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- 1 An interior point in a rectangle is connected by line segments to the midpoints of its four sides. Thus four domains (polygons) with the areas  $a, b, c$  and  $d$  appear (see the figure). Prove that  $a + c = b + d$ .

<https://1.bp.blogspot.com/-BipDNHELjJI/XzcCa68P3HI/AAAAAAAAAMXY/H2Iqya9VItMLXrRqsdyxHLTXCA/s0/2002%2BMohr%2Bp1.png>

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- 2 Prove that for any integer  $n$  greater than 5, a square can be divided into  $n$  squares.

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- 3 Two positive integer numbers have the sum 2002. Can 2002 add up to the two numbers' product?

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- 4 In triangle  $ABC$  we have  $\angle C = 90^\circ$  and  $AC = BC$ . Furthermore  $M$  is an interior point in the triangle so that  $MC = 1$ ,  $MA = 2$  and  $MB = \sqrt{2}$ . Determine  $AB$

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- 5 Homer Grog has written the numbers 1, 3, 4, 5, 7, 9, 11, 13, 15, 17, one number on each note. He arranges the bills in a circle and tries to get the largest sum  $S$  of the numbers of three consecutive bills to be the least possible. What is the smallest value  $S$  can assume?
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