

Moscow Mathematical Olympiad 1938

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– tour 1

- 038** In space 4 points are given. How many planes equidistant from these points are there? Consider separately
(a) the generic case (the points given do not lie on a single plane) and
(b) the degenerate cases.
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– tour 2

- 039** The following operation is performed over points O_1, O_2, O_3 and A in space. The point A is reflected with respect to O_1 , the resultant point A_1 is reflected through O_2 , and the resultant point A_2 through O_3 . We get some point A_3 that we will also consecutively reflect through O_1, O_2, O_3 .
Prove that the point obtained last coincides with A .
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- 040** What is the largest number of parts into which n planes can divide space?
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- 041** Given the base, height and the difference between the angles at the base of a triangle, construct the triangle.
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- 042** How many positive integers smaller than 1000 and not divisible by 5 and by 7 are there?
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