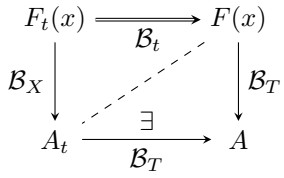
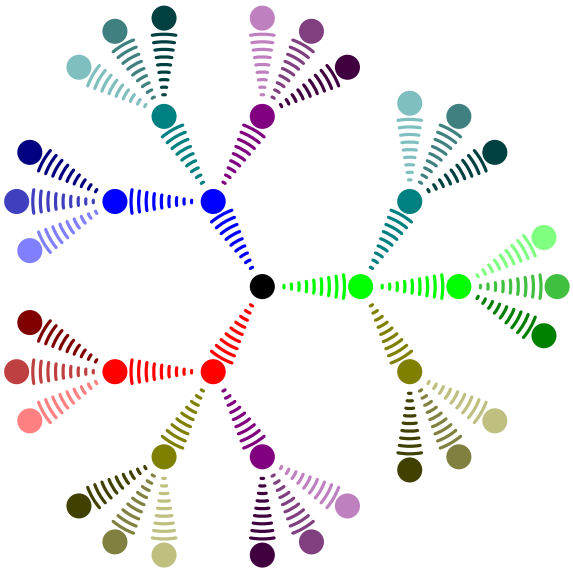
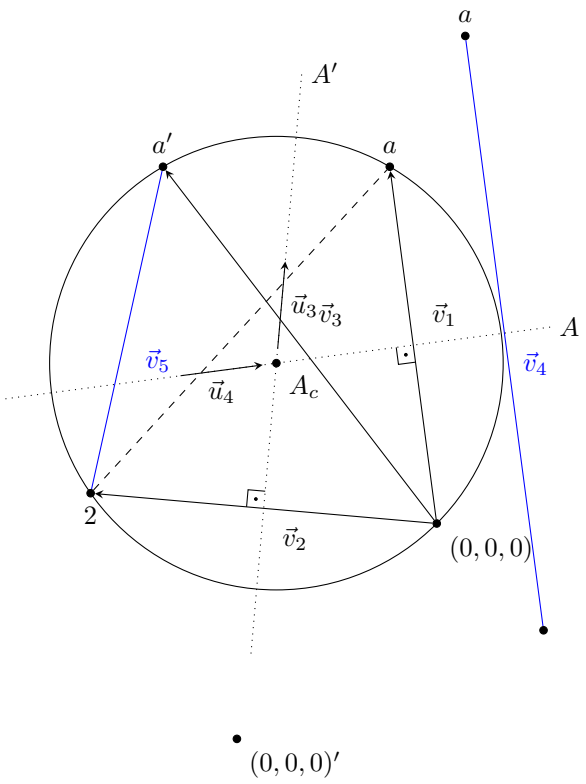
* A matrix is used for positioning the main nodes * Arrows are drawn as edges, between the main nodes, using further nodes for labeling

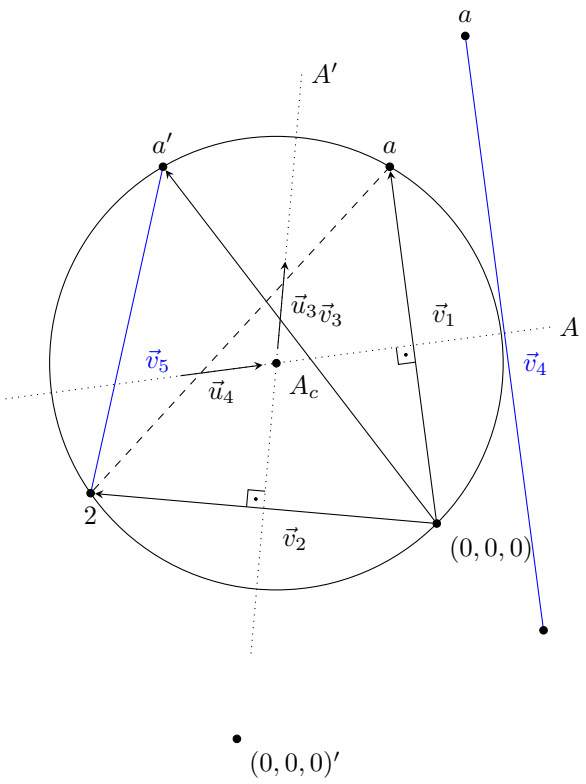


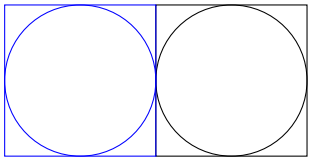


A perpendicular bisector of a line segment is a line which is perpendicular to this line and passes through its midpoint. This drawing shows perpendicular bisectors of a triangle. They meet in the center of the circumcircle of the triangle.



$(0,0,0)'$





The construction of points on the perpendicular bissector of [AB]. It is achieved in an artisanal way, the purpose being to show how to achieve computations with pgf. A much simpler construction can certainly be done with other pgf commands but the idea here is to emphasize the analytical process.

