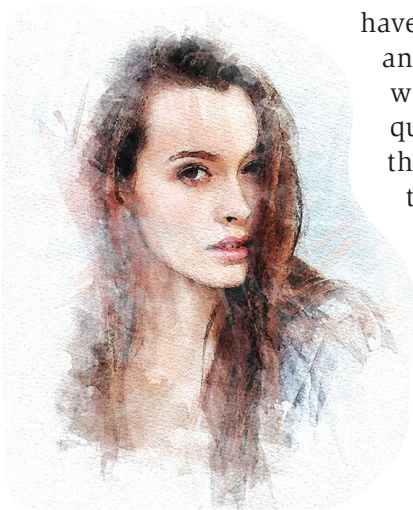


Painting and drawing software

Both painting and drawing software are examples of **graphics programs** used to create, manage and edit 2-dimension digital images.

■ Painting software

Painting software is pixel-based software, which allows the user to create and save a series of coloured **dots**, called **pixels**, in a **bitmap** file. Bitmap-based images, also called **raster graphics**, are therefore made up of pixels in a **grid** like a mosaic, and each pixel, or **bit**, holds a specific colour value. The most common bitmap-based formats are: JPEG, GIF, TIFF, PNG, PICT and BMP.



Bitmap-based images have a fixed resolution and cannot be resized without losing image quality. Moreover, as the image files tend to be rather large, they are often compressed to reduce their size. Bitmaps can be stored, reused, and converted into other bitmap formats very easily. It can take thousands of dots to

make up a whole picture and to edit the image, each dot needs to be altered individually, although there are a lot of different tools to make it easier.

The general features of a painting program are the following:

- a palette from which the user can choose the colour;
- pens and **brushes** with different styles and line thickness;

brush: pennello
canvas: tela
dot: punto

grid: griglia
layer: strato

- colour fill tools;
- spray cans and eraser tools;
- cut, copy and paste.

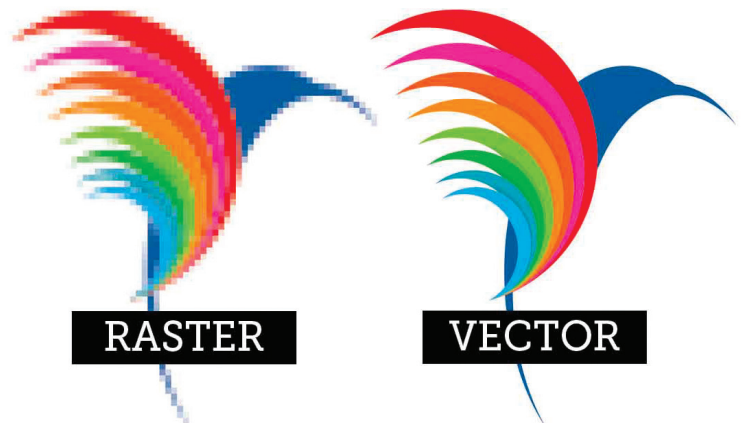
Microsoft Paint is a basic program for non-professional users. Another popular free program for general users is Krita.

■ Drawing software

Drawing software is **vector-based**, or **object-based, software**. Vector graphics are made up of many individual objects which are defined by mathematical formulas and individual properties such as colour, fill, and outline. Although the result is still a bitmap, i.e. a series of dots, the image consists of separate lines and shapes, which are the objects, and is saved as coordinates and equations, making the file size a lot smaller.

The image is edited by manipulating the objects. For example, if you want to draw a circle, you only need four sets of values: the x,y coordinates of the centre, the stroke line style, the radius of the circle, and the fill colour (optional).

The big advantage of the vector approach is **scalability**: one formula or set of formulas can represent many sizes of the object. Therefore, vector graphics are resolution independent and easy to modify by simply changing the sets of values. AI (Adobe Illustrator) is a common drawing program.



1  **Answer the questions.**

1. What do painting and drawing software have in common?
2. What does pixel-based software mean?
3. What is a bitmap?
4. What are JPEG and GIF?
5. Name a painting program for non-professional users.
6. What are the disadvantages of bitmap-based images? And the advantages?
7. What are vector graphics made up of?
8. What does a vector image consist of?
9. What is the biggest advantage of vector graphics?
10. How can you modify a vector image?

2  **Read the text and complete it with the missing words.**

bitmap • drawing • information • layer • objects • painting • placed • raster • screen • size

Drawing vs Painting

Images in a **1.** program are created as independent objects that can be placed on top or underneath each other, moved apart and scaled to a different **2.** and even reshaped. Objects are filled with colour. A **3.** program is an electronic **canvas**. Images are created with electronic brushes that paint colour onto the canvas. You can paint separate **4.**, but they are not independent. Some editing programs that contain **layers** enable bitmapped images to be treated independently so that they can be **5.** into different layers as if each were a separate canvas. Although bitmap elements cannot be resized as effectively as drawing objects, they can be moved independently with their own **6.** without affecting the



elements in the others. When the final result is obtained, all the layers are put one above the other to form a single layer. When the objects are displayed on **7.**, they are always turned into a **8.** format both for bitmap and vector structures. That's how screens and printers display and print **9.** Bitmapped graphics are also known as **10.** graphics.

Adapted from: <http://www.bbc.co.uk/education/guides/zv2v4wx>