

Comprehension questions

PROBLEM 6.1. *For billiards in an equilateral triangle, find a periodic trajectory with more than 6 bounces (which is not a 3-bounce or 6-bounce trajectory repeated several times). Draw a sketch of the trajectory, and include an explanation of why the construction works, either through the “mirror” picture or in some other way. (The same instruction applies to the two following problems.)*

PROBLEM 6.2. *For billiards in a $30^\circ/60^\circ/90^\circ$ triangle, find a periodic trajectory (other than the 6-bounce trajectory that exists for every right-angled triangle, drawn in Example 6.7, or $6n$ -bounce trajectories which repeat that one several times).*

PROBLEM 6.3. *For billiards in a square, find a 14-bounce periodic trajectory (which is not just a 7-fold repeat of a 2-bounce trajectory).*

PROBLEM 6.4. *Why does the tiling-by-reflection trick not quite work for a regular hexagon?*

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