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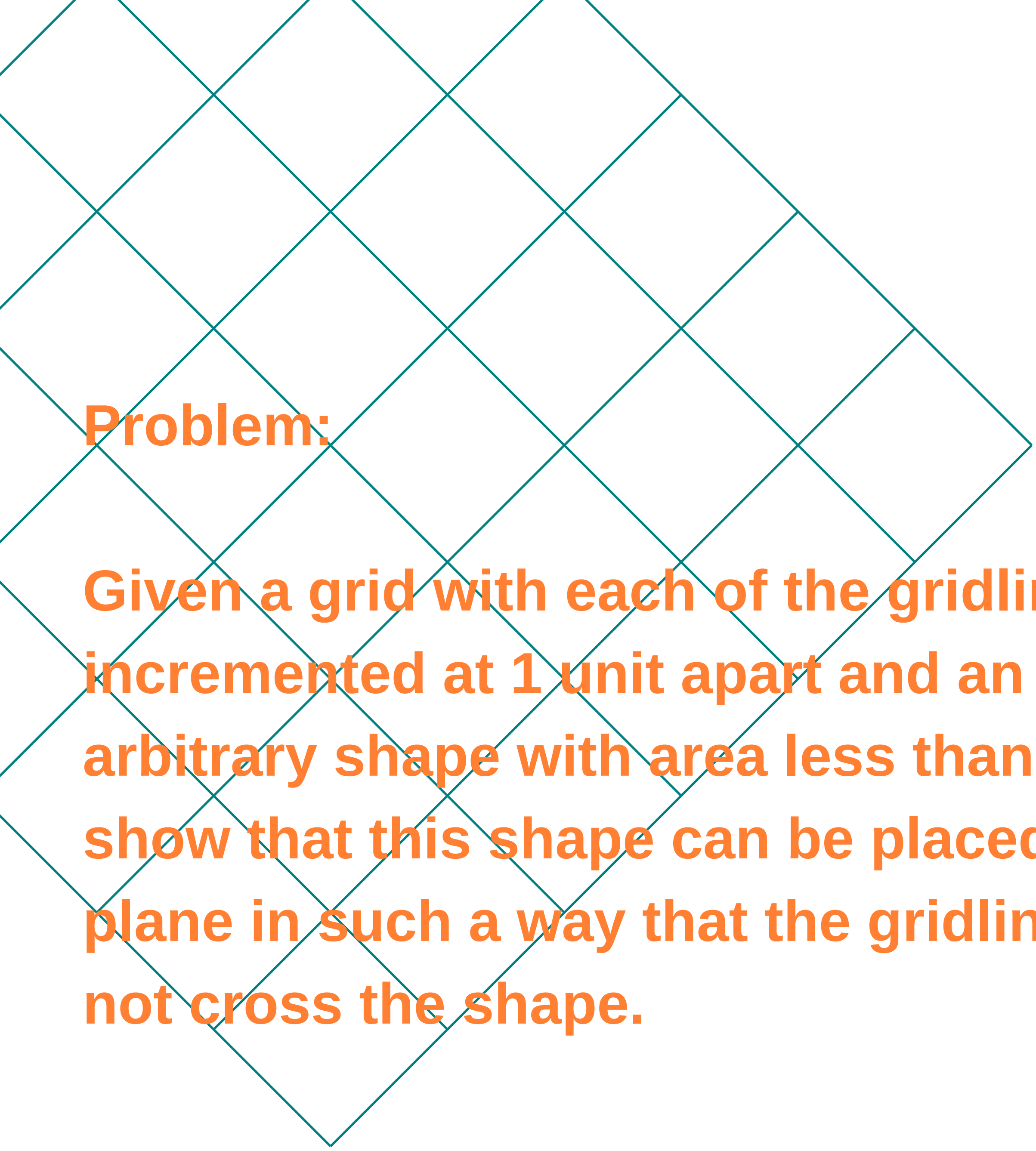
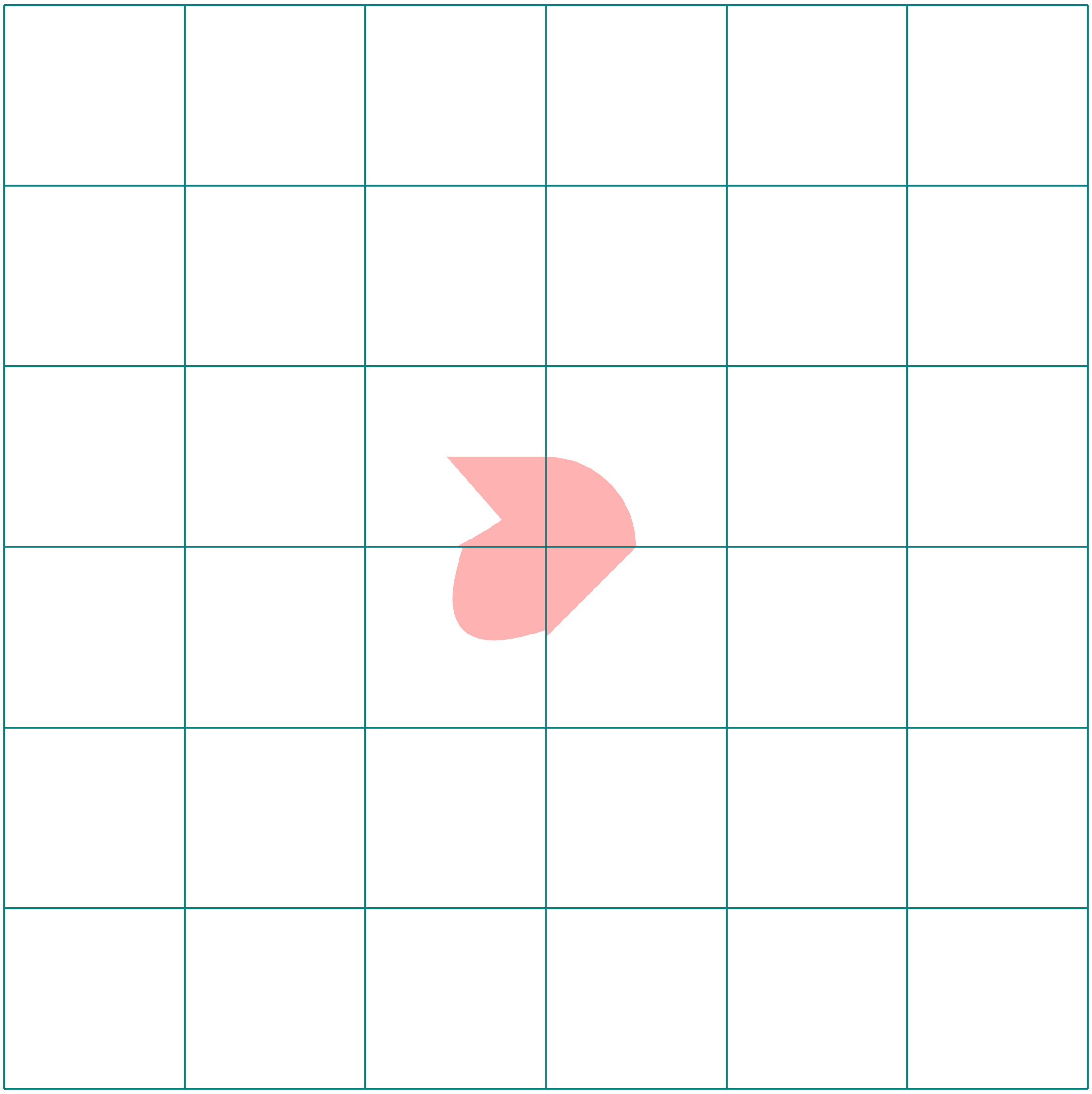
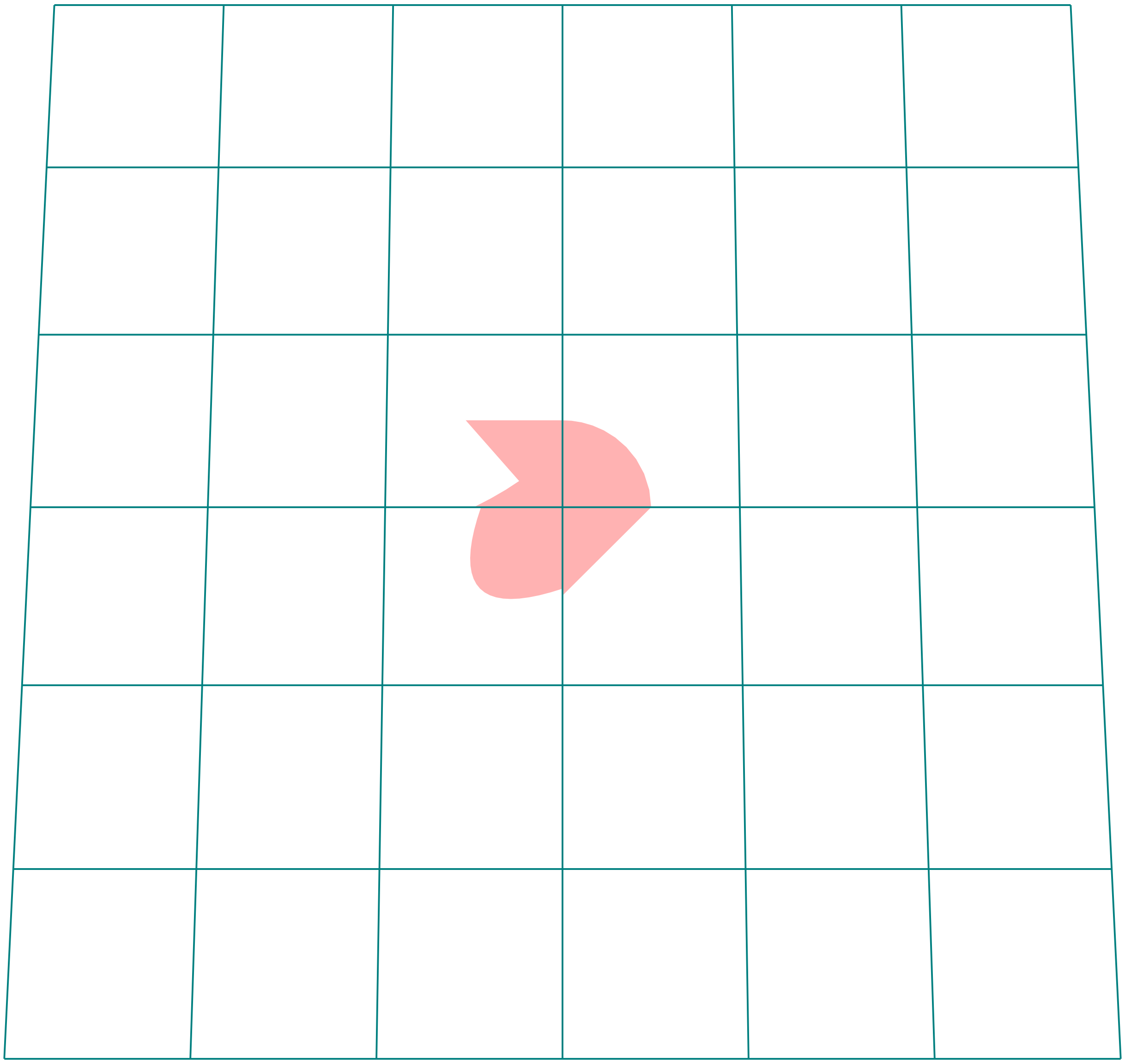
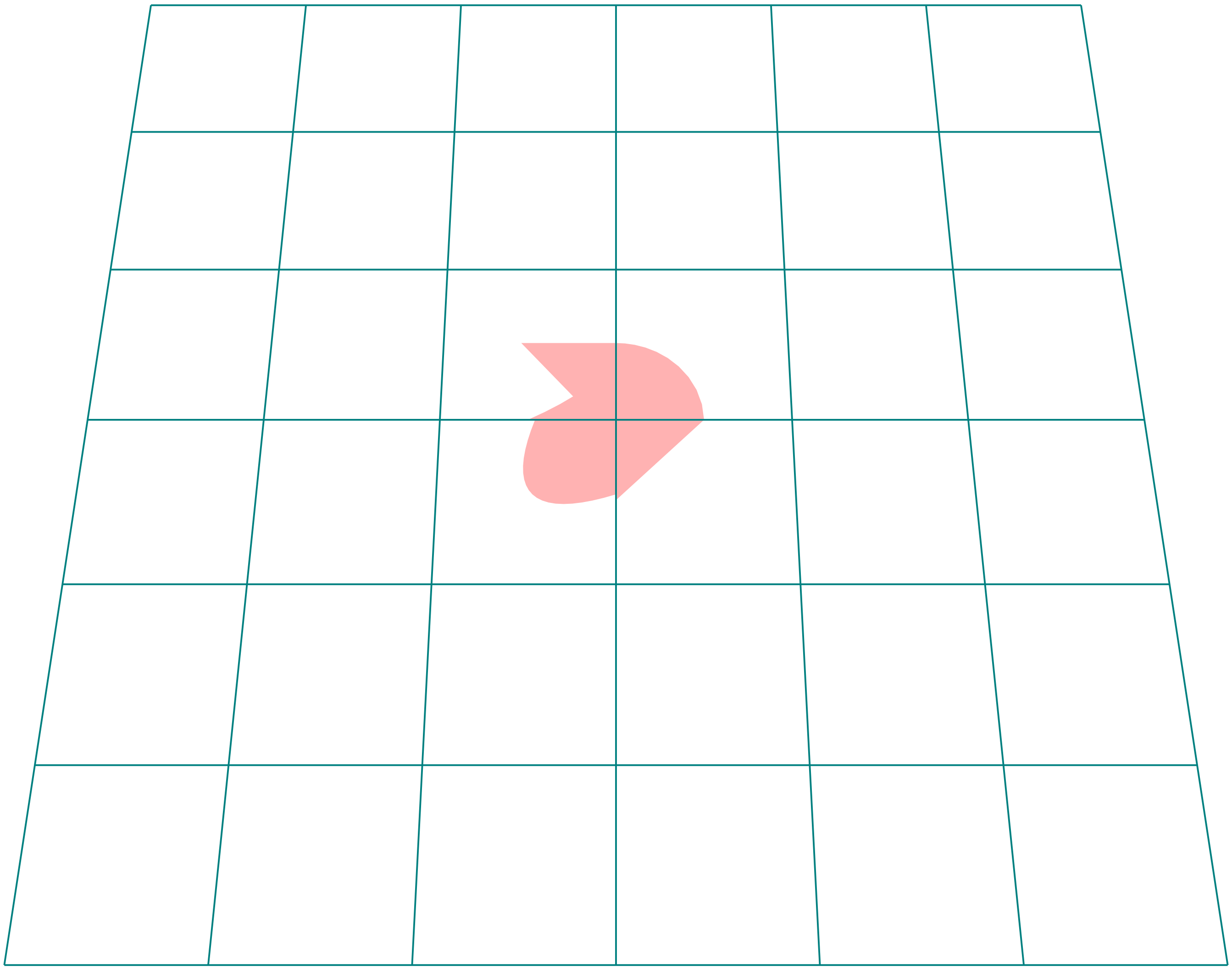


