

# GIMP PRACTICAL–5:

## Objective

To understand following terms related to images

- **Image Size**
- **Resolution**
- **DPI (Dots Per Inch)**
- **PPI (Pixels Per Inch)**
- **Colour Model**
- **Bit Depth**

### 1. Image Size

Image size refers to the dimensions of an image, usually expressed in pixels, inches, or centimeters. It determines how large or small an image appears on a screen or when printed.

- **Pixel dimensions:** Width  $\times$  Height in pixels (e.g., 1920  $\times$  1080).
- **Physical dimensions:** Actual print size such as 5  $\times$  7 inches or 10  $\times$  15 cm.

#### Example:

An image with dimensions **1920  $\times$  1080 pixels** contains 2,073,600 total pixels.

Image size affects:

- File size
- Display quality
- Printing clarity

### 2. Resolution

Resolution refers to the amount of detail an image holds, usually determined by the number of pixels within a given space.

- Higher resolution :- More detail and clarity.
- Lower resolution :- Less detail.

Resolution is typically measured using **PPI (pixels per inch)** or **DPI (dots per inch)** depending on the context.

#### Example:

- Low resolution: 72 PPI (used for web images)
- High resolution: 300 PPI (used for printing)

### 3. DPI (Dots Per Inch)

DPI is a measurement used in printing. It refers to the number of ink dots a printer places within one inch of a printed image.

- Higher DPI produces **sharper and more detailed printed images**.
- Lower DPI produces **less detailed prints**.

**Typical values:**

- 300 DPI – High quality printing
- 600 DPI or higher – Professional printing

**Note:** DPI relates to **printer capability**, not the image file itself.

### 4. PPI (Pixels Per Inch)

PPI refers to the number of pixels displayed in one inch of a digital image on a screen.

- Higher PPI :- Sharper digital image
- Lower PPI :- Less detailed image

PPI is mainly used in:

- Digital displays
- Image editing software
- Web graphics

**Example:**

An image with **300 PPI** contains 300 pixels in every inch of the image.

### 5. Colour Model

A colour model is a system used to represent colors using numerical values. It defines how colors are created and displayed in digital images.

Common colour models include:

#### **RGB (Red, Green, Blue)**

- Used for **digital screens and web images**
- Colors are created by mixing red, green, and blue light.

#### **CMYK (Cyan, Magenta, Yellow, Black)**

- Used in **printing**
- Colors are produced by combining these four ink colors.

## Grayscale

- Uses only **shades of gray**
- No color information

## HSV / HSL (Hue, Saturation, and Value/Lightness)

- Represents color using **Hue, Saturation, and Value/Lightness**
- Used in image editing applications.

## 6. Bit Depth

Bit depth refers to the number of bits used to represent the color of each pixel in an image. It determines how many colors an image can display.

Higher bit depth:- More colors and smoother gradients.

Bit Depth	Number of Colors
1-bit	2 colors (Black & White)
8-bit	256 colors
16-bit	65,536 colors
24-bit	16.7 million colors (True Color)
32-bit	Used for high dynamic range images

### Example:

A **24-bit image** uses **8 bits for each RGB channel**, allowing millions of color combinations.