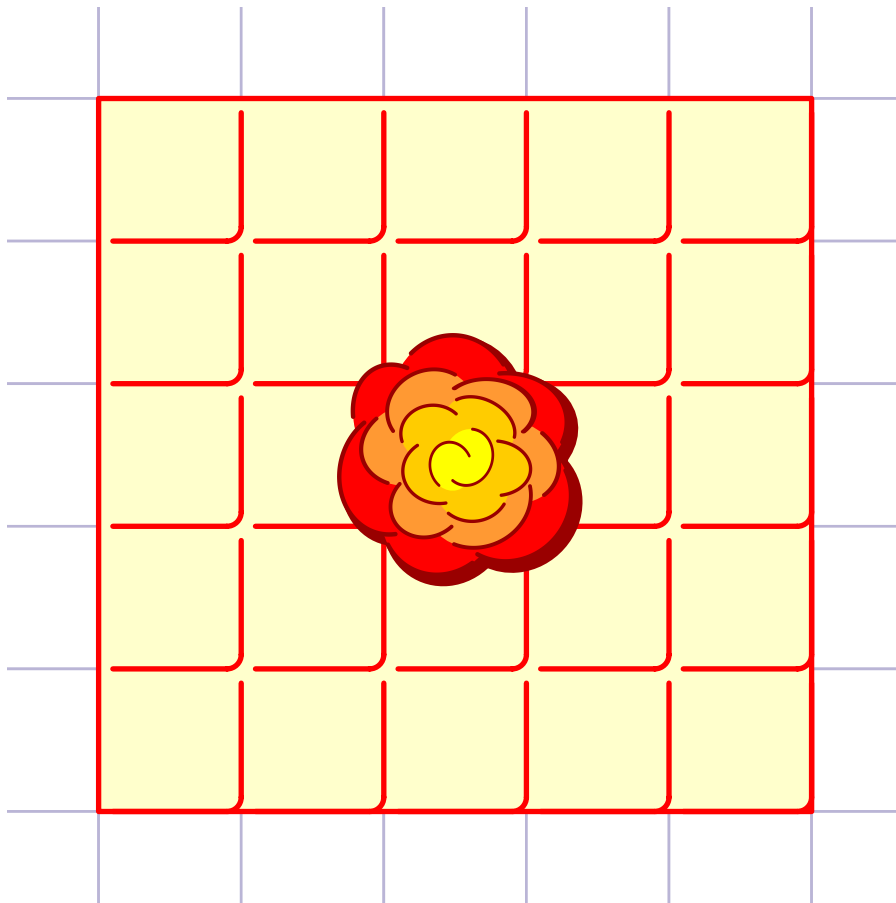


Cutting a Cake

after H.S.M. Coxeter

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A square with a 5x5 grid on it represents a tasty cake like that shown in the illustration.

Your task is to divide this cake into five pieces in such a way that each piece has the same volume.

All the cuts must be "conventional" - each cut has to go straight exactly from the central point of the cake to its edges, and every cut's plane has to be perpendicular to the cake's base. In this case we'll consider any two pieces as being equal if their top surfaces are equal.

To solve the puzzle you are not allowed to use any measuring tools except the square grid itself and the central point of the cake (the center of a 5x5 square).

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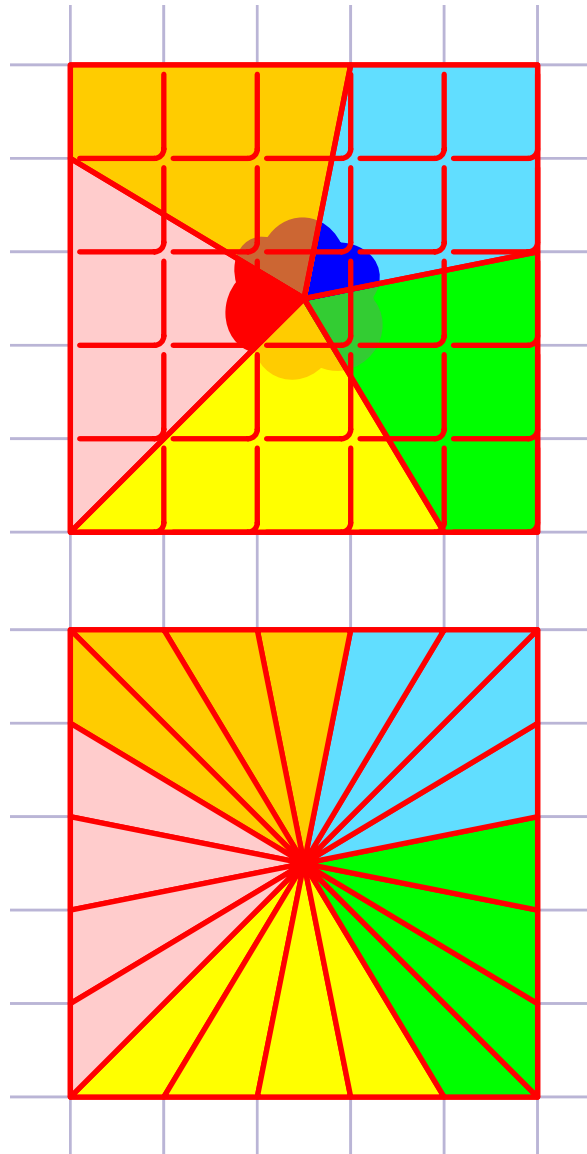
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Cutting a Cake

Solution

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One of the possible solutions is shown in the upper illustration.

If we mark all straight cuts from the center of the cake to its edges, as shown in the lower illustration, we get exactly 20 triangles. All the triangles are equal in area - they have equal bases and the same altitude.

Therefore to get five equal parts of the cake we have to divide it into five pieces consisting of 4 small triangles each ($20:5=4$) as shown in the lower illustration.

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