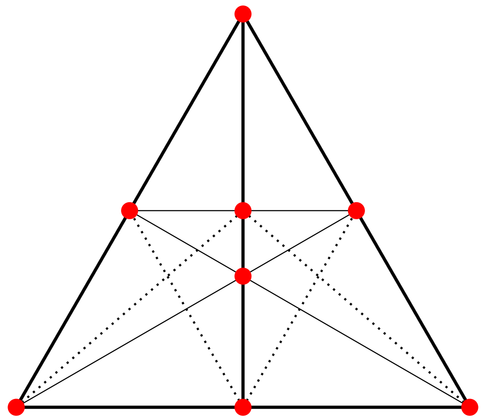
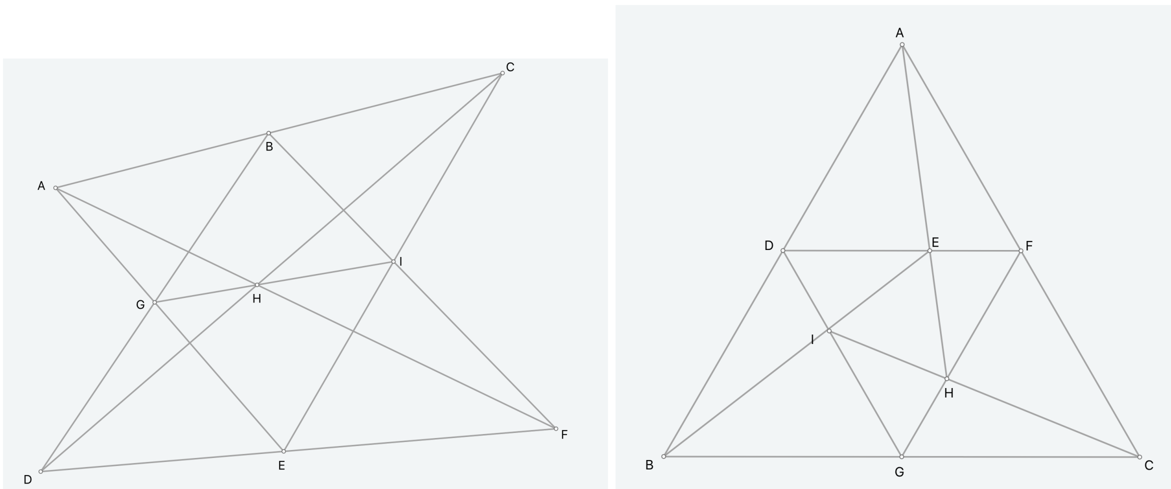
Q1:



As indicated in the figure, the 8 points consist of 3 vertices of an equilateral triangle, 3 midpoints of edges, the mass center and the midpoint of the height. The 4 dotted lines are the ordinary lines.

Q2: We borrow the ideas from graph theory. For each configuration X, we associate it with a matrix $m(X)$ with rows labeled by points and columns labeled by lines and with the entry value 1 if the point lies on the line and 0 if not. Relabeling and moving vertices around for a fixed configuration X only permutes rows and columns of $m(X)$. In other words, if X and Y are two isomorphic combinatorial configurations, then there is a permutation matrix P such that $m(Y) = P \cdot m(X)$. In particular, this means $m(X)$ and $m(Y)$ have the same rank.

Now label the Pappus configuration and another configuration as in the figure.



Then the associated matrices are

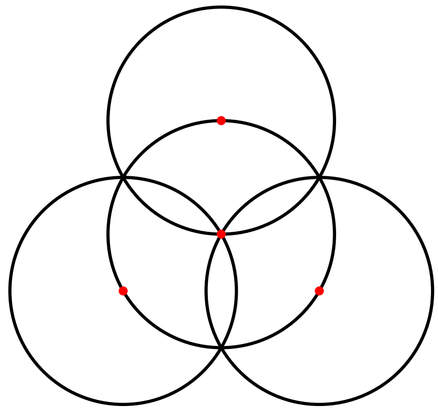
$$
\begin{array}{c}
\\ A \\ B \\ C \\ D \\ E \\ F \\ G \\ H \\ I
\end{array}
\begin{array}{c}
\begin{array}{ccccccccc} ABC & AHF & AGE & BGD & BIF & CHD & CIE & GHI & DEF \end{array} \\
\begin{pmatrix}
1 & 1 & 1 & 0 & 0 & 0 & 0 & 0 & 0 \\
1 & 0 & 0 & 1 & 1 & 0 & 0 & 0 & 0 \\
1 & 0 & 0 & 0 & 0 & 1 & 1 & 0 & 0 \\
0 & 0 & 0 & 1 & 0 & 1 & 0 & 0 & 1 \\
0 & 0 & 1 & 0 & 0 & 0 & 1 & 0 & 1 \\
0 & 1 & 0 & 0 & 1 & 0 & 0 & 0 & 1 \\
0 & 0 & 1 & 1 & 0 & 0 & 0 & 1 & 0 \\
0 & 1 & 0 & 0 & 0 & 1 & 0 & 1 & 0 \\
0 & 0 & 0 & 0 & 1 & 0 & 1 & 1 & 0
\end{pmatrix}
\end{array}
= m(X)
$$

and

$$
\begin{array}{c}
\\ A \\ B \\ C \\ D \\ E \\ F \\ G \\ H \\ I
\end{array}
\begin{array}{c}
\begin{array}{ccccccccc} ADB & AEH & AFC & BGC & BIE & CHI & DEF & DIG & GHF \end{array} \\
\begin{pmatrix}
1 & 1 & 1 & 0 & 0 & 0 & 0 & 0 & 0 \\
1 & 0 & 0 & 1 & 1 & 0 & 0 & 0 & 0 \\
0 & 0 & 1 & 1 & 0 & 1 & 0 & 0 & 0 \\
1 & 0 & 0 & 0 & 0 & 0 & 1 & 1 & 0 \\
0 & 1 & 0 & 0 & 1 & 0 & 1 & 0 & 0 \\
0 & 0 & 1 & 0 & 0 & 0 & 1 & 0 & 1 \\
0 & 0 & 0 & 1 & 0 & 0 & 0 & 1 & 1 \\
0 & 1 & 0 & 0 & 0 & 1 & 0 & 0 & 1 \\
0 & 0 & 0 & 0 & 1 & 1 & 0 & 1 & 0
\end{pmatrix}
\end{array}
= m(Y).
$$

But a straightforward calculation gives $\det(m(X)) = 0$ and $\det(m(Y)) = 27$. It follows that $m(X)$ and $m(Y)$ do not have the same rank and these two configurations are not isomorphic.

Q3:



As shown in the figure, the centers of the unit circles are $(0,0)$, $(\sqrt{3},0)$, $(\frac{\sqrt{3}}{2},\frac{1}{2})$ and $(\frac{\sqrt{3}}{2},\frac{3}{2})$.

Q4:

Q5:

Q6:

Q7: