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*Three problems in Geometric Probability related to Frank Hawthorne E1150 [Amer.Math.Monthly 62(1955), 40]*

Geometric probability is the study of probabilities associated with the lengths, areas and volumes of randomly generated objects and configurations of elementary geometry. In 1955, Frank Hawthorne proposed the problem E1150 in American Mathematical Monthly: "If three points are selected at random in a rectangle  $AX_2A$ , what is the probability that the triangle so determined is obtuse?". Roger Pinkham suggested in 60' a more general problem: "Let there be given three points at random in an arbitrary rectangle. What is the probability that the triangle thus formed is obtuse?". In this research, we study three problems derived from E1150. The method we used consists in performing independent trials of same chance processes and recording the number of trials until a particular outcome is obtained.

This is a joint work of Mihail Calitoiu, Ning Hu, Andrew Sun, Ryan Sun, and Louis Zhang