Pappus Poster Explanation

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Pappus's theorem is a basic theorem in projective geometry, going back to Pappus of Alexandria, an ancient Greek mathematician. The theorem refers to the following construction, shown in Figure 1:

1. Place 3 black points on a straight line.

2. Place 3 blue points on another straight line.

3. Connect the black points to the blue points, using the green lines.

4. Take the three red points, which lie at the intersection points of the three pairs of green lines.

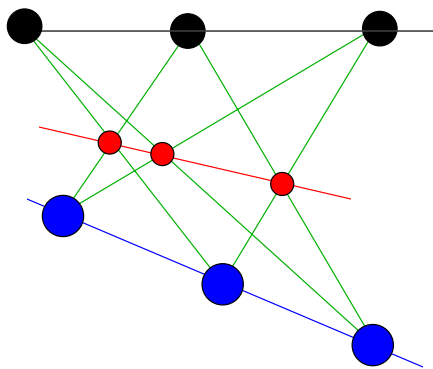Pappus's theorem says that the three red points also lie on a straight line.

Figure 1

The construction begins with three black points on a line and three blue points on a line and produces three red points on a new line. But then the construction can be repeated to produce a 4th and 5th line, colored magenta and pink. using the black-red pair and the red-blue pair, as shown in Figure 2.
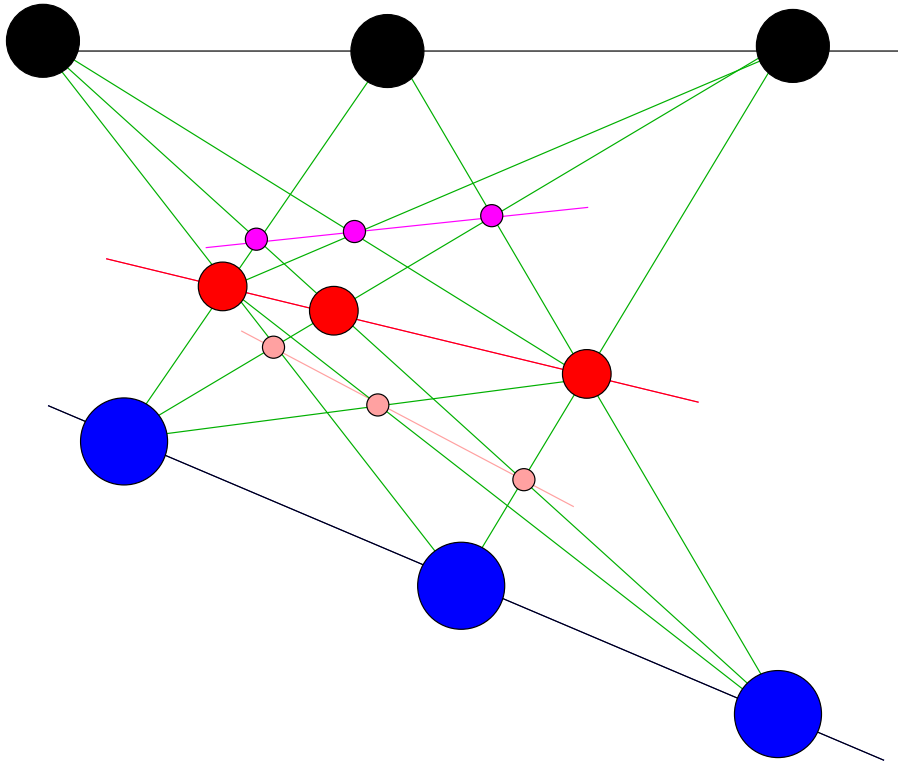

Figure 2

Now there are 4 pairs one can use to create new lines, the black-magenta pair, the magenta-red pair, the red-pink pair, and the pink-blue pair. This process can be continued indefinitely. I studied this infinite process in my paper *Pappus's Theorem and the Modular Group*, published by the I.H.E.S. Publications, Volume 78, in 1993. My poster does many steps of the above process and colors it in, using various shades of blue.