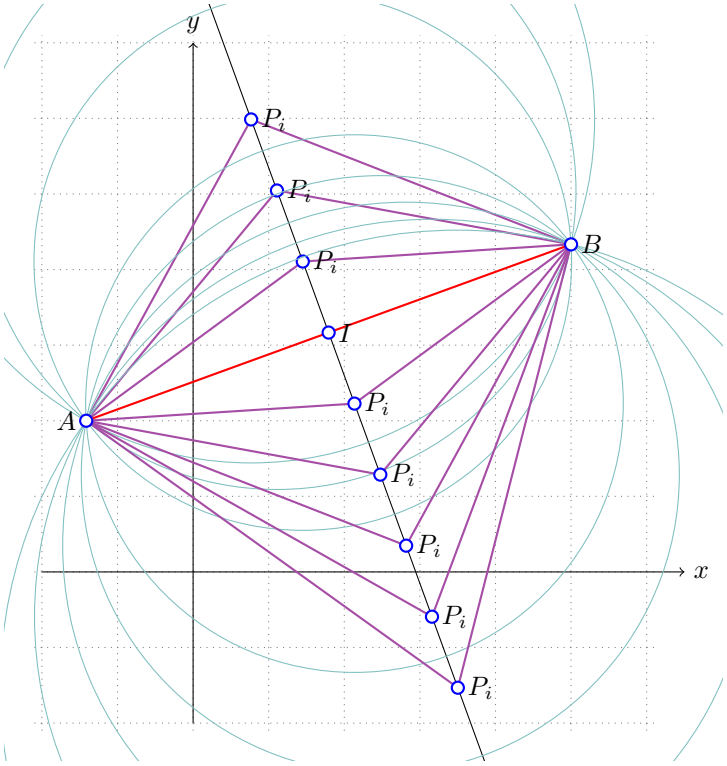
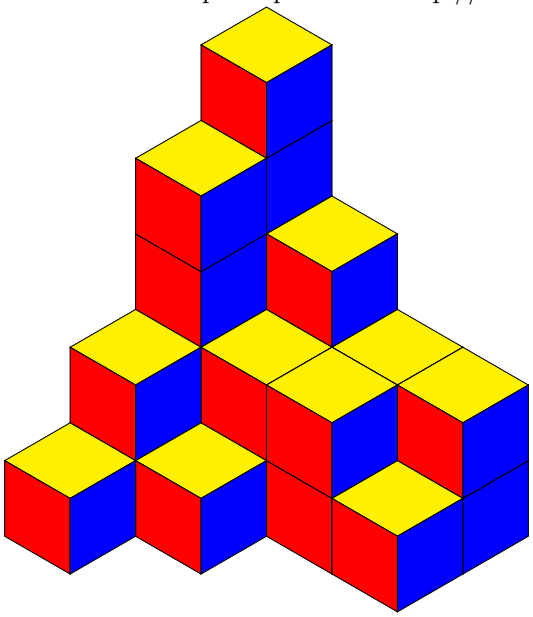


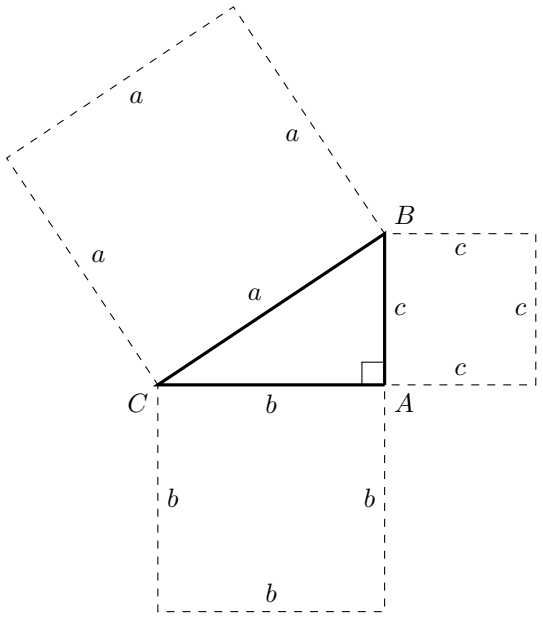
Illustration of a 'plane partition'. http://mathworld.wolfram.com/PlanePartition.html



The width and height of the triangle are put into constants, so we can change them later if we need to. Loading them once and computing everything else on the fly, it makes it easier to change things around later

We label our coordinates so that the name matches the label which gets printed, otherwise we might get horribly confused.

