



## Engineering

Engineering is about solving problems: about designing processes and making products that can make a real difference to individuals and society. Engineers require a strong academic knowledge, but engineering is more than just mathematics or science. It's the ability to analyse a problem and find a solution in a practical and cost-effective way.

The task for this year's Gonville & Caius Engineering Challenge for Year 12 students is to **devise a strategy for the UK's Green Homes Grant**. In 2020, the UK government introduced a grant for homeowners which would contribute £5000 to cover 2/3 of the cost of home improvements to increase energy efficiency. In March 2021 the government withdrew the scheme because of very disappointing take-up.

Your task is to decide how the UK should be increasing energy efficiency of homes. Your strategy is entirely up to you and you can propose anything. There are numerous issues you could consider which include:

- How much energy is used in heating homes within the UK?
- What is the carbon footprint of this energy?
- What is the cost of this energy?
- Does the wastage of energy through poor insulation matter?
- How much of the heating energy could feasibly be saved with efficient building insulation?
- What is the cost of such insulation?
- Should homeowners be encouraged to follow an environmentally useful policy?
- How can individuals be encouraged to follow a preferred approach?
- What are the implications of planning regulations?
- Should old buildings be knocked down and rebuilt with modern insulation?
- What is the carbon footprint of rebuilding houses?
- Cost *vs* benefit.

The policy you come up with is entirely up to you. **Base your policy on what you think an ideal system would look like.** We need a sustainable approach that can reliably heat houses in the UK whilst keeping within the government target of zero CO<sub>2</sub> emissions by 2050.

**Your Explore entry should include two parts:**

- (1) The developed policy as a high-level presentation to a government minister. This could be a text document or a PowerPoint presentation. It should succinctly convey the important aspects
- (2) Explanatory notes detailing the decisions you have made and crucially why you made them. This can be as long as you wish and can contain calculations to justify your thinking if appropriate.