company SWEDEBUILD design a new furniture range and maximise their profit? Use Lego to model the furniture and work out which combination of tables and chairs is the most profitable, and then see if you can use algebra to reach the same answer. We recommend running this with classes in Year 9 or above.

Workshop 2 – Climbing the Careers Ladder: Play our very own version of snakes and ladders! It showcases maths-related careers profiles: maybe you'll become a mathematic comedian and move forward two spaces, or maybe you'll get caught up in traffic and move back one space. Playing the board game is used as an introduction to flow charts and algorithms. This workshop uses less traditional maths and is suitable for Year 6 upwards.

Workshop 3 – Theatre Booking: You're in charge of organising bookings and seating for a theatre company. You have to decide who sits where, if anyone sits by themselves, and what to do with people who book in a group. What's the most efficient way to seat people? How do you take into account audience preferences? Did you know that there are bin-packing algorithms that can help? We recommend running this with classes in Year 8 or above.

Workshop 4 – Paper Cups: A competitive challenge - teams of students are timed building paper cups, and must organise the task into subtasks - such as folding or designing. This leads onto thinking about efficiency and process improvement. Students have a chance to make changes to their process before repeating the exercise, then compare the means, standard



deviations and variances to check whether they were successful or not. This can be adapted with or without using statistics – we recommend running this with classes in Year 8 or above without statistics, and Year 10 and above with the statistics.

Workshop 5 – Cooking Bolognese: Have you got time to cook, wash up and then eat before meeting your friends at the cinema? What time do you need to start cooking, and how long will each step take? This workshop uses critical path analysis to solve problems. We recommend running this with classes in year 10 and above.

Workshop 6 – Theme Park Trip: You're organising a school trip for your friends at school. What time should the coach leave? Which ride should you go on first? See if you can sort out all the logistics so you get to go on every ride! This workshop covers algorithms, the travelling salesperson problem and Hamiltonian cycles. We recommend running this with classes in Year 10 or above. This workshop can take up to two hours to run.

Workshop 7 – Sports Matching: You're the sports captain of your school and you've got to allocate students to different teams. They all have their favourite sports and some of them are very good at certain sports. Can you allocate them in the best way to ensure your school wins the sports day? This workshop focuses on matching algorithms, we recommend running this with classes in Year 10 and above.