KEVICC Cooperative Learning Project

Key Stage 3 MATHS

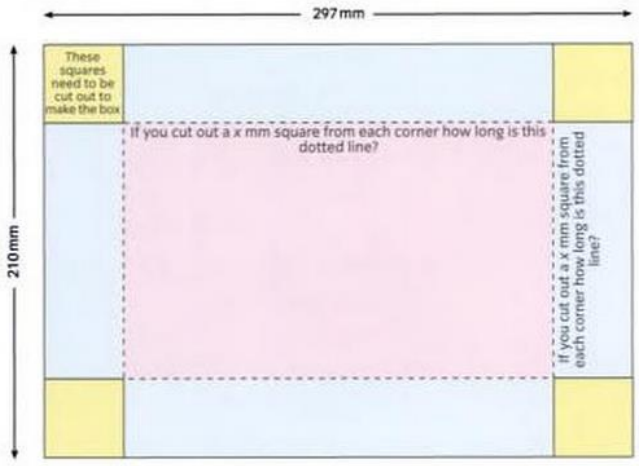
Our Cooperative Learning Projects help you to become rounded, balanced learners. Growing your independence and self-management, our projects also reflect our College cooperative ethos. Each project will focus on one or more of our cooperative values: Democracy, Equity, Self-responsibility, Self-help, Equality and Solidarity.

Project Title

Make a Big Box

Project Brief

A packaging manufacturer has been given the brief to make the largest volume open-top box they can from a single sheet of a4 card (297mm x 210mm). The manufacturer needs to know how to cut and fold the card to do this.
You decide to help. You realise that the box will need to be made like this:



Some things to consider:

- If you take an xmm square from each corner to allow the sides to be folded up to make the box, how long will the sides of the box be?
- How tall will the box be?
- Can you use a spreadsheet to calculate the volume of the box?
- To find the largest volume box that can be made from this piece of card, the manufacturer needs to try different 'What if x is …?' questions. Can you put the value of x into a cell so that the model will automatically work out the volume of the box?
- Can you work out a strategy you can use with your model to find the largest volume?
- What are the dimensions of this box?

Once you have solved this basic version of the problem, consider taking it further:

- Can you plot a graph of x values against volume?
- What is the equation of this curve?
- Can you ask someone (e.g. sixth former, teachers) how to find the maximum of a curve?
- What if the paper was a5, a3, a2, a1 rather than a4?

Learning Skill(s) developed

Problem solving, spatial awareness, spreadsheets, explaining mathematics

Cooperative Value(s) developed

Self-help, self-responsibility, solidarity.

Final project format

This could be presented in a number of ways. It could be a poster, a booklet, a video explaining your work or you could produce a website detailing your steps and progress.

Teacher feedback

Effort scale	Achieved
Secure You have demonstrated a good level of independence in tackling this difficult task! Your skills development has been positive and you have learnt how maths can be applied. You have seen how spreadsheets can support mathematics and presented a solution to the initial problem. Your final project provides an insight to the work you have done.	
Thorough You have taken on a difficult task and had a lot of success in tackling it! Your skills development has been good and you have a strong appreciation for how maths can be applied. You have developed your spreadsheet skills and have taken this task and considered how it can be extended. Your final project is clear and presents your results accordingly.	
Outstanding The hard work has paid off! You have used great strategies to succeed in this task. Your skills development has been outstanding and you have used applied your mathematics effectively. You are proficient with spreadsheets and have managed to extend the task beyond its simple form. Your final project is easy to follow and details your progress at each step.	

What was great about this project:

What would have made your project even better: