



## **Problem Solving Challenge 2024**

### **What is it?**

SATRO's Annual Problem Solving Challenge for Secondary Schools in Surrey and the surrounding areas. We have teams from Hampshire, Berkshire and Kent who regularly take part. We think the event has been taking place for well over 30 years!

### **Where does it take place?**

There will be FIVE heats held across Surrey in Camberley, Carshalton, Guildford, Redhill and Woking. Please select your nearest venue and a second option in case we are oversubscribed.

### **When?**

The heats will take place from 25<sup>th</sup> January to the 5<sup>th</sup> March with the Final in the 3<sup>rd</sup> week of March. See the booking form for details.

### **What time?**

Each heat starts at 4.15pm so please aim to arrive by 3.45pm. The competition lasts 90 minutes and the teams need to hand in their design sheet in the first 30 minutes. The design sheet is marked by the judges so failure to hand it in on time will result in lost points. The judging may take 30 minutes so each heat should finish by 6.30pm. The Final takes place at 5.00pm to allow for increased travel time for some schools.

### **The teams**

Schools can enter a maximum of six students in each key stage (3,4 & 5). All key stage teams have the same problem to solve. A school can enter a maximum of THREE teams (only one from each key stage).

### **How do the schools pick the teams?**

Entirely up to the schools. You could have an internal competition, choose G & T students, bring members of a STEM club, reward students for effort, ask for volunteers etc

### **Can school staff assist the teams?**

No. School staff should not communicate with their team at all during the 90 minutes or during the judging time. It is the students challenge!  
ANY BREACH COULD RESULT IN DISQUALIFICATION.

**What is the problem?**

It's a secret! The teams are given an unseen challenge and materials to use at the heat. There will be a set of rules to follow.

**How do we keep it a secret for subsequent heats?**

We ask that schools taking part do not share the task with anyone (verbally or visually) until the final heat is completed. You are in competition with all of the schools so don't give them an advantage!

**What materials do the students use?**

Some could be found in an office such as paper, card, paper clips plus items like cotton reels and egg boxes. The teams will have 10 minutes to check if there is anything missing from their materials pack and notify the judges who have spares.

**Do the students need to bring any equipment?**

We suggest they bring basic equipment such as a pencil, pen, ruler, rubber, pencil sharpener, scissors.

**Are there any refreshments?**

We ask the host schools to supply water, squash, tea, coffee and biscuits. We suggest that students bring additional food/drink due to the late finish.

**Is there an area for teachers and other school staff?**

There will be space at each event for staff to sit, relax or do marking/planning if they like. Schools usually supply a visitor Wi-Fi code should you need it.

**Can parents attend?**

Unfortunately not. As space is limited at all our venues.

**Can teachers/school staff take photos?**

We ask all schools to complete a photo consent form. Inevitably we will have some students who do not have consent. Therefore we ask that you only take photos of your own school students. Please do not share any photos taken at your heat until Heat 5 has taken place to keep the problem secret.

**How are the teams judged?**

We have a team of volunteer judges from the STEM industry who are there to answer any questions, ensure teams comply with the rules and judge each entry. The solution could be judged on time taken, amount of items moved, accuracy or anything else that we might think of!

### **Can the teams test before judging?**

We would definitely encourage testing and improving your solution before the 90 minutes has elapsed.

### **Is the event Sustainable?**

Last year was the first year that our problem was linked to a UN Sustainability Goal. Most of the materials we used in 2023 were found in the SATRO offices so a minimum amount needed to be purchased. Teams were rewarded for using less materials by gaining extra points and any unused or reusable materials were used at a subsequent heat or at the Grand Final. Some materials will be retained for use the following year. We would encourage schools to participate in their nearest heat and keep vehicles travelling to the venues to a minimum.

### **How do you qualify for the Final?**

The top team in each Key Stage at each heat qualifies. In addition the next best five scoring teams over all the heats qualify. So in total TEN teams per Key Stage qualify.

### **Can we substitute students in the final?**

If a heat winning student is unavailable for the final another student can take their place. However, we would not expect a whole team to change!

### **What is the problem solving challenge at the Final?**

It will not be the same as the heat although it may be linked in some way!

### **What are the benefits for the students?**

The teams are challenged to solve a problem in a given time period using the minimum of resources to be more sustainable. Just like in Industry!

The students will develop their essential skills such as problem solving, creativity and teamwork as per the SkillsBuilder framework. <https://www.skillsbuilder.org/universal-framework>

### **Some quotes from our previous challenges:**

#### **A Student Quote when asked, What have you learnt?**

*“How to work as a team to build each other’s confidence, to create a structure that will suit what we have been asked to create and to manoeuvre quickly as a team to complete the task in time.”*

**Another student said:** *“It required the team to think fast and come up with innovative ideas to solve the problem. This was an enjoyable competition, because you had to think creatively and work together to solve the challenges you faced ... It was a good learning experience.”*

**And another student said:** *“Tensions were high, especially as we neared the time limit, but I know that we are all very pleased with the result, and would love to have another go!”*

**A teacher said:** *“All teams showed excellent communication and perseverance throughout the challenge”*

## **Gatsby Benchmarks**

### **4. Linking curriculum learning to careers**

The problems solved provide a link between STEM subjects and future careers such as Engineering.

### **5. Encounters with employers and employees**

Many of our volunteers/judges are from the STEM Industry. Air Products continue to sponsor our challenges and will be supplying many of the judges.

### **Any further questions?**

If you need more information please contact Carl Webb.

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