Assembling Planer Graphs to Service the Coloring Number.

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- **Abstract:** The next question was asked in [6], if given three simple and planar graphs on the same set of vertices V, those they G_1:(V, E_1), G_2:(V, E_2) and G_3:(V, E_3), and let G:(V, E_1∪E_2∪E_3). Is it possible that χ (G) the chromatic number of G will be equal to 20? The answer was no, this result was obtained by proving that the graph is 19- coloring. Here in this paper, I will expand this, and will give a general answer even if there are data more than 3 graphs. From the new result, we will deduce a better solution to the initial question, which the graph is 18- coloring. Moreover, in [8], a proof was given of the following: For each 14-regular graph, there is a division E=E_1∪E_2∪E_3, so for each of the three graphs (V, E_1), (V, E_2), (V, E_3), the maximum degree will be at most five. Here, too, we will expand to d-regular graphs and get a general division.

- Keywords: d-regular graphs, general division, 14-regular graph