

The suite of Technology Subjects

Student Challenges - 25th May



Applied Technology



Engineering



Graphics



Wood Technology



Applied Technology Challenges

CHALLENGE 13



The documentary 'The Last Dance' has just been released in full on Netflix. It boasts an impressive amount of statistics about players and their game. In recent years, advances in *wearable technology* have improved the ways teams gather statistics about players.

1. Choose **one** wearable technology used in sport.
2. Research how this technology works.
3. Suggest **two** other applications of wearable technologies.

Create a presentation or poster on your findings.

Links which might help in completing this challenge:

<https://www.youtube.com/watch?v=g6S3gRX7ssE>

https://www.youtube.com/watch?v=qObSFfdfe7l&feature=emb_lo
[go](#)

CHALLENGE 14



Designers and engineers often dismantle a product to find out more about how it was made. This process helps people to find out more about the materials used, how components work and how parts are designed and assembled.

1. Choose an old household item you can dismantle.
Please ensure that it is broken or no longer in use.
2. Sketch the main parts of your chosen product which you have dismantled.
3. Make notes on your sketch to explain the parts of the item and details of how to assemble/disassemble the item.

Links which might help in completing this challenge:

<https://www.youtube.com/watch?v=-odpPU6ISAE>

<https://vimeo.com/9075206>



Engineering Challenges

CHALLENGE 13



Internal combustion engines are the most common form of heat engines as they are used in vehicles, boats, ships, aeroplanes and trains. The fuel is ignited in order to drive these engines and the fuel/air mixture is emitted through the exhaust.

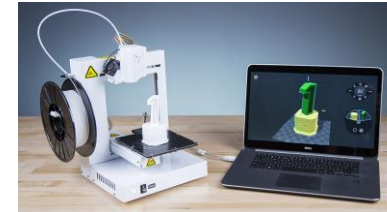
Research how a 4-stroke engine operates with a focus on each individual stroke. **Design** a poster displaying a 2D image of the engine and clearly **explain** the operation of the 4-stroke process.

Links which might help in completing this challenge:

Click on this [link](#) to view a 3-minute video on the operation of a 4-stroke engine.

To further your learning check out this [video](#) to improve your knowledge of 2-stroke engines.

CHALLENGE 14



New technological innovations have enhanced work processes, design, proto-typing, production and testing in the Engineering industry. Examples include the adoption of 3D printing, laser cutting, Computer-Aided Design (CAD), Computer-Aided Manufacturing (CAM), etc.

Explore the revolution of 3D printing in the construction industry and **develop** a 1-minute video which creatively promotes the advances being made by 3D printing over traditional manufacturing processes.

Links which might help in completing this challenge:

Check out this [3-minute video](#) "What is 3D printing and how does it work?"

Follow this [link](#) to see how 3D printing could be used to create houses in the community .



Graphics Challenges

CHALLENGE 13



Choose an item or object that you interact with or use everyday.

Create a sketch of this object paying attention to its proportions.

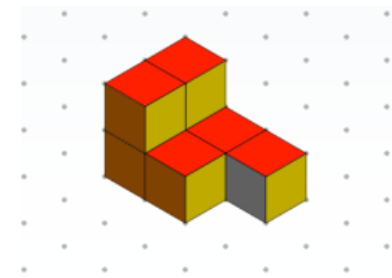
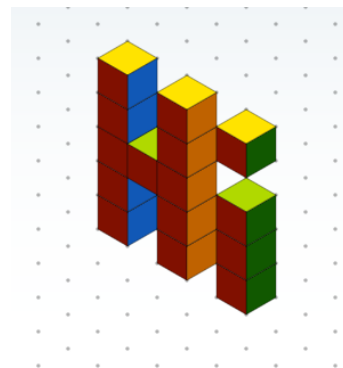
Include at least three main dimensions.

Apply a rendering technique to enhance your sketch.

Here is a link which might help with completing this challenge:

The link [here](#) shows some sketching and rendering techniques.

CHALLENGE 14



Use the website <https://www.nctm.org/Classroom-Resources/Illuminations/Interactives/Isometric-Drawing-Tool/> to **create** a block model of your own initials or any other suitable model.

Investigate its plan and elevation using the inspect tool.

Add colour to highlight the different surfaces on the object.

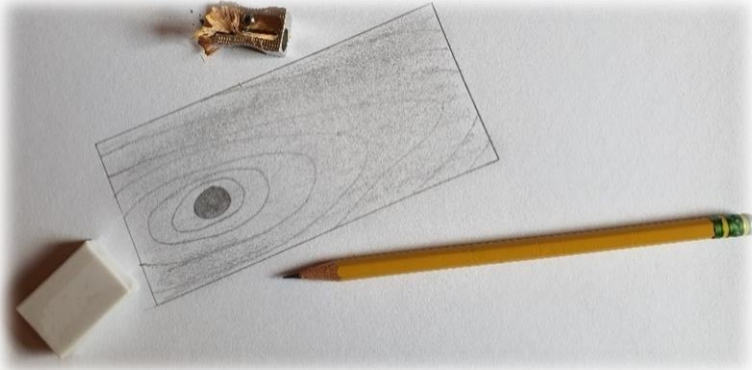
Here is a link showing some examples that may help with this challenge:

The link [here](#) shows a basic introduction to the software.



Wood Technology Challenges

CHALLENGE 13



Sketching and Rendering techniques

Freehand sketching is a great way to communicate design ideas for our projects. Sketching wood grain detail and rendering really helps to bring our design ideas to life on paper.

Use the following video tutorials to improve your sketching and rendering techniques when presenting your project designs in Wood Technology.

Links which might help in completing this challenge:

Watch this tutorial to help you with [grain pattern](#).

This tutorial focuses on [rendering](#) your woodgrain sketches.

CHALLENGE 14



Design Challenge

When designing and working with wood we generally start with freehand sketches or drawings to develop our design ideas. Some of these ideas have complex shapes or curves which need to be transferred to the wood to enable us to make the items.

Design a wooden glider that will fly for more than **five seconds**. Make a cardboard prototype of your design.

Use the rendering skills learned in the previous challenge to add woodgrain detail to your drawings and prototype.

Here is a link which might help in completing this challenge:

Watch this [video](#) to help you with transferring your designs from paper to your cardboard prototype.

Technologies teachers ...

These activities are designed and collated for teachers who may have to engage with remote teaching. These activities only offer, as a suggestion, some possible tasks which could be completed by students.

Teachers knowledge of their own students' context should inform their decision around which activities would best engage their students.

We would like to showcase student challenge responses each Friday on our JCT4 twitter page.

If you would like any of your student's responses featured, please send images of this work to the following JCT4 email: michael.lynch@jct.ie



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