Bitmap and Vector Graphics: Two Ways to Make Images

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What Are Bitmap and Vector Graphics?

When you see an image on your computer or phone, it has to be stored in one of two ways. **Bitmap graphics** and **vector graphics** are like two completely different languages for telling a computer how to draw a picture.

Bitmap graphics (also called **raster graphics**) are made from thousands of tiny coloured squares called **pixels**. Imagine painting a picture by filling in squares on graph paper—each square is one colour, and when you stand back, all the squares together look like a real image.

Vector graphics use **mathematical instructions** instead. Rather than storing colours for individual pixels, a vector graphic stores information about shapes like lines, circles, and curves, plus their positions and colours.

Think of it like this: a **bitmap** is like a mosaic made of coloured tiles. A **vector** is like an instruction manual that says "draw a red circle here" and "draw a blue line there."

Why Does Size Matter?

The biggest difference between these two types becomes clear when you resize an image. If you make a **bitmap** much larger, it looks fuzzy and blocky because you're stretching those tiny pixels. The computer doesn't know what extra detail to add—it just makes each pixel bigger.

But **vector graphics** stay crisp and sharp at any size. Because they're built on mathematical formulas, the computer can recalculate the shapes perfectly, whether your image is tiny or enormous.

Think of it like this: stretching a **bitmap** is like zooming into a photo until you see the pixels. Stretching a **vector** is like zooming into a map that automatically adds more detail.

When Do We Use Each Type?

Bitmaps are perfect for photographs and detailed artwork because they can store millions of colours and tiny details. Programs like **Photoshop** use bitmaps. File types include **JPG**, **PNG**, and **BMP**.

Vectors are ideal for logos, posters, and designs that need to look sharp at any size. Programs like **Adobe Illustrator** and **Inkscape** create vector graphics. File types include **SVG** and **AI**.

Understanding the difference helps you choose the right tool for your project and explains why some images look perfect on your phone but blurry when printed large.

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