

ICT in Design and Manufacturing

Research and Presenting	- Collecting and recording - Using digital images	- The internet - Graphics software - Using a digital camera - Word processing - Video conferencing
Design	- Creating visuals - Developing a specification - Creating prototypes - Experimental work	- Graphics software - Digital camera work - Using a scanner - Digital printer - Various CAD systems
Manufacturing	- Producing forms and patterns - Producing and cutting garments - Controlling machinery - Costing	- Lay planning - Digital printers 3D body scanning equipment - Computerised lathes, milling machines, sewing, knitting and weaving machines - Electronic Data Interchange
Distribution	- Stock control and dispatch systems - Order processing	- Tagging - Databases - Spreadsheets - Stock tracking software
Sales	- Promoting the product - Sales channels and promoting a website - E-commerce - Security tagging	- Graphics software - Word processing software - Digital printer - EPOS software (Point of Sale)

Advantages of CAM	Disadvantages Of CAM
Faster than traditional methods and machines	Leads to the unemployment of skilled labour (traditional skills)
More accurate than traditional methods	Training costs and times
High repetitive accuracy	Expensive set up costs for machines
Machines can run 24/7	CAM machines need specialist engineers to maintain and repair
Can produce work directly from CAD files	



Vinyl cutters	CNC Lathes	Laser cutters	CNC routers	3D printers
Produce labels, stickers. Vinyl placed into machine. Cutting blade moves on X axis as material moves on Y	Numeric controls are used to control the tool head, the work would rotate in the lathe	X and y axis only , used on most thin materials. Flat 2D products	X,Y, Z axis. Products created include cupboard doors	Designs spliced into layers. Material (commonly ABS) is extruded in layers to create 3D object

CNC

CAM

Computer aided Manufacture

STL files
When exporting work to 3d printers. Work is often saved as STL files

CAD and CAM work through the use of **COMPUTER NUMERICAL CONTROL**. The CAD software generates a series of machine codes which are then interpreted by the CNC machine into movements on the machine bed, machine tool paths and other actions such as motor speeds to control tooling.

CAD

Computer aided Design

Advantages of CAD	Disadvantages Of CAD
Designs can be altered easily	Software can be hard to learn
It can be faster to draw designs, saving labour costs	Software can be expensive
Designs are easily saved	There may be compatibility issues
Parts of designs can be easily copied or repeated	Security risks
Designs can be simulated to judge ease of manufacture	Increase demand on computer memory
Designs can be sent by email for approval	
Designs can be worked on by whole teams	
Designs can be rendered	

FMS- Flexible manufacturing systems.

A flexible manufacturing system is a collection of automated machines that are adaptable and are used in production lines where the product is likely to change. CNC machines are regularly used in FMS as they are easily reprogrammable



- Computer Aided Design
- Computer Aided Manufacture
- Computer numeric control.
 - Axis
 - STL files
 - CNC lathes
- CNC milling machines
- CNC routers
- Software
- Spreadsheets
- Video conferencing
- Databases of information.
- EPOS systems



- Check your questions carefully, is it asking about ICT or CAD/ CAM?
- If you are being asked about ICT in design and manufacturing remember to think about what you can do on a normal computer that has no CAD software.



Fusion 360

Title: ICT / CAD /CAM

Design and Technology

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Research and Presenting		
Design		
Manufacturing		
Distribution		
Sales		

Examples of CAD software



Autodesk Inventor



Solidworks



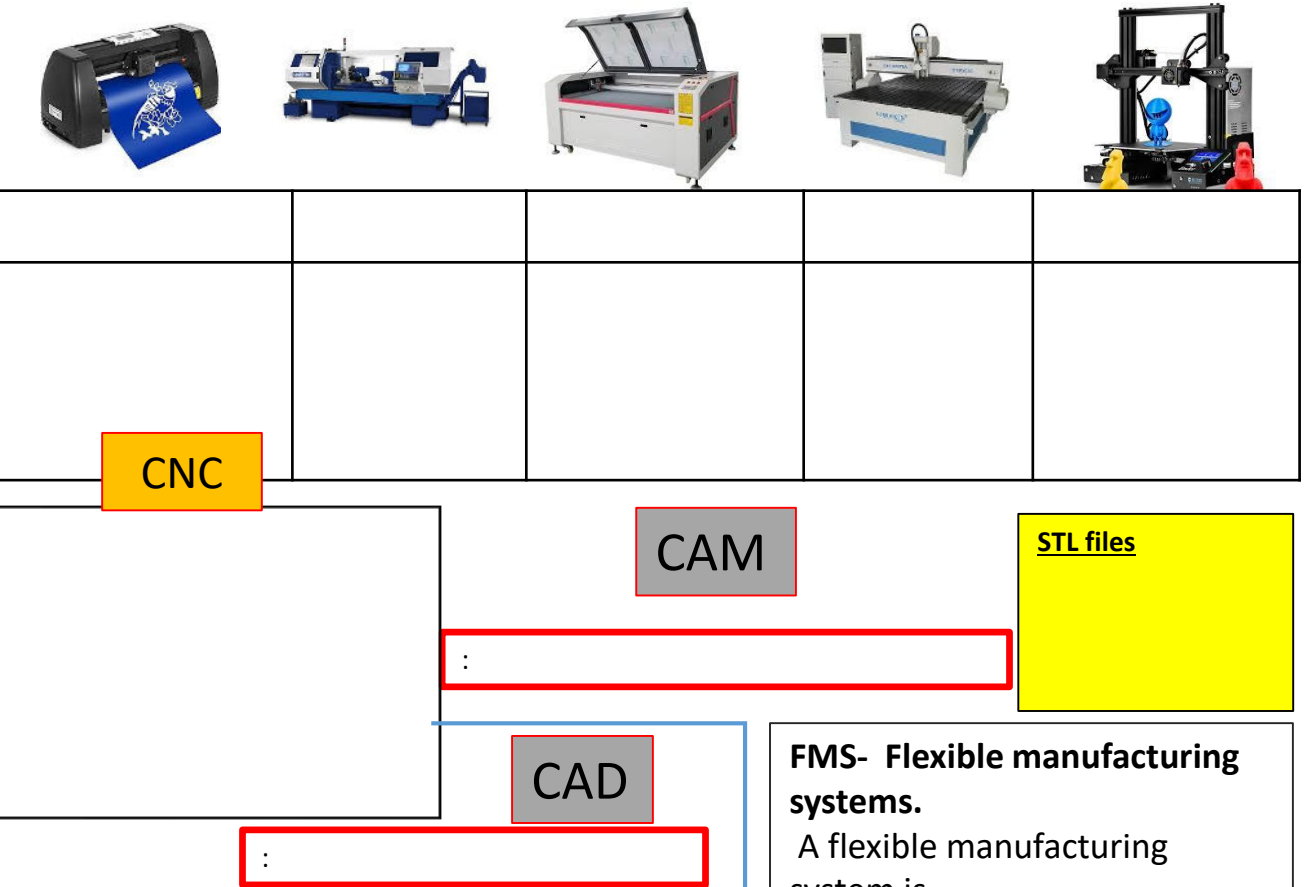
Fusion 360



Google SketchUp

Advantages of CAD	Disadvantages Of CAD

Advantages of CAM	Disadvantages Of CAM



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