

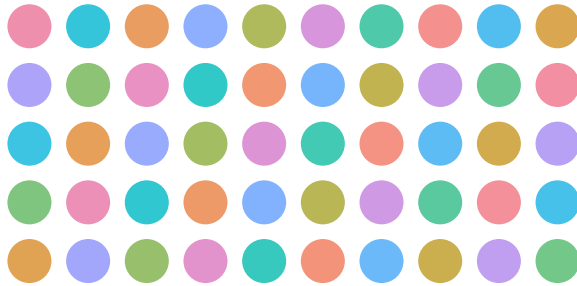
Formula for generating distinct colors

It's useful to be able to generate a set of an arbitrary number of colors, such that all colors have the same lightness and colorfulness so they can be used in the same context, but each color in the set is otherwise maximally distinct from the others.

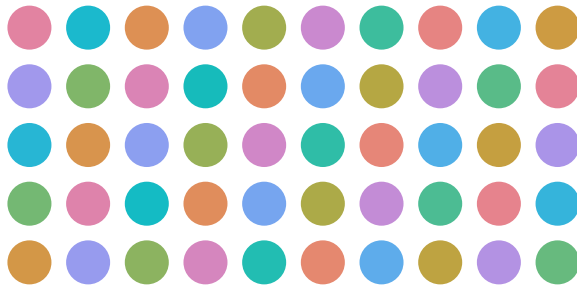
This simple formula generates a series of 50 unique colors before the cycle repeats, such that the series can be cut off at an arbitrary point, and all the colors before the cutoff are nearly maximally distinct from each other. This formula can be used to assign a distinct color to each item in a set of an arbitrary size, even if the number of items in the set is not known before starting to pick colors for some of the items.

The basis for this formula is the *oklch* color space, which is good for describing colors based on how similar or distant they are to each other in lightness, colorfulness and hue.

Here are all 50 colors with lightness 76 and chroma 12.



Here are all 50 colors with lightness 72 and chroma 12.



Here are some examples of the first 14 colors with different choices of lightness and the highest chroma possible on an SRGB display for each lightness. There are displays with a gamut wider than SRGB that allow a slightly higher chroma, but only SRGB is supported on most displays.

Lightness	Chroma	Sample
97	1	
95	2	
93	3	
91	4	
87	6	
85	7	
83	8	
81	9	
80	10	
78	11	
76	12	
71	12	
65	11	
59	10	
53	9	
48	8	
42	7	
36	6	
30	5	
24	4	
18	3	

The hue is generated by picking colors as far apart as possible on the color wheel, but slightly biased to leave room to add one more color that is almost as distinct from all the previous colors as the previous colors are from each other.



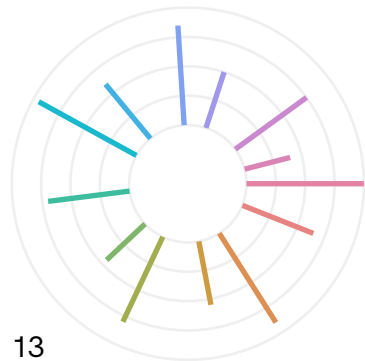
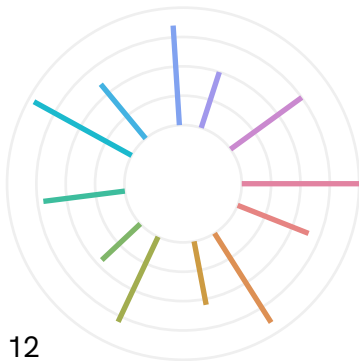
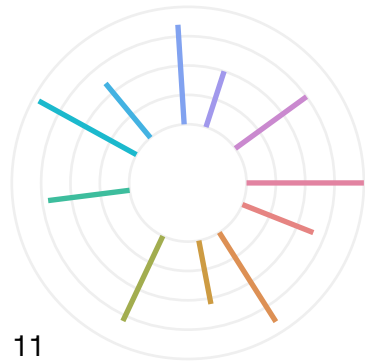
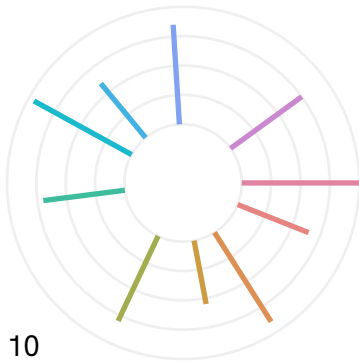
Here are the first five colors, showing that the colors are almost as far apart from each other as possible, making them very distinct colors, but with two noticeable larger spaces for adding more colors. Colors that come earlier in the series are visualized with longer lines.



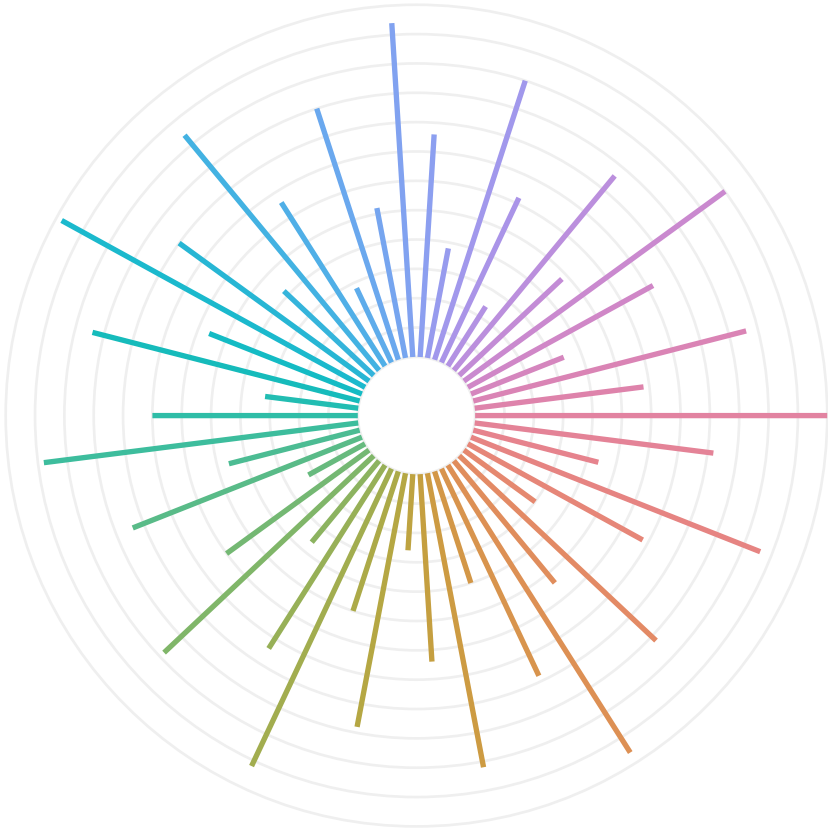
Here the sixth color is added, taking up the largest space free space.



Here the seventh color is added, taking up the largest free space.



Here are all 50 colors.



The formula for the hue is: Add the magic number 208.8 degrees of rotation around the color wheel for each color. This is 0.58 times 360 degrees.