

Gradients and patterns

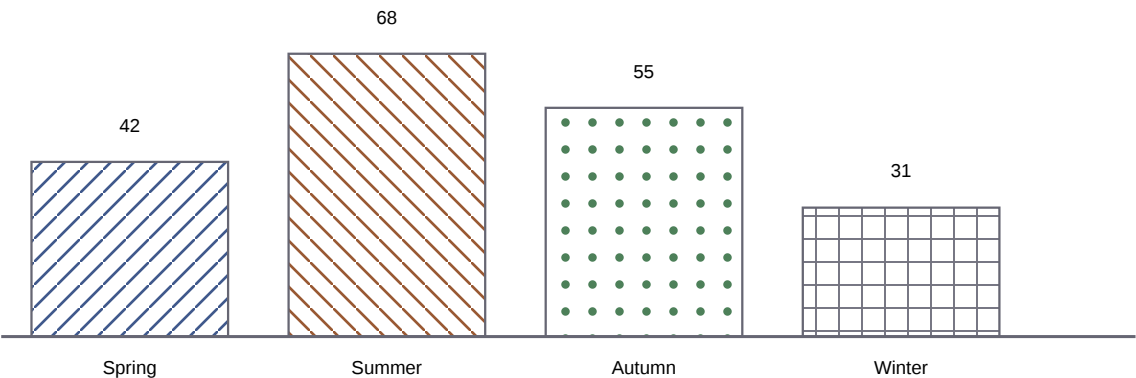
A label, built from both



APRICOT

A chart: patterns instead of colours

Distinguishable in monochrome, which colour alone is not.

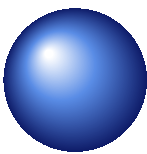


A tiling pattern is a piece of content the reader repeats. It is stored once, however large the area it covers - the file does not grow with the surface.

Where a gradient runs, and how a pattern is laid



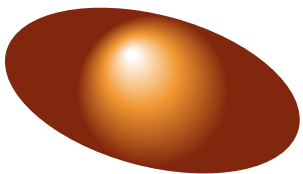
-from, -to, -stops



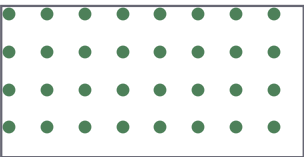
-center, -focus, -extend {0 0}



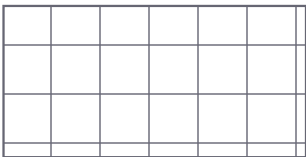
direct form, -matrix



radial pattern, -matrix



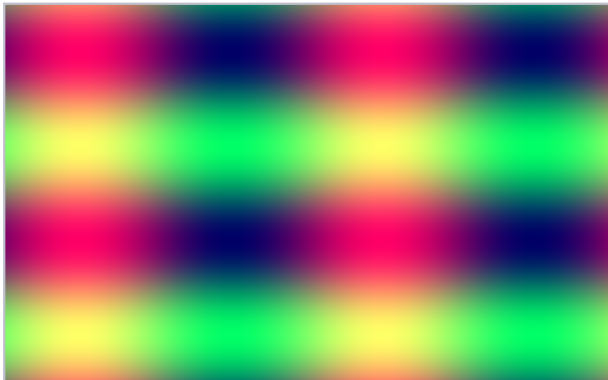
-step {5 5} on a 2 mm tile



-size {0.25 0.25} -unit in

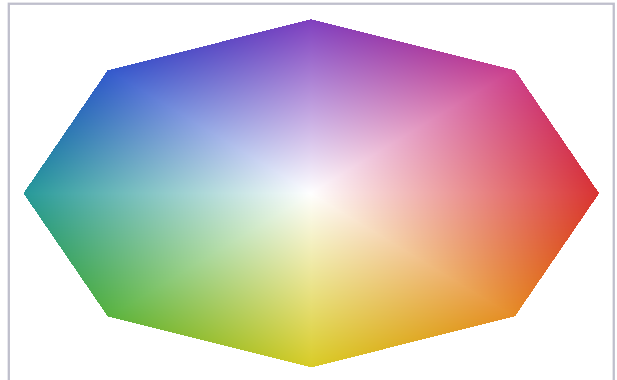
Shading types 1 and 4 to 7

A gradient runs between stops. These five hold their colours themselves: one as a calculation over the area, four as a mesh of points - triangles, a lattice of rows, and the two kinds of curved patch.



type 1, function-based

-expression is the body of a PostScript calculator function: it takes x and y and leaves one number per component.



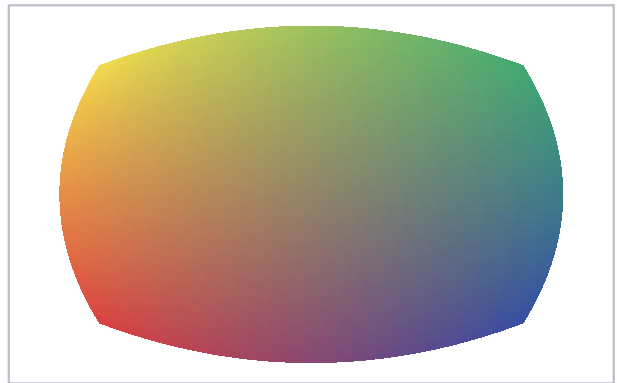
type 4, free-form Gouraud triangles

A vertex is {x y colour}; a fourth word is the edge flag - 2 keeps the centre and makes the strip a fan.



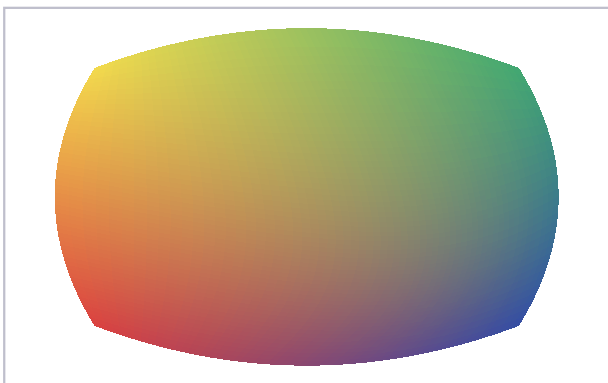
type 5, lattice-form Gouraud triangles

-perRow says how many vertices a row holds; the reader makes the triangles between two rows itself.



type 6, Coons patch

Twelve control points round the boundary - four cubic edges - and one colour per corner.



type 7, tensor-product patch

The same boundary and the same corners; the four interior points are pulled to one corner, and the field is squeezed with them.



a mesh as a pattern

shading pattern registers any of the seven; the shape is then filled with it, mesh and all.

What the mesh types cost

The four mesh types write their points as a binary stream: two bytes per coordinate over the bounding box of the mesh itself, one byte per colour component, one for the edge flag. A vertex is eight bytes in RGB, a Coons patch sixty-one - so a mesh of a thousand triangles is a few kilobytes, deflated with everything else. The colours share one space, the way the stops of a gradient do: a grey corner among coloured ones is promoted rather than refused.