

YR 9 CAD/CAM

Google sketch up:



- Select tool-** Click to select objects, edges, or faces in your model.
- Eraser-** Erase edges or soften/smooth surfaces in your model.
- Line-** Draw straight edges to build shapes and structures.
- Rectangle-** Create rectangular shapes on surfaces or in 3D space.
- Push/pull-** Turn flat surfaces into 3D shapes by pulling or pushing
- Move-** Move, stretch, or copy objects and geometry.
- Rotate-** Rotate objects or geometry around a point or axis.
- Scale-** resize objects by scaling up, down, or in specific directions.
- Paint bucket-** Apply colours, textures, or materials to surfaces.
- Orbit-** Rotates the camera view around the model
- Pan-** Moves the camera view side to side or up and down

Careers using 2D design:

- Graphic Designer- creates logos, posters, branding
- Illustrator- produces drawings for books, advertising, games
- Animator (2D)
- Print Designer- designs textiles, wallpapers,

Careers using 3D design:

- Product Designer- fashion, gadgets, tools
- Architectural Designer
- Interior Designer
- Set/Exhibition Designer- theatre sets
- 3D Animator
- CAD Technician-3D models for engineering

CAD- computer aided design

uses computer software to create designs.



AutoCAD



Fusion



Adobe Illustrator

Graphics editor software



SketchUp

Advantages

- Produces accurate 2D drawings and 3D models
- Helps improve accuracy, speed, and efficiency in the design process.
- Examples include 2D design and Google sketch up

Disadvantages

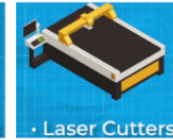
- Complex & time consuming
- expensive

CAM- computer aided manufacturing

Uses computer-controlled machines to make products from CAD designs.



• 3D Printers



• Laser Cutters



• Milling Machines

Advantages

- Improves production efficiency & accuracy
- Reduces human error and speeds up manufacturing.

Disadvantages

- Expensive
- requires training
- Can cause unemployment due to dependance of CAM

Safety Equipment

Visor

protects the whole face

Leather apron

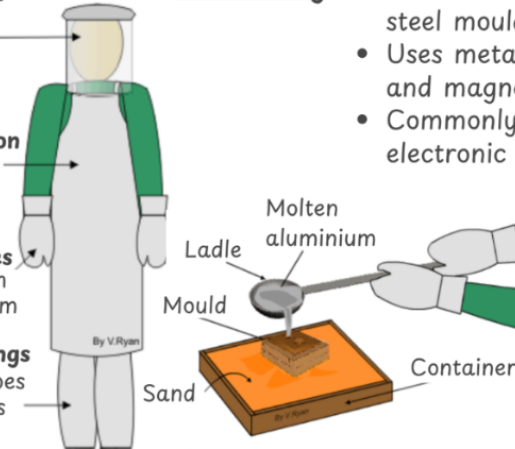
protects the upper body & legs

Leather gloves

extend to high up the forearm

Leather leggings

covers the shoes and lower legs



Die casting

- A manufacturing process where molten metal is injected into a steel mould (die) under high pressure.
- Uses metals with low melting points, such as aluminium, zinc, and magnesium.
- Commonly used for products like engine parts, tools, toys, and electronic housings.

Advantages

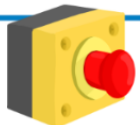
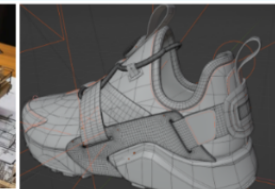
- produces accurate detailed products
- Quick production
- Consistent
- strong, durable results

Disadvantages

- High initial cost for moulds
- Only suitable for metals with low melting points
- Not ideal for very large components due to machine size limit

Benefits of 3D modelling

- Allows designers to visualise products before making them.
- Helps identify design problems early, reducing mistakes and waste.
- Enables quick changes and easy refinement of ideas
- Produces accurate dimensions and technical details



Emergency stop



wear eye protection



wear an apron



No running



No eating



Aesthetics



Cost



Customer



Environment



Size



Safety



Function



Material