



Design and Make

5th Class

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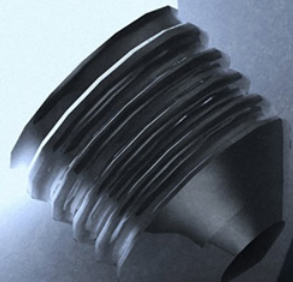


Hi everybody!

To celebrate Engineers Week – we have put together a few Design and Make ideas for you all to experiment with at home. Use the Engineers Journal provided to reflect, analyse, evaluate and problem solve like a true Engineer!

Good luck!

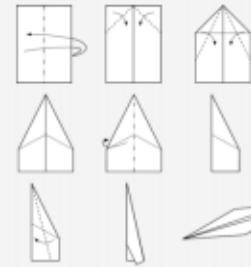
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ENGINEER A PLANE

What you will need:

- An A4 sheet of paper
- Measuring tape



How can you do this:

There can be planes of various shapes made by folding the paper in different ways. Try and design a few shapes and see which flies the furthest. If you are having trouble, there are plenty of videos and instruction on the internet to help you.

It's a balancing act! As with real airplanes there are 4 main forces, called aerodynamic forces, that enable a paper plane to stay in the air:

Force	Description
Thrust	when you throw the plan forward
Lift	is a force that acts on the wings and helps the plane to move up. Big wings increase lift
Gravity	is the force that pulls the plane down. The right materials can create a lighter aircraft that stays up longer.
Drag (caused by the tail)	is the opposite of thrust and it makes the plane slow down

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Cardboard Chair

The brief

Construct a chair that you can sit on using only cardboard. No glue, tape or other fixing materials allowed.

The method

1. Write down or sketch some ideas as to how you will construct the chair.
2. When you are planning, think about using cones, interlocking sheets, spirals, tubes – or even using strips of card like sewing thread.
3. Use the materials to create a chair made from cardboard.
4. If your first design doesn't work, evaluate what went wrong and try again.

Top tip

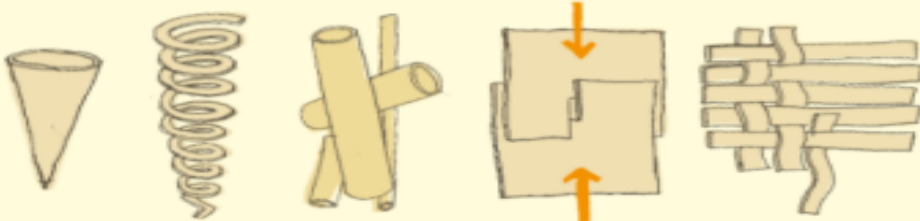
Think about structure.

Materials

- Cardboard
- Cutting equipment (with adult supervision)
- Rulers
- Pencils



Examples of different structures:



Water Crisis Challenge



Materials

Popsicle Sticks	Cups	Tape & elastic band
Newspaper	Scissors	Water/ weight

TOP TIP - like real engineers, prototypes must be economical and sustainable, using as little materials as possible and designs should hold the weight of water.

Activity Content

• Rectangular Snip

A small village in Sub Saharan Africa has no access to running water. How do the villagers drink a glass of water when they are thirsty? How do they shower? How do they clean their clothes? Currently a high percentage of village women and children must walk 15 km to a well and fill up old cartons with water. Why is this a problem? (Discuss)

The Task

The Irish Government has assigned your teams a task to create a water tower that can hold water, which will free up the villagers time, increase standard of living and children can go to school!

Straw Rockets



[Watch the video tutorial!](#)

<https://www.wikihow.com/Ma-ke-a-Paper-Rocket>

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Engineers Journal



Step 1: Plan and design

Today my problem is?

What problem do I have to solve?

What questions do I have about my problem?

What are some solutions?

What materials do I need?