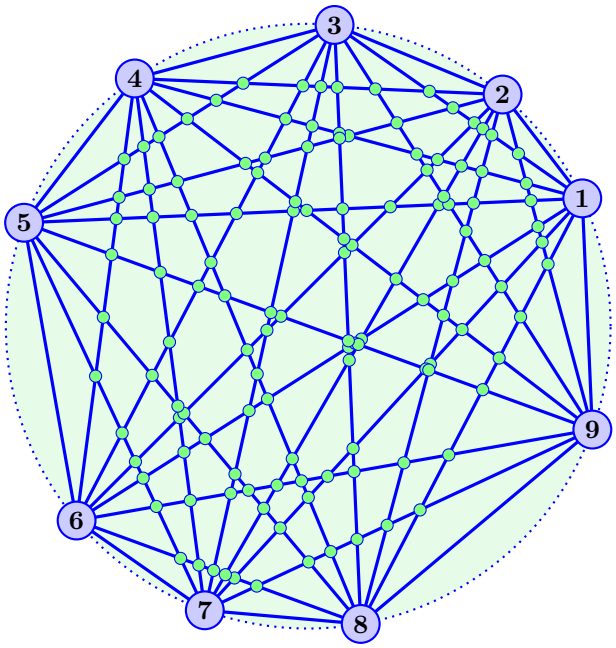
Two of the rectangles (the ones matching the horizontal and vertical edges) are easy to draw. The square corresponding to the hypotenuse is a bit more difficult, but we can use a little plane geometry. We can find another edge of the square by rotating the original triangle through 90 degrees, and then translating appropriately. We can use the same method to find the two extra coordinates of the hypotenuse square in TikZ.



Consider n randomly placed points on a circle.

The complete graph on the n points has $\binom{n}{2}$ edges.

Each pair of edges yields an intersection point and there are (at most) $\binom{n}{4}$ such points.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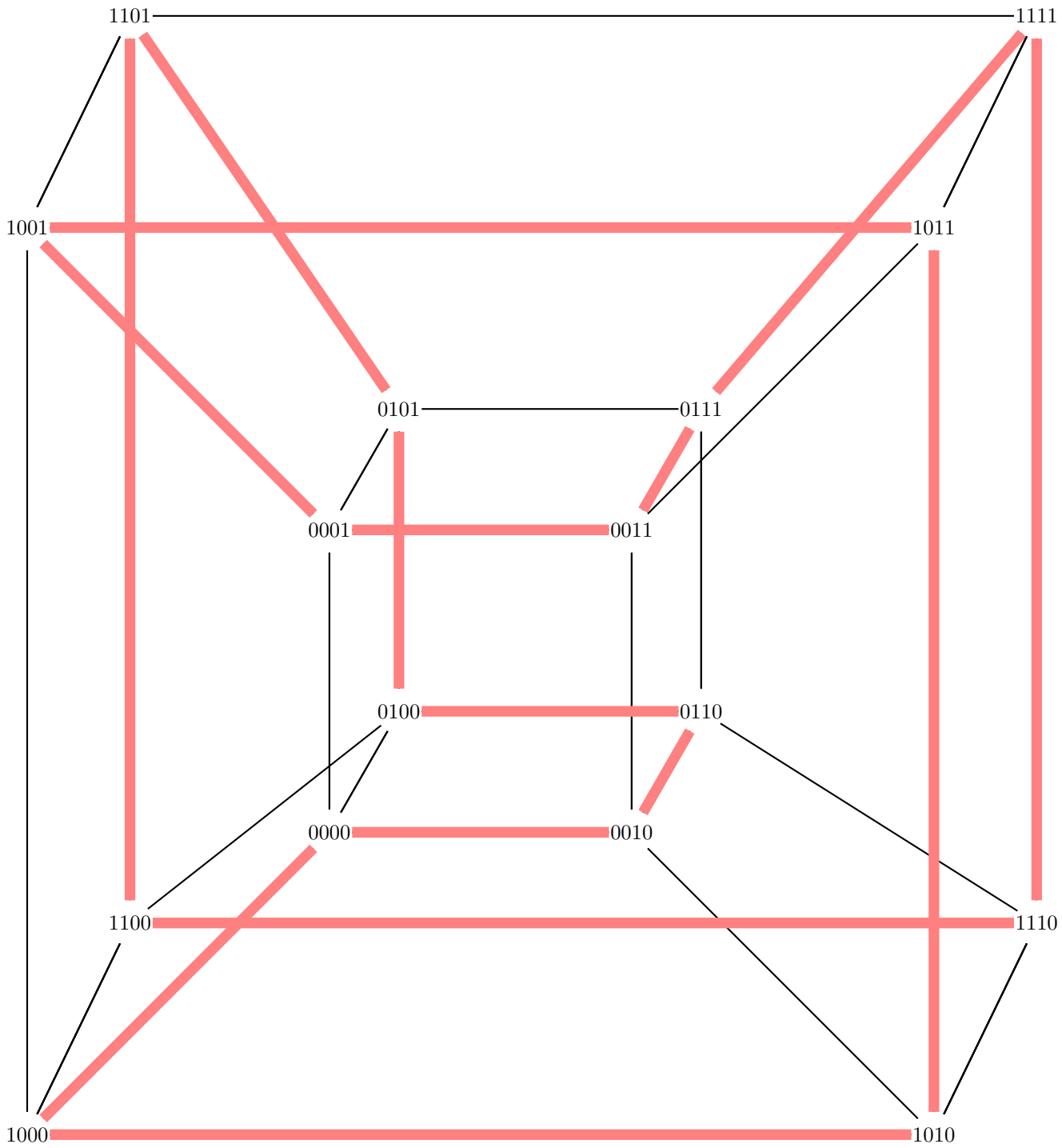
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