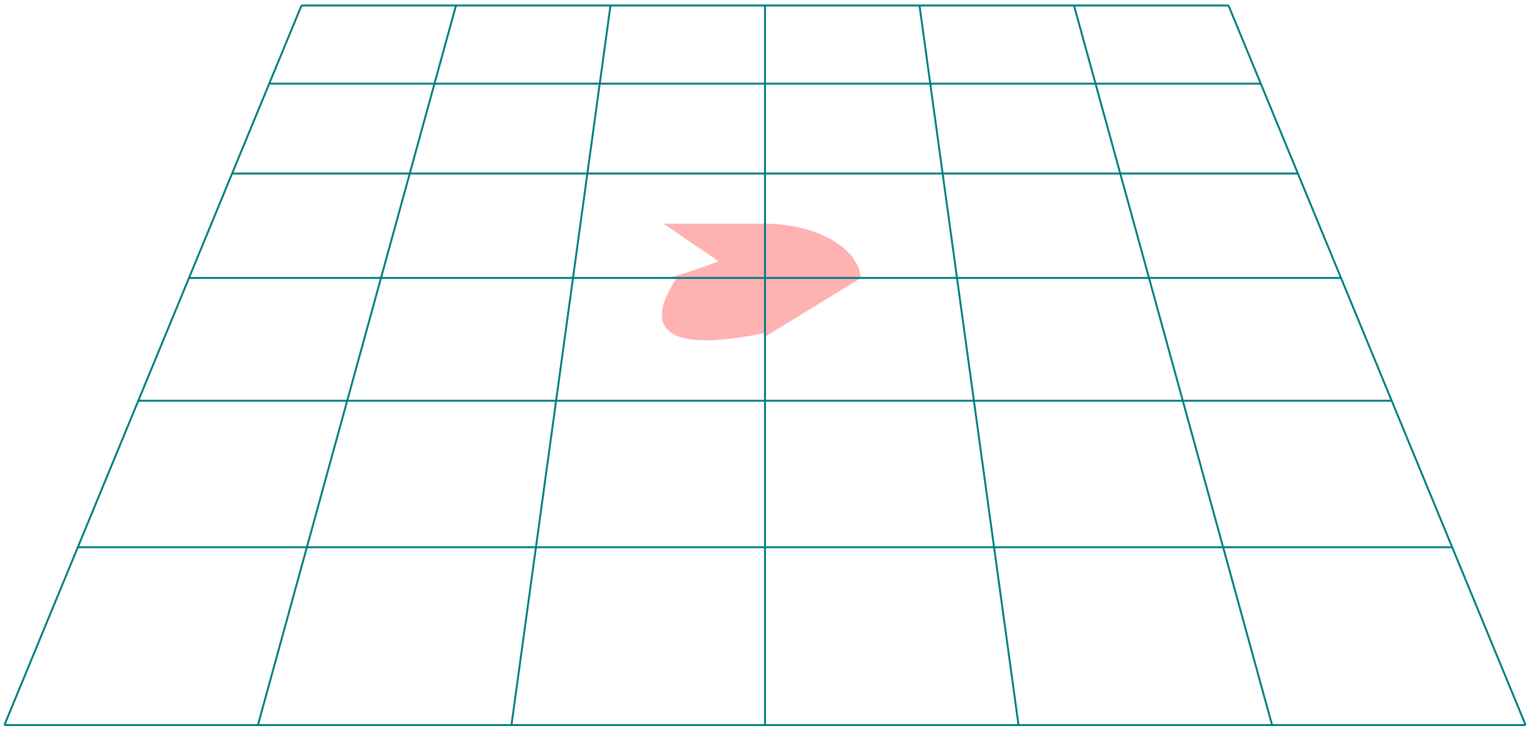
Problem:

