




**Enquiry Question:** What are the different production systems and how can we make products sustainable? (pages 4-9 in the revision guide)

**Lesson Launch:** Question 5 is about sustainability. You are advised to spend about 5 minutes on this question. Use straight lines to connect the words below with the correct description.

Reduce	We must mend broken products instead of throwing them away.
Reuse	We should decrease the amount of finite materials that we use.
Recycle	We should decide whether we need products before we buy them.
Refuse	We should think of another use for a product before we throw it away.
Repair	We should decide not to buy products that harm the environment.
Rethink	We should make sure that products are converted back to their basic materials and then remade into new products.

**SUSTAINABLE FOREST**



Card packaging with this symbol, means that the materials used to make the packaging, have been harvested from sustainable forests. This means that the forest is managed in such a way that the trees are replanted so that trees that are cut down are replaced.

A sustainable material is a material that can be renewed, such as natural wood - trees can be grown to replace ones cut down and processed into products.

**THE FOREST STEWARDSHIP COUNCIL**



FSC The Forest Stewardship Council promotes the responsible management of forests - sustainable forestry. The logo guarantees that paper and card has been purchased from responsible forest operations (sustainable forestry).

CAD and CAM are really important part of designing products and manufacturing them. They're used in loads of different industries from food packaging to component manufacture. Now to explain what they are...

CAD is designing using a computer...

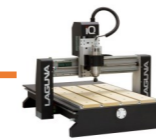
- What does CAD stand for?
- What does it involve?
- What are examples of CAD packages?
- What are the advantages of CAD?

CAM is making using a computer....

- What does CAM stand for?
- What does it involve?
- Explain how it works?

CAM machines can be used on different materials.

CNC routers are:



Laser cutters are:



3d printers are:



When you make a product there's some sort of impact on the environment. Recently there's been an increasing focus on minimising the size of this impact to help protect our planet.

Sustainable products are better for the environment.

- Explain what sustainability is?
- What is a sustainable material? You should include an explanation of sustainable forests in your answer.
- Who are the Forest Stewardship Council and what do they do?

All products have a carbon footprint.

- Explain what a Carbon footprint is ?
- 1)
  - 2)
  - 3)
  - 4)
  - 5)



Some products are designed to last and some aren't.

Explain why no products last forever?

Explain why some products are designed to last and some aren't?

Explain the term planned obsolescence?

What is meant by 'design for disassembly'?