

Turn in your solution to at least two of the problems. **Explain your solution in full sentences. Give detailed reasonings.** Include diagrams and figures if appropriate.

Problem 1. We have two strings of pyrotechnic fuse. The strings do not look homogeneous in thickness but both of them have a label saying 4 minutes. So we can assume that it takes 4 minutes to burn through either of these fuses. How can we measure a one minute interval?

Problem 2. The front window of our house looks like a convex quadrilateral. It has four semicircular shutters folding along the edges of the window. Can we be sure that our window is completely covered if we close all the coverings?

Problem 3. A polyomino or animal is a finite set of cells of a rectangular grid connected along edges. We only consider two animals different if they are not congruent. How many animals are there containing exactly five cells?