

DISPLAYS

The image on a display is made of thousands of tiny illuminated dots called pixels. The resolution of a display is the number of pixels in it. The quality of the image depends on the resolution of the display. Displays produce either monochrome or color images

- Monochrome images have two colors: one foreground color and one background color
- Color displays produce images by combining the 3 primary colors: red, green and blue

Displays can be portrait or landscape:

- Portrait displays are square-shaped and offer more height.
- Landscape displays are rectangular and offer more width.

Made up of red, green and blue colored pixels arranged together in tiny blocks. A back light made of cold cathode fluorescent lamps shines behind the pixels.

Color is created by illuminating sufficient red, green and blue pixels to get the desired shade.

LCDs are thin and don't use a lot of energy. they do not harm our eyes as they don't produce glare.

DISPLAYS

Flat-panel displays

Liquid crystal display (LCD)

Light-emitting diode (LED) display

Previously, the most used form of display was cathode ray tube (CRT) display. A CRT consists of a sealed glass tube with a fluorescent coating of phosphor dots applied to the inside. Colors are created by mixing various shades of red, green and blue. They produce flickering images which can strain our eyes.

CRTs have been replaced by flat-panel displays. Flat-panels are comparatively thinner, lighter and use less energy. Their images are brighter and have higher resolution.

Flat-panels are easily damaged if they are dropped. They also suffer from 'dead pixels'.

This is a more advanced version of the LCD. And LED is back lit with light emitting diodes. LEDs provide brighter light and are smaller and thinner than LCDs. The image is also visible over a wider viewing angle.

However, LEDs are less energy efficient than LCDs.

DIGITAL PROJECTORS

- Contains 3 separate LCD glass panels, one for each of the RGB colors.

- As light passes, individual pixels are opened which either block or allow the light.

- They provide images with good brightness and contrast.

LCD PROJECTOR

DLP PROJECTOR

- Uses millions of tiny mirrors to reflect light towards the lens.

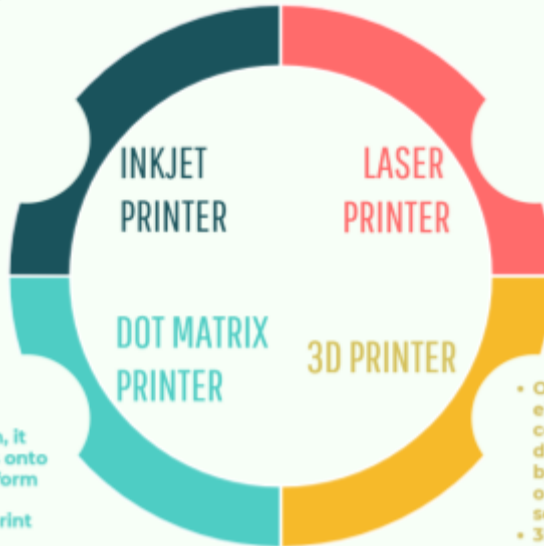
- The images have excellent color reproduction but have less brightness and contrast.

- They are smaller as they have lesser components.

- They are more portable when compared to LCD projectors.

PRINTERS

- Ink is sprayed onto paper through nozzles.
- They usually have 4 cartridges, one for each CMYK color.
- Relatively cheap, making it popular.
- Image quality is high when used with photographic paper.
- However, printing on both sides of ordinary paper is not possible as the paper absorbs the ink.
- They are slow at printing.



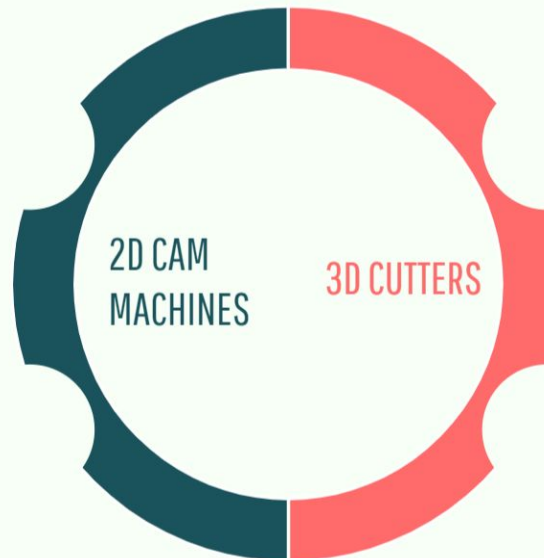
- Uses laser to create static electricity on certain areas of the page. Toner is then scattered on the page. The static electricity attracts the toner and images or text.
- A fusing element is used to ensure that the toner is stuck to the page.
- These printers are expensive.
- They produce high quality images and can print very fast.

- Only prints text
- As the print heat strikes the ribbon, it imprints the dots onto the page, which form letters.
- They have poor print quality and are expensive.

- Objects are created either using a computer-aided design application or by scanning the object with a 3D scanner.
- 3D printing is also known as additive manufacturing.

COMPUTER AIDED MANUFACTURING

- They manipulate materials in 2 dimensions.
- The excess material after the shape has been cut is drawn out by an extractor.
- Laser cutters are quick, accurate and quiet.



- 3D machines rotate on six axes.
- They are commonly used for cutting wood, wax, plastics and acrylics.
- They test and modify prototype designs which helps reduce errors and saves time and money.