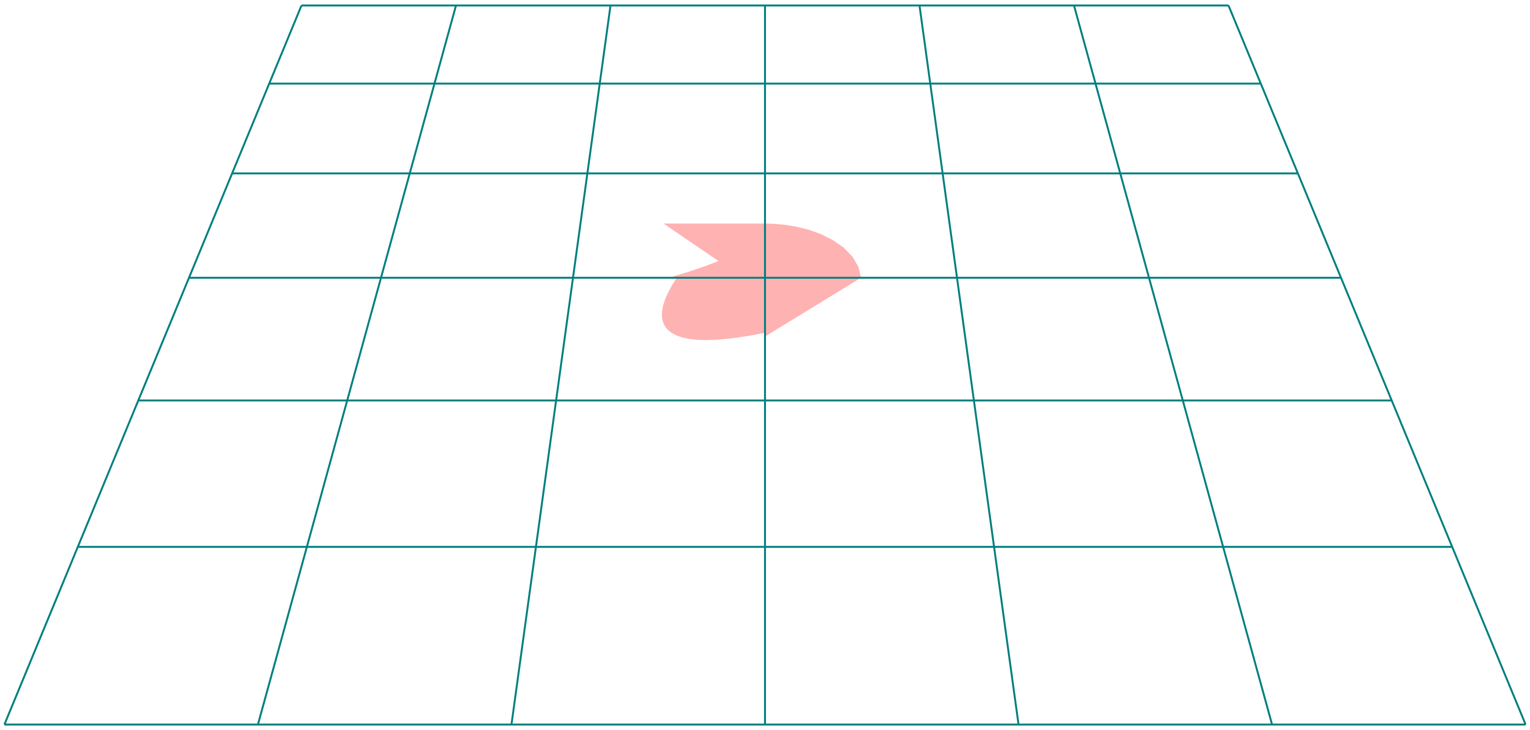
Given a grid with each of the gridlines incremented at 1 unit apart and an arbitrary shape with area less than 1, show that this shape can be placed on the plane in such a way that the gridlines will not cross the shape.

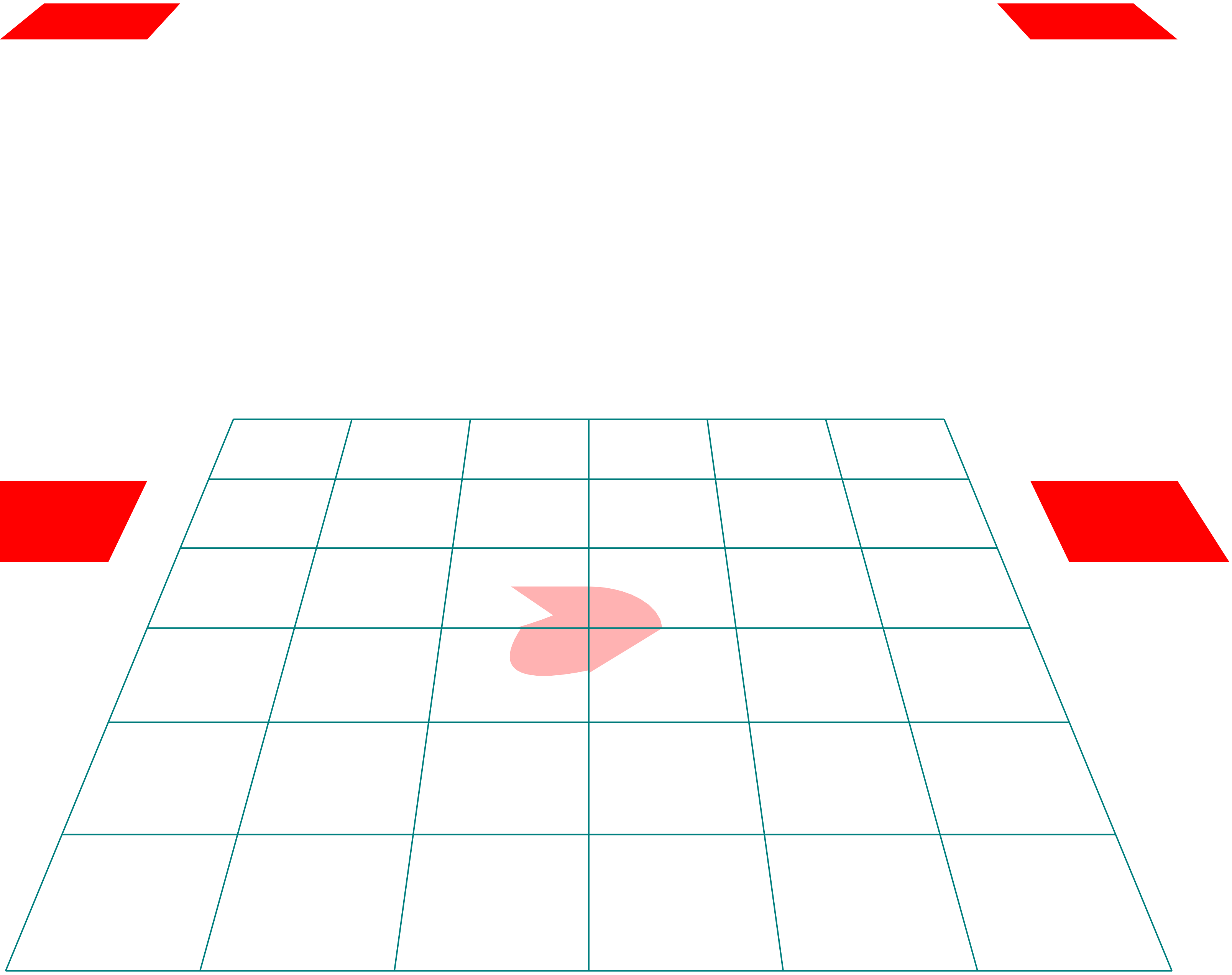


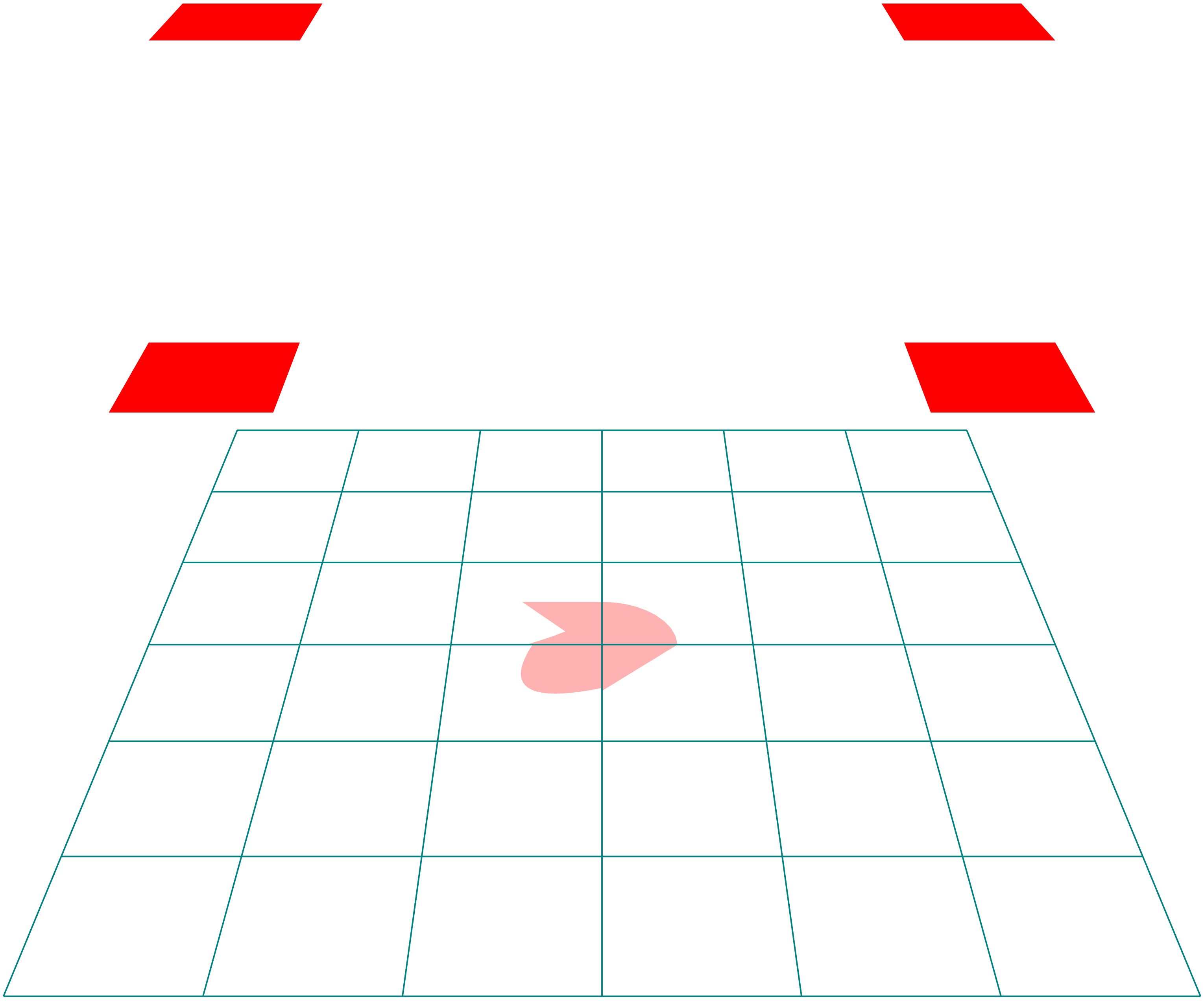


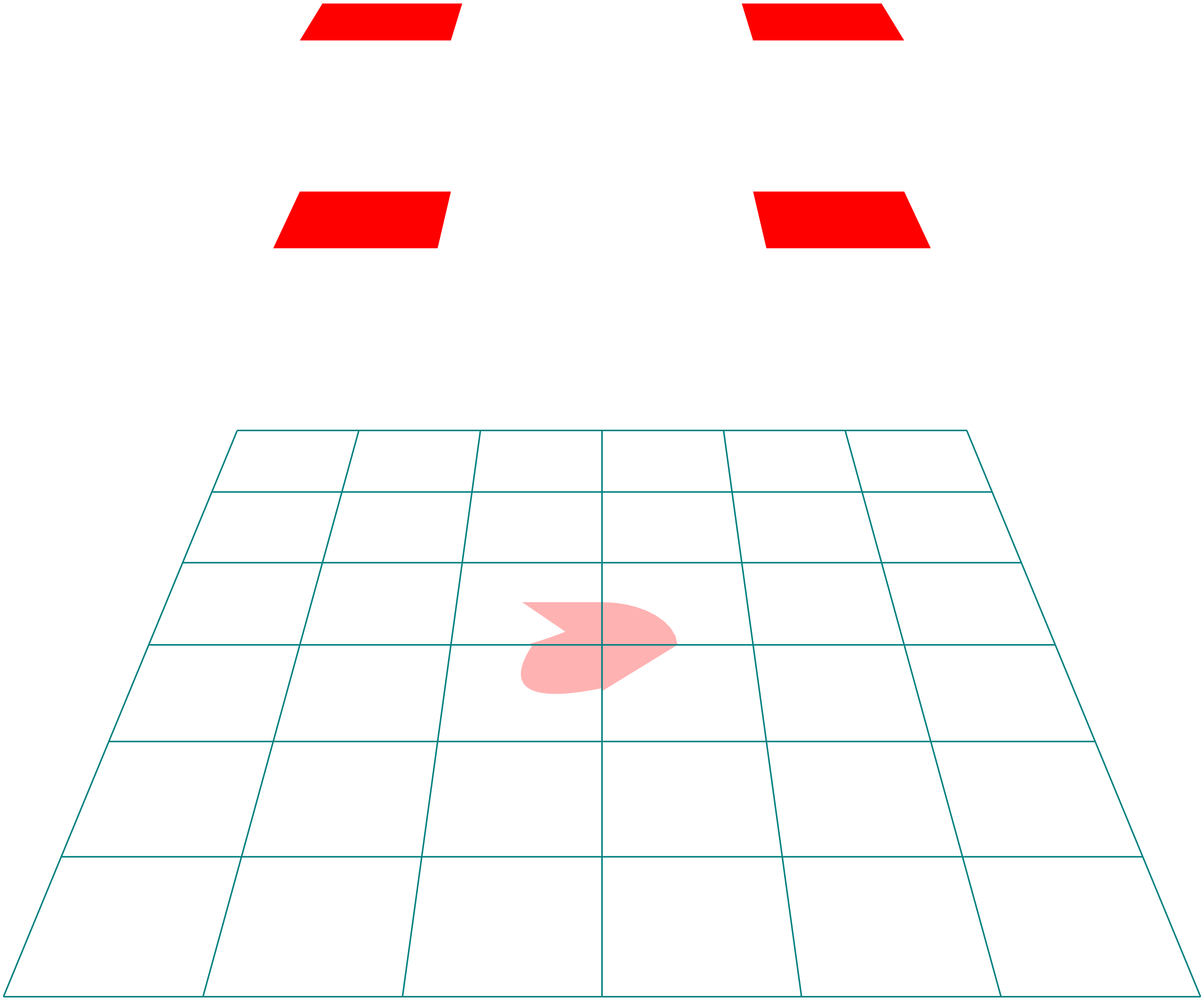


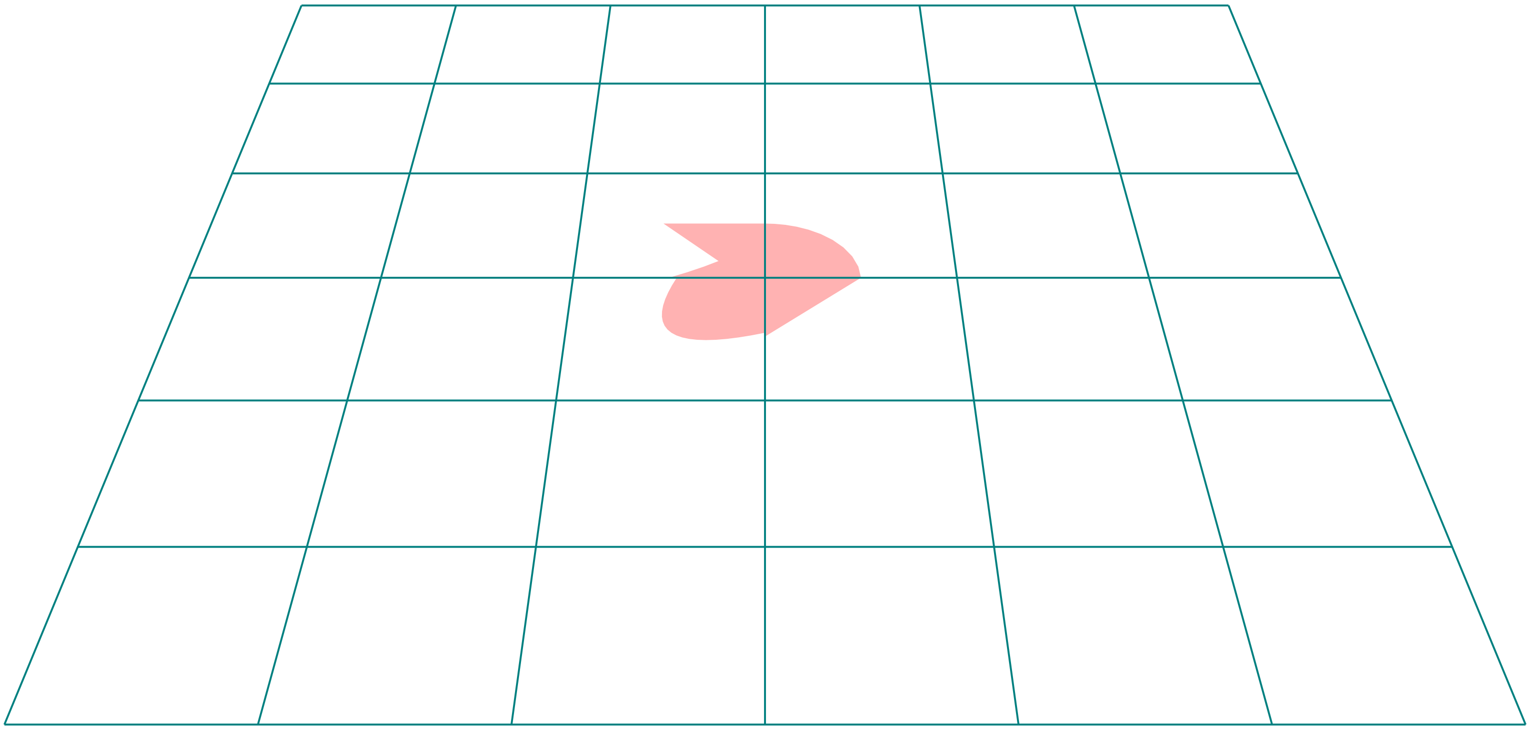


