

Understanding Graphics, Vectors, and Rasters

A beginner's guide to visual design fundamentals



What Are Graphics?

Graphics are pictures or visual designs created using computers to present information in an attractive, easy-to-understand way. Instead of reading lengthy text, graphics help us grasp concepts quickly through visual representation.

They transform complex information into something simple and engaging, making learning and communication more effective.



Types of Graphics Around Us



Charts & Diagrams

Visual representations of data, such as bar charts showing students' marks or pie charts displaying survey results



Digital Images

Photos, illustrations, and artwork used in books, websites, mobile apps, and social media platforms



Logos & Symbols

Distinctive designs representing companies, brands, or organisations that communicate identity at a glance



Technical Drawings

Detailed diagrams of systems, processes, or structures like computer network layouts or architectural plans



Two Main Types of Graphics

Vector Graphics

Made using mathematical lines, curves, and shapes. They stay sharp at any size.

Raster Graphics

Made from tiny coloured dots called pixels. They can become blurry when enlarged.

What Makes Vector Graphics Special?

Mathematical Precision

Created using lines, curves, and geometric shapes defined by mathematical formulas

Infinite Scalability

Can be enlarged or reduced to any size without losing quality or sharpness

Clean & Sharp

Always maintains crisp edges and smooth curves, perfect for professional designs

The key advantage: Vector graphics remain crystal clear whether displayed on a mobile screen or a massive billboard.

Vector Graphics in Daily Life

Common Examples

- Company logos (Google, Apple, Nike)
- Mobile app icons
- Road signs and maps
- Technical drawings and blueprints
- Typography and fonts

Popular Formats

SVG, AI, EPS, PDF



📄 When you zoom in on a company logo on a website and it remains perfectly clear, you're looking at vector graphics in action!

Understanding Raster Graphics

Raster graphics are images composed of thousands or millions of tiny coloured squares called **pixels**. Each pixel contains specific colour information, and together they form the complete image you see.

1 Resolution Matters

Image quality depends on pixel count – more pixels mean sharper images

2 Size Limitations

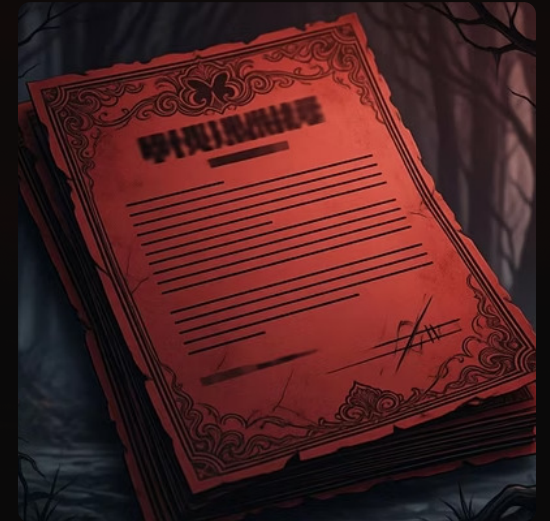
Enlarging beyond original size causes blurriness or visible pixelation

3 Photorealistic

Perfect for capturing complex colours, shadows, and realistic details



Raster Graphics Examples



Where You'll Find Raster Graphics

- Photographs from cameras and smartphones
- Images on websites and social media
- Scanned pictures and documents

Common Formats

JPG, PNG, BMP, GIF, TIFF

Quick Comparison

Feature	Vector Graphics	Raster Graphics
Made from	Mathematical lines & shapes	Tiny coloured pixels
When resized	Stays sharp & clear	Becomes blurry
Best for	Logos, icons, diagrams	Photos, realistic images
File size	Usually smaller	Usually larger
Common formats	SVG, AI, EPS	JPG, PNG, GIF



Key Takeaways

1 Graphics Simplify Communication

Visual designs help us understand information quickly and make learning more engaging

2 Choose Vector for Flexibility

Use vector graphics when you need designs that resize perfectly – logos, icons, and technical drawings

3 Choose Raster for Realism

Use raster graphics for photographs and images requiring complex colour detail and realistic representation

Understanding these fundamentals will help you make better decisions when creating or working with digital images.