Step 2: Draw a detailed diagram

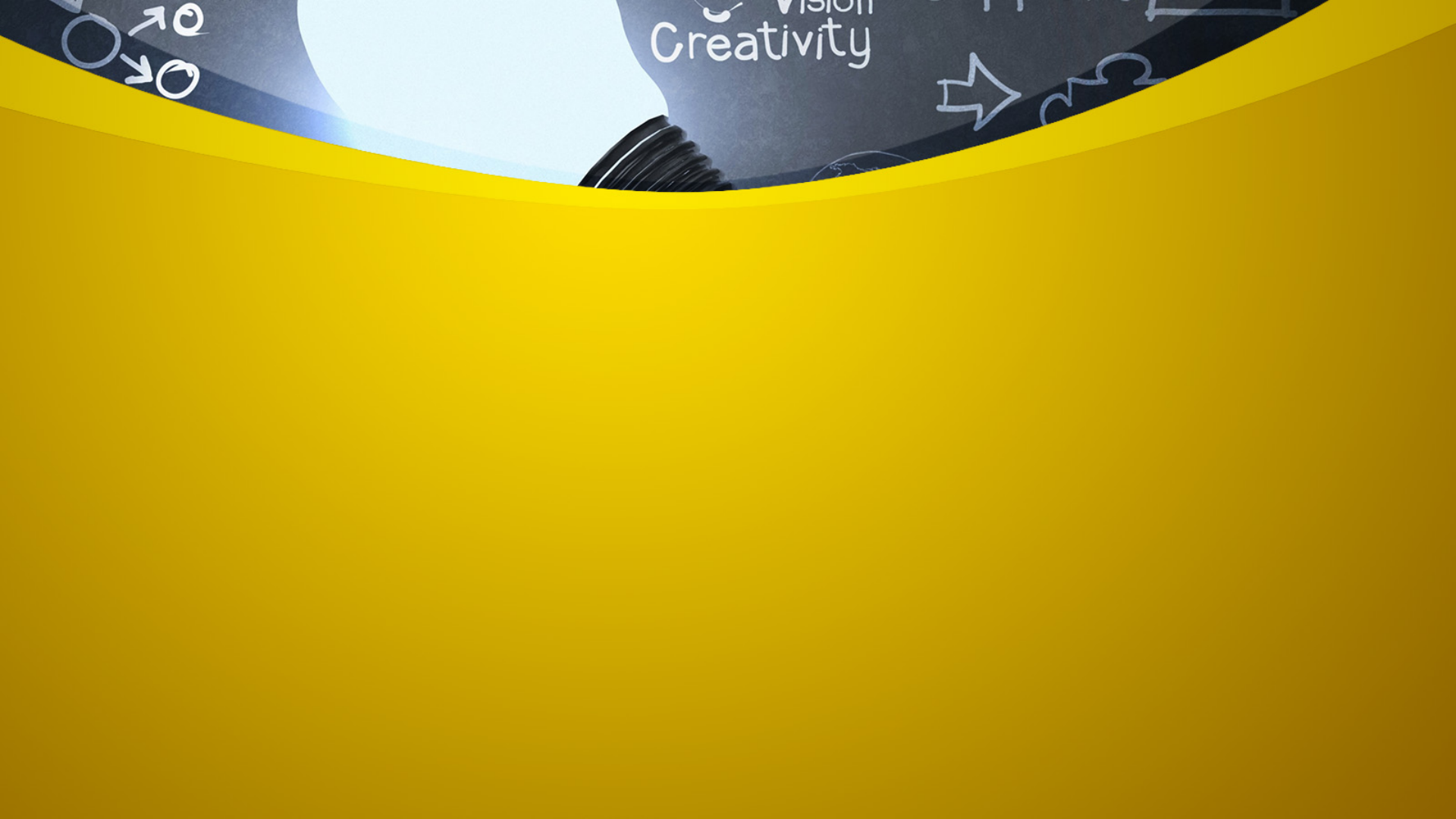
Step 3 & 4: Build it! Test it!

Step 5: Reflect

What changes can be made to the idea?

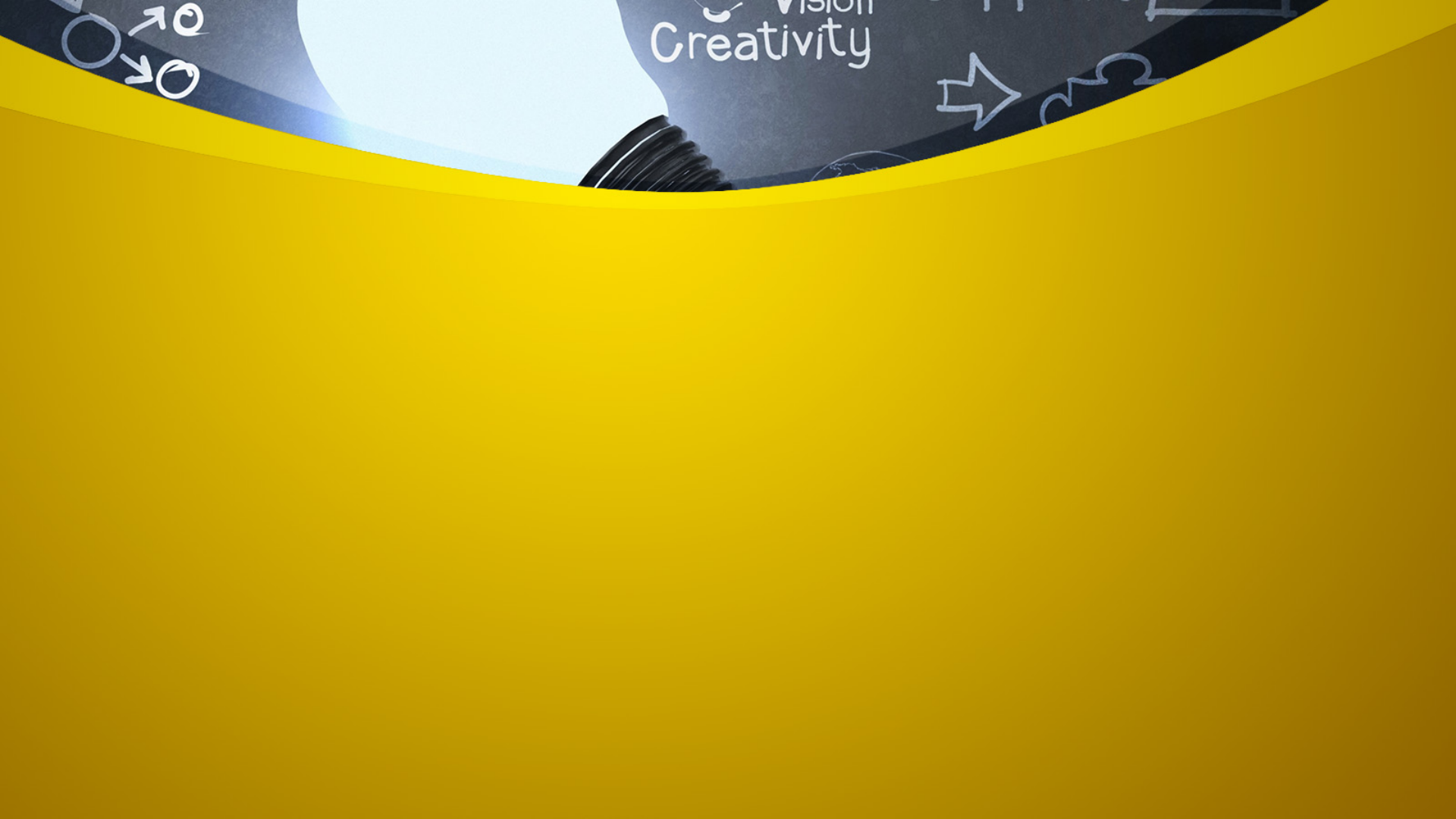
How can I make it better?

Step 6: Present your solution



vision
Creativity





vision
Creativity