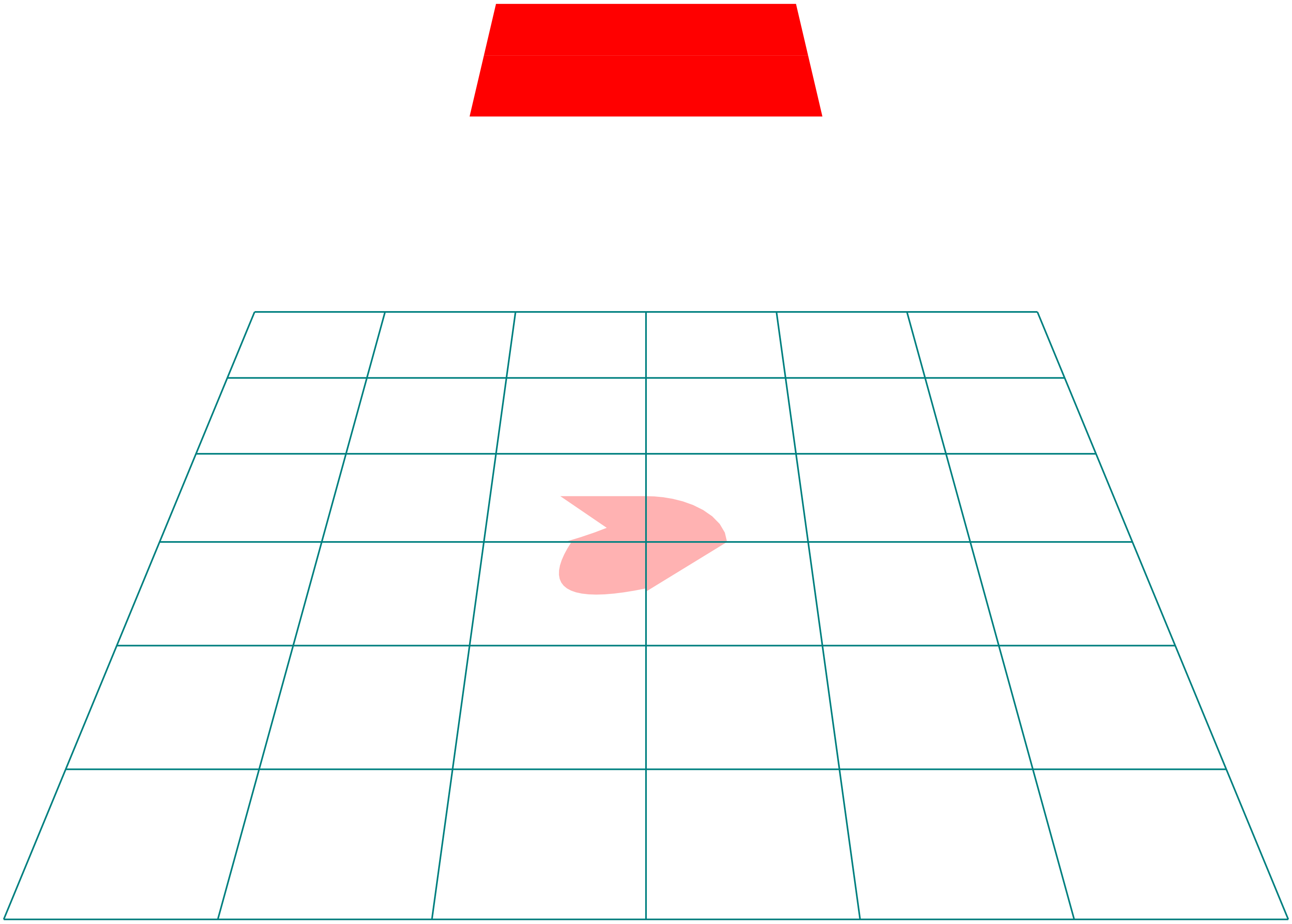


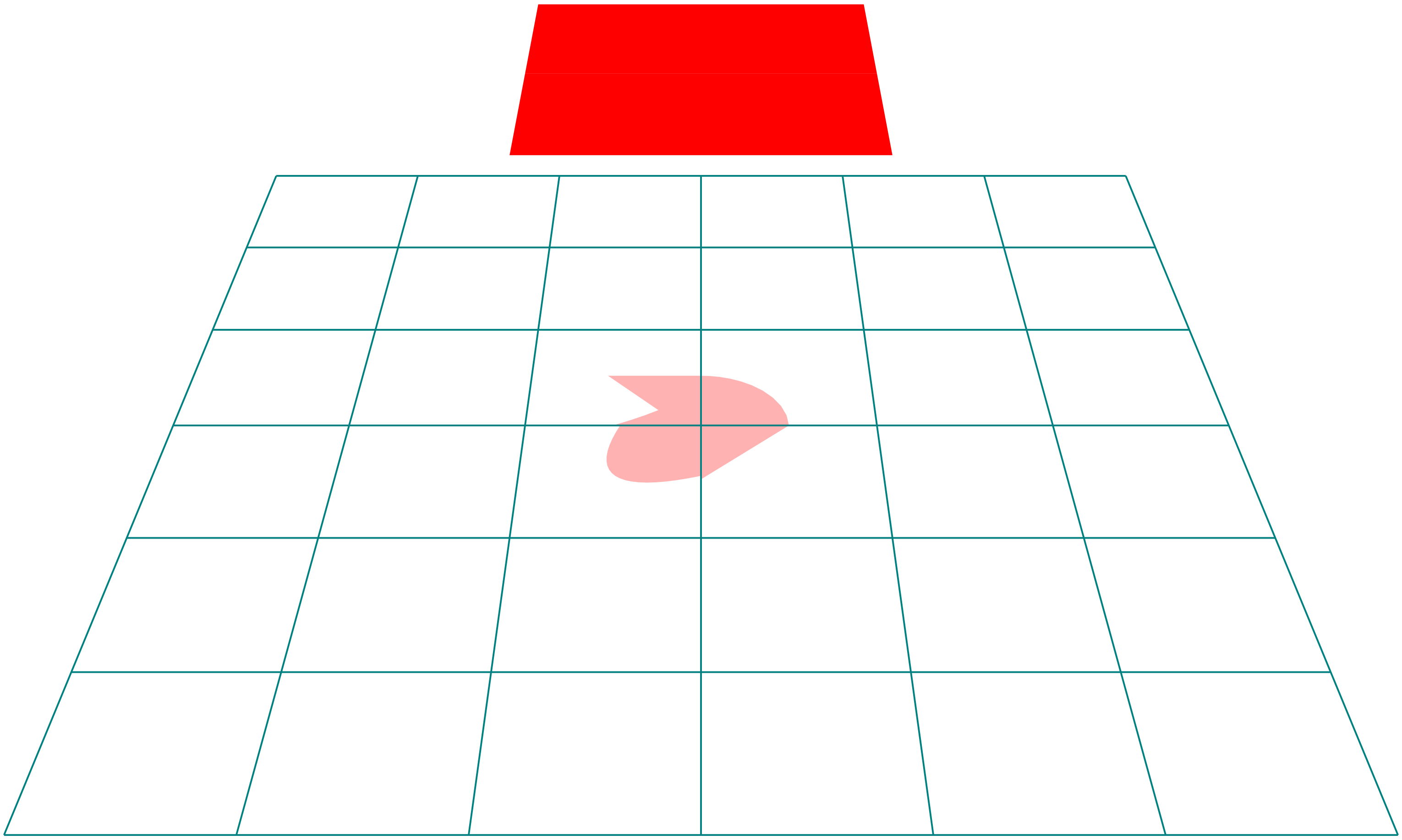


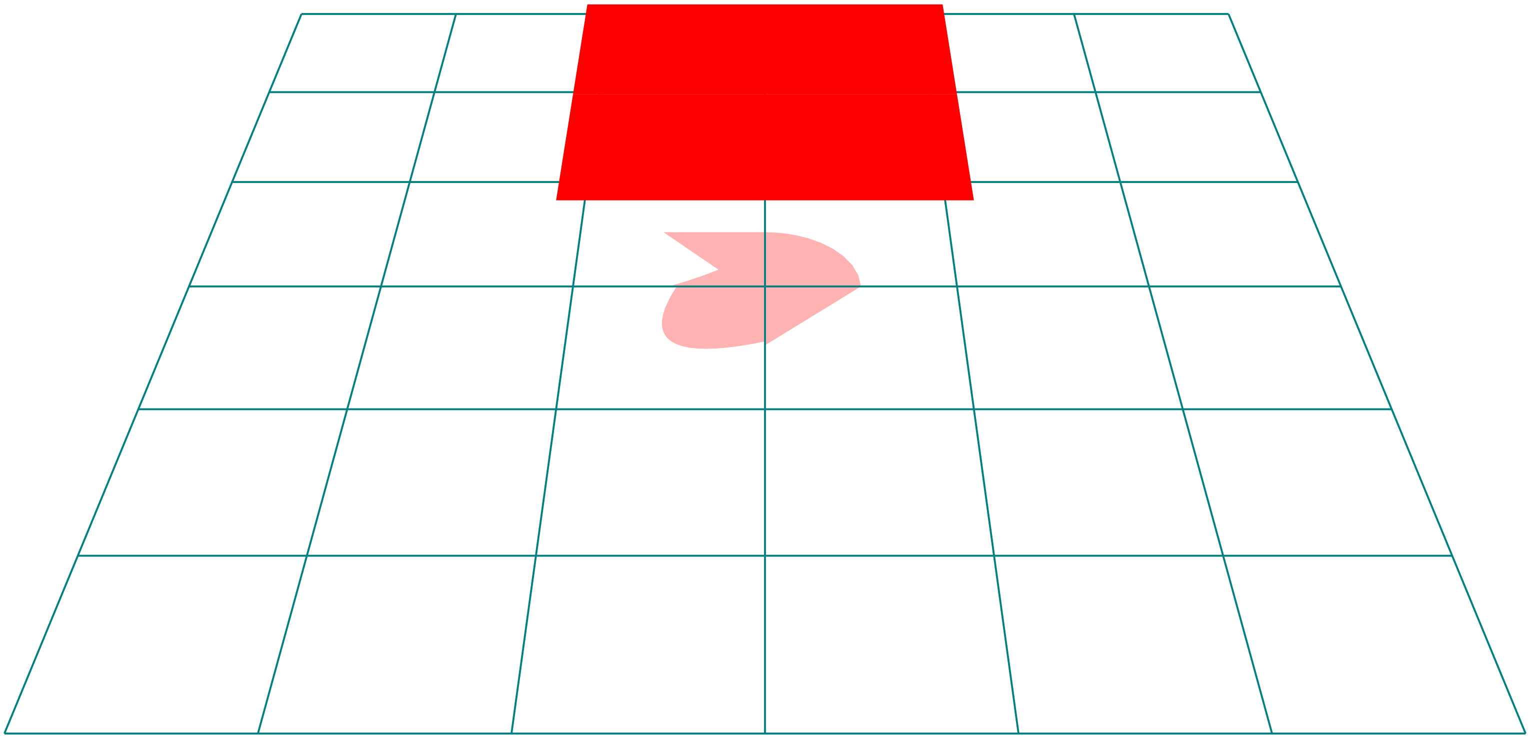


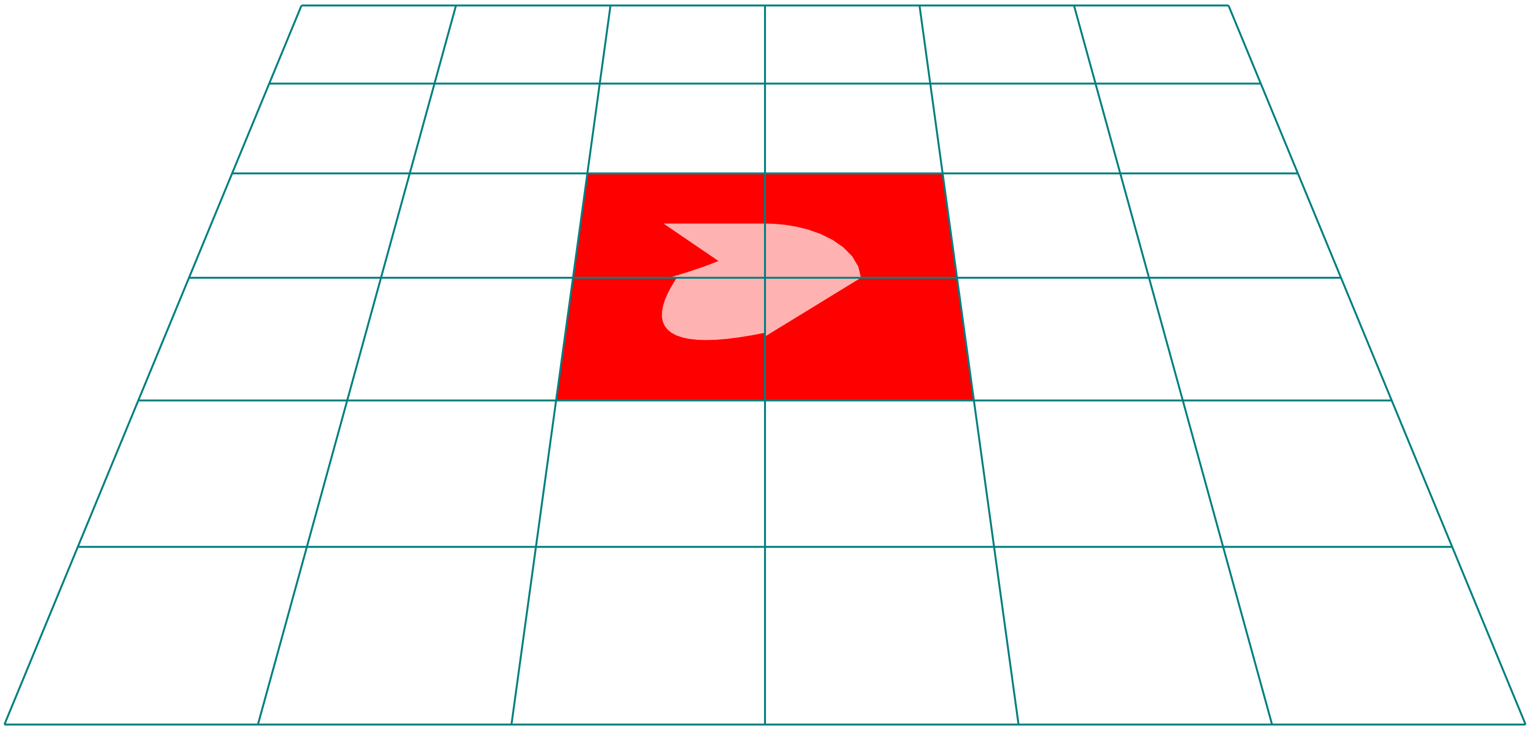


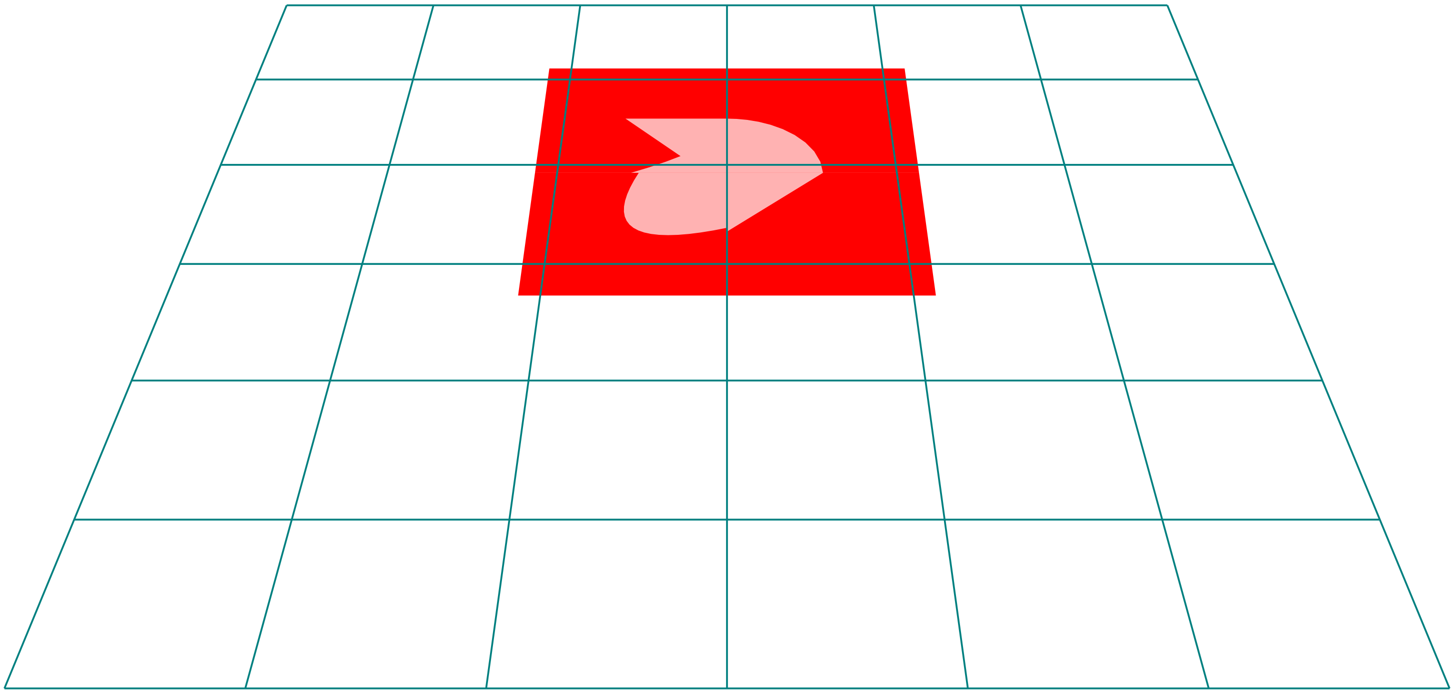


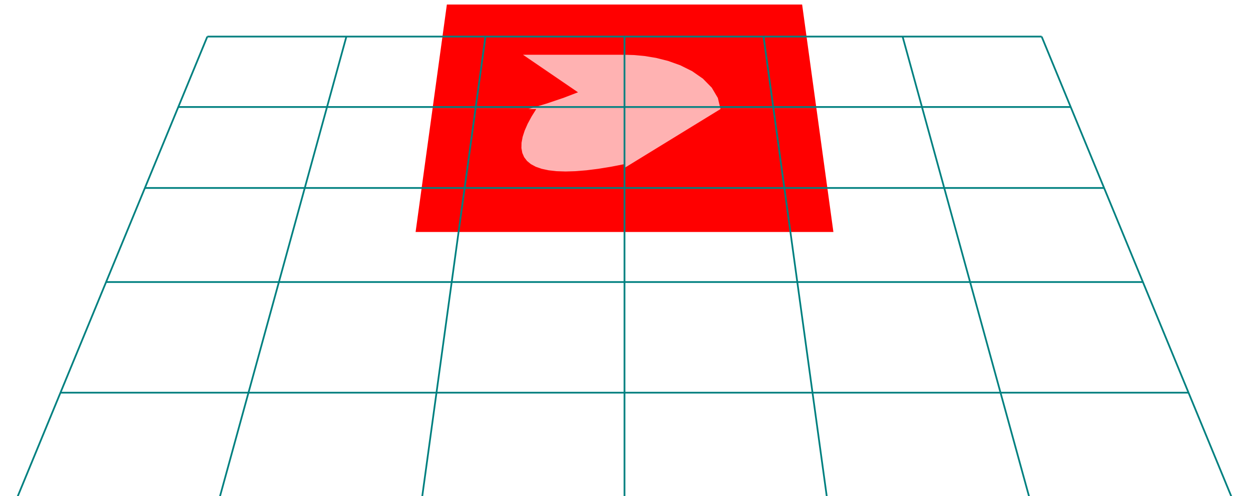


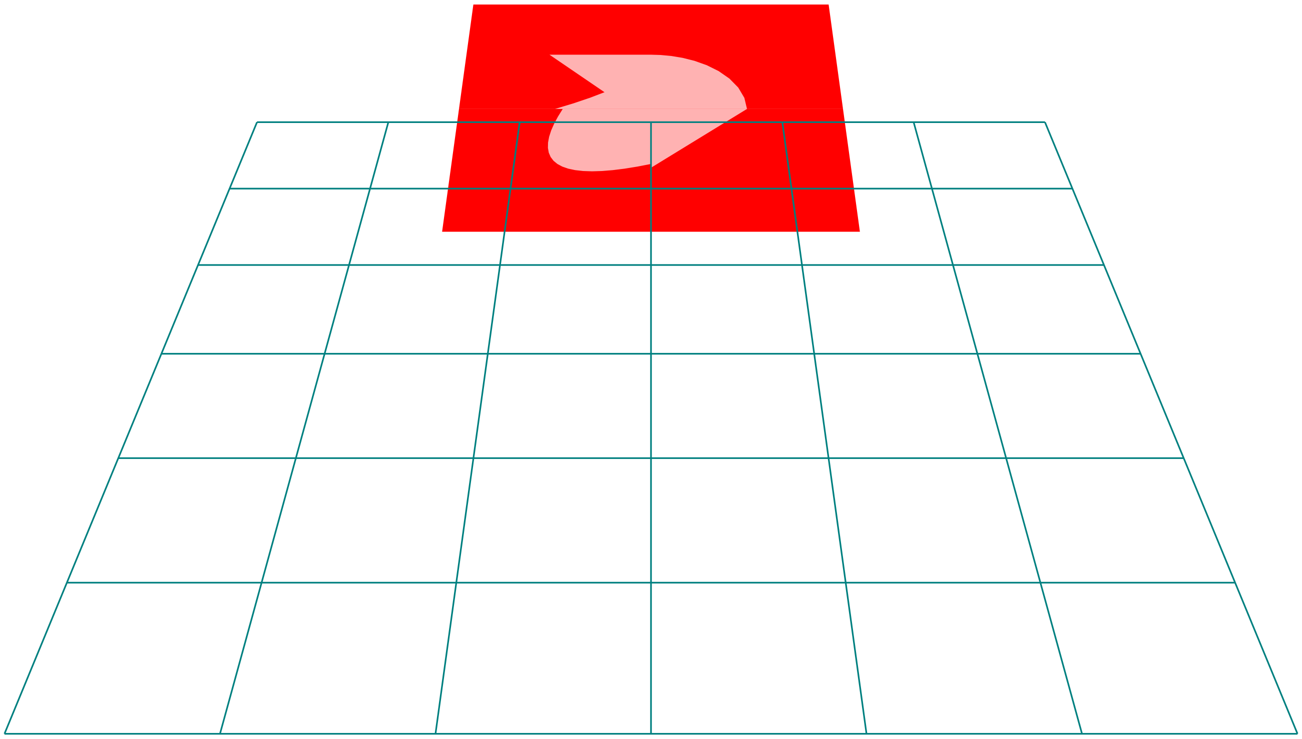


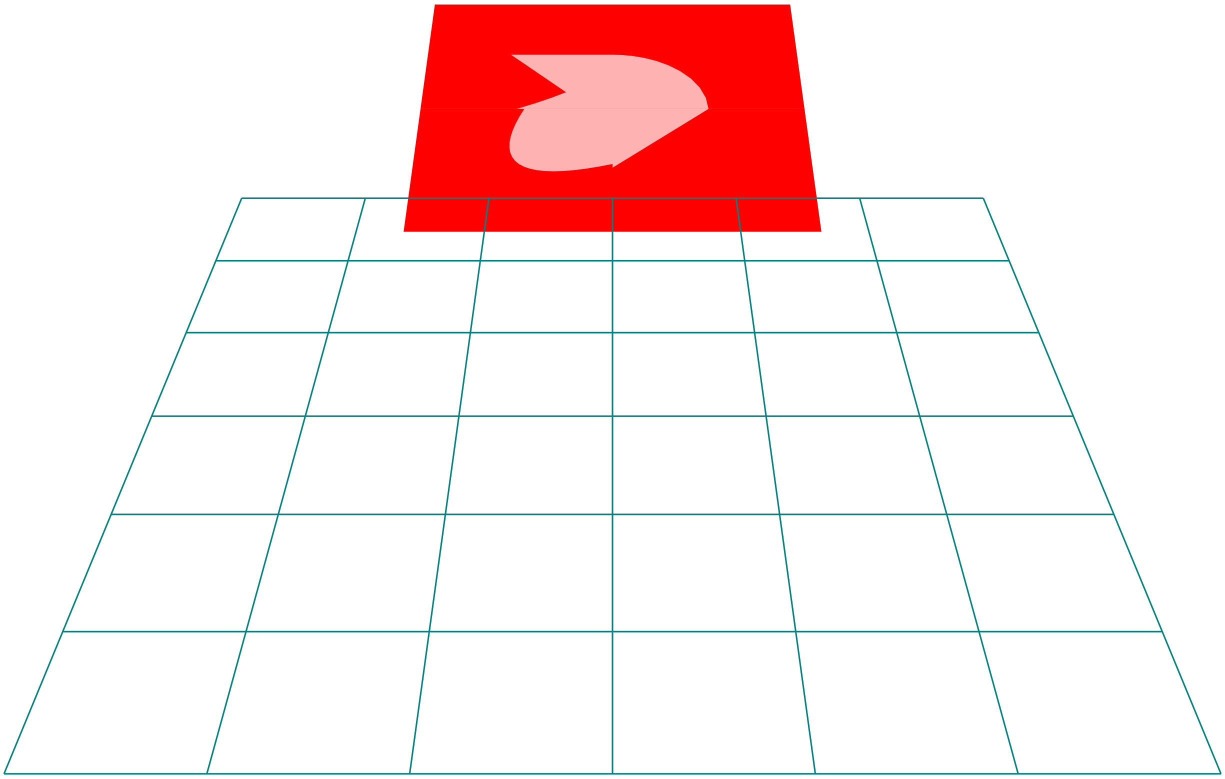


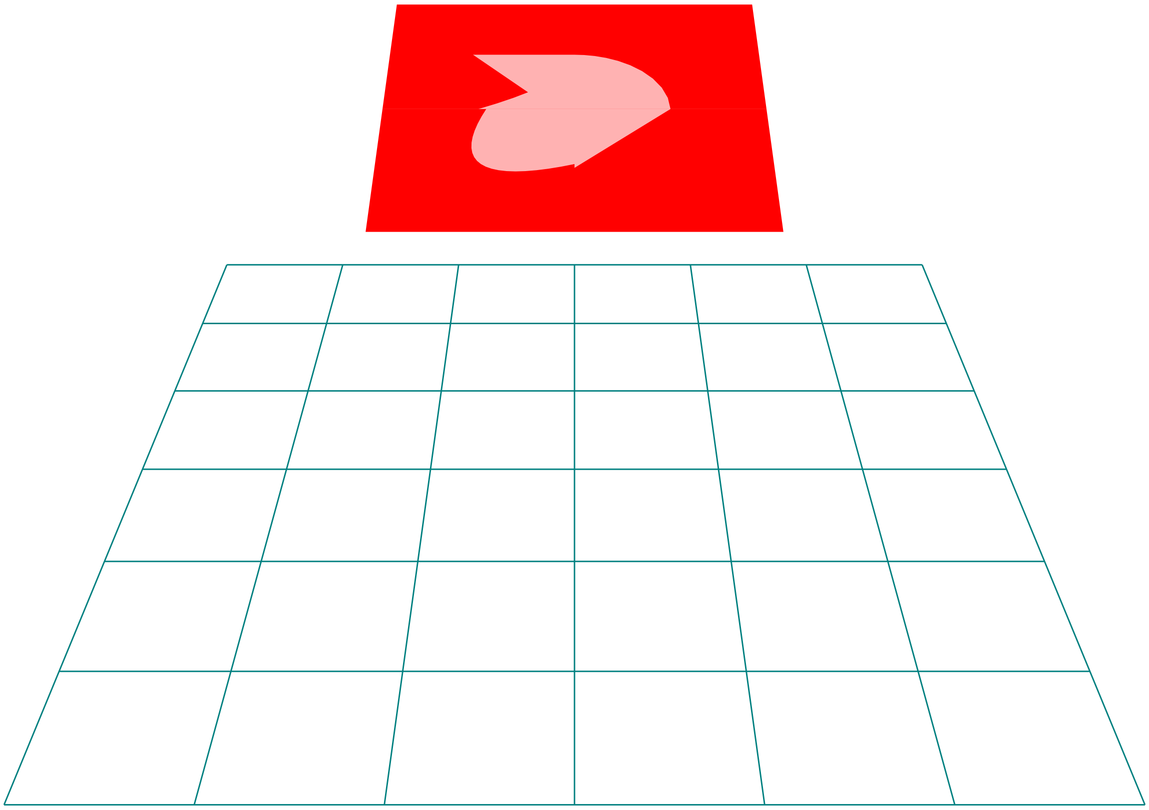


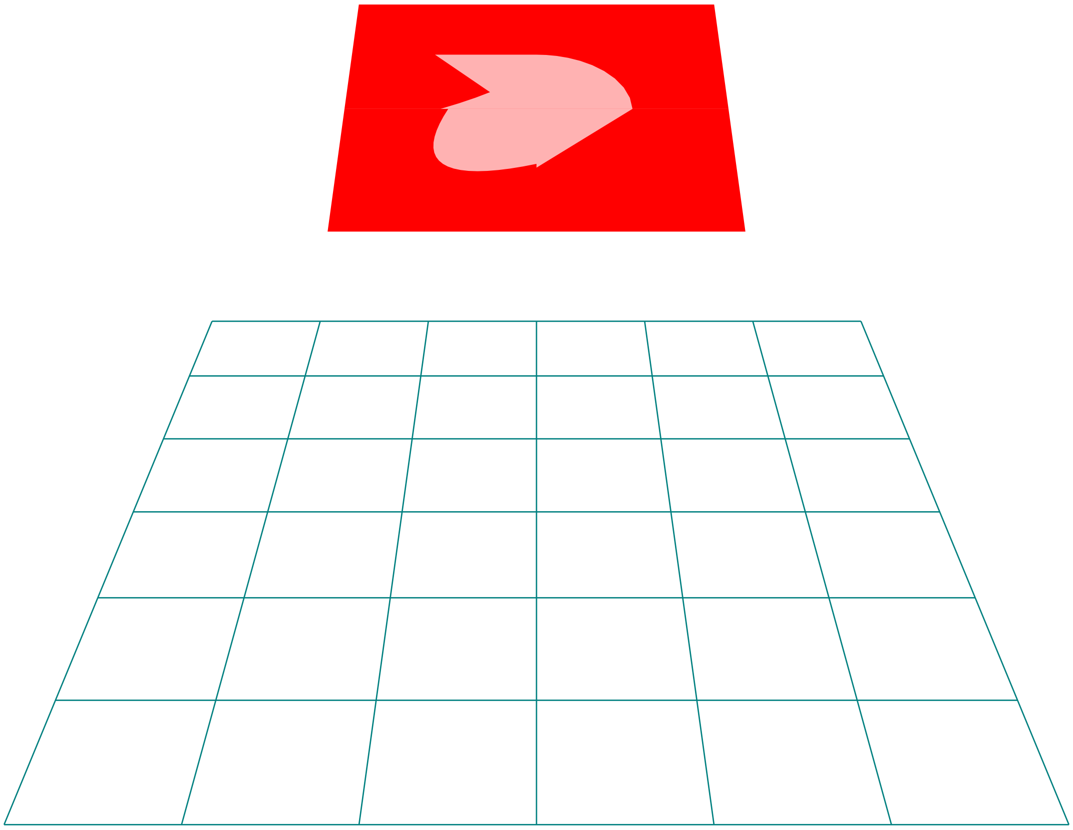


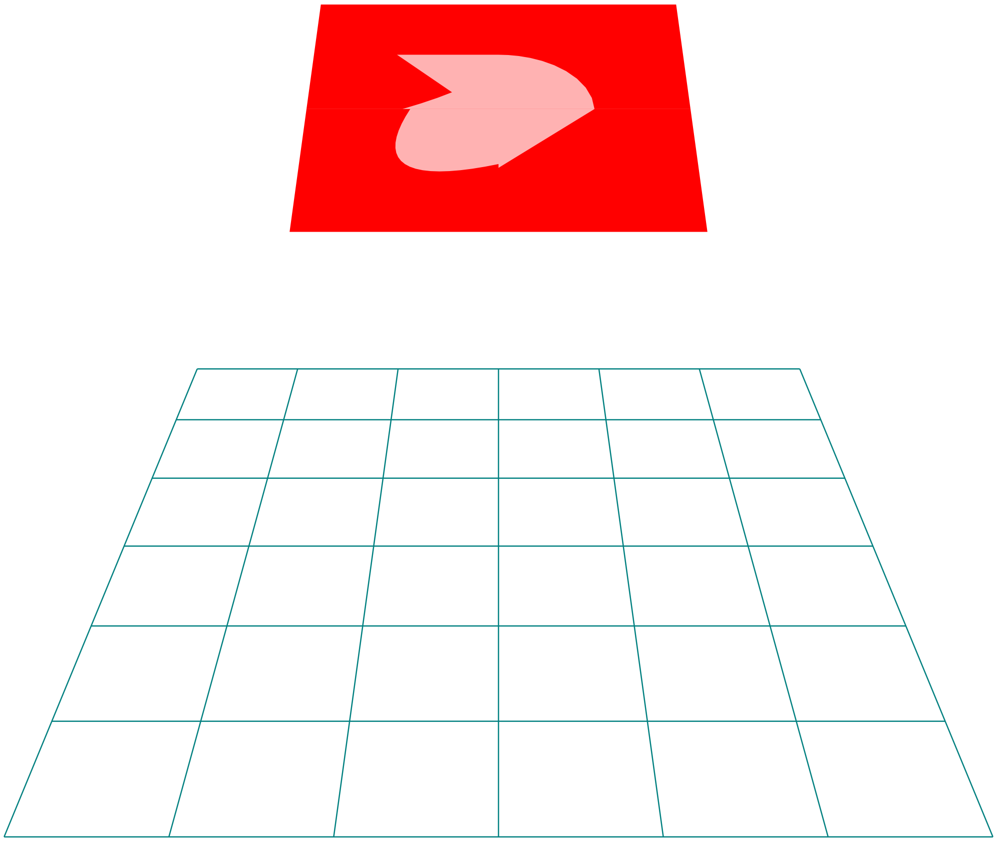


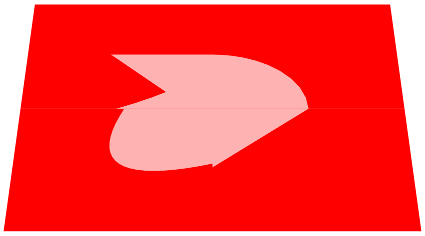


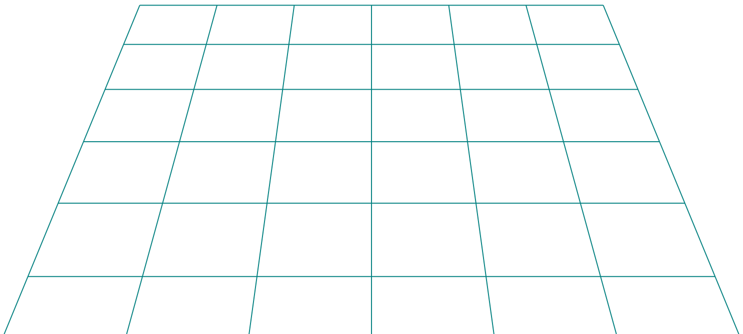


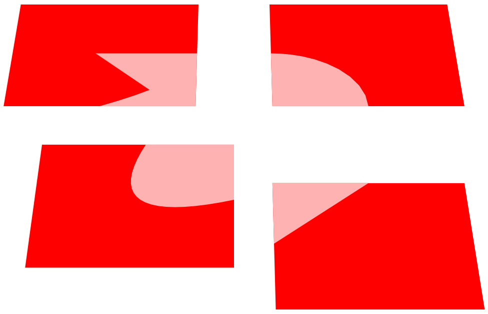


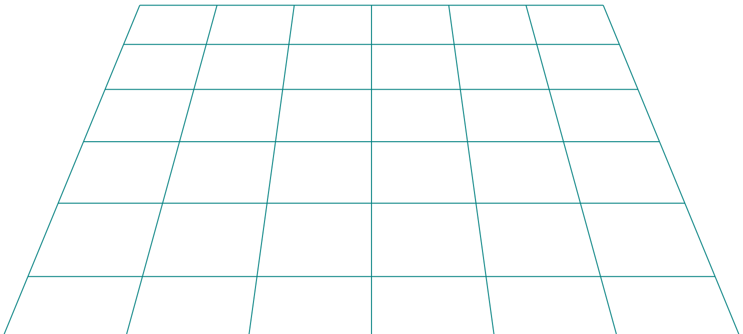


