1) What is the length of the shortest strip of paper that is 1 inch wide, black on one side and white on the other side that can be folded up to form a 1 inch cube that is black on all sides?

2) Draw four flat regions on a plane so that they all touch each other (corners don’t count) and they each have the same shape and area.
3) Find three numbers so that the product of any two added to the third gives a number that is a perfect square (is the product of a number times itself).

\[
\begin{align*}
1 \times 1 &= 1 \\
2 \times 2 &= 4 \\
3 \times 3 &= 9 \\
4 \times 4 &= 16 \\
5 \times 5 &= 25 \\
6 \times 6 &= 36 \\
7 \times 7 &= 49 \\
8 \times 8 &= 64 \\
9 \times 9 &= 81 \\
10 \times 10 &= 100 \\
11 \times 11 &= 121 \\
\ldots
\end{align*}
\]

4) Maria wants to walk from point M meters from a river to point H meters from a river and D meters downstream. She first wants to get a drink of water from the river. How (in what directions) should she walk to make the distance she walks as short as possible?

5) Four boards are hinged together to form a corral. The lengths of these boards were not measured before they were connected; so, their lengths are not related to each other in any special way. How should the construction be arranged to enclose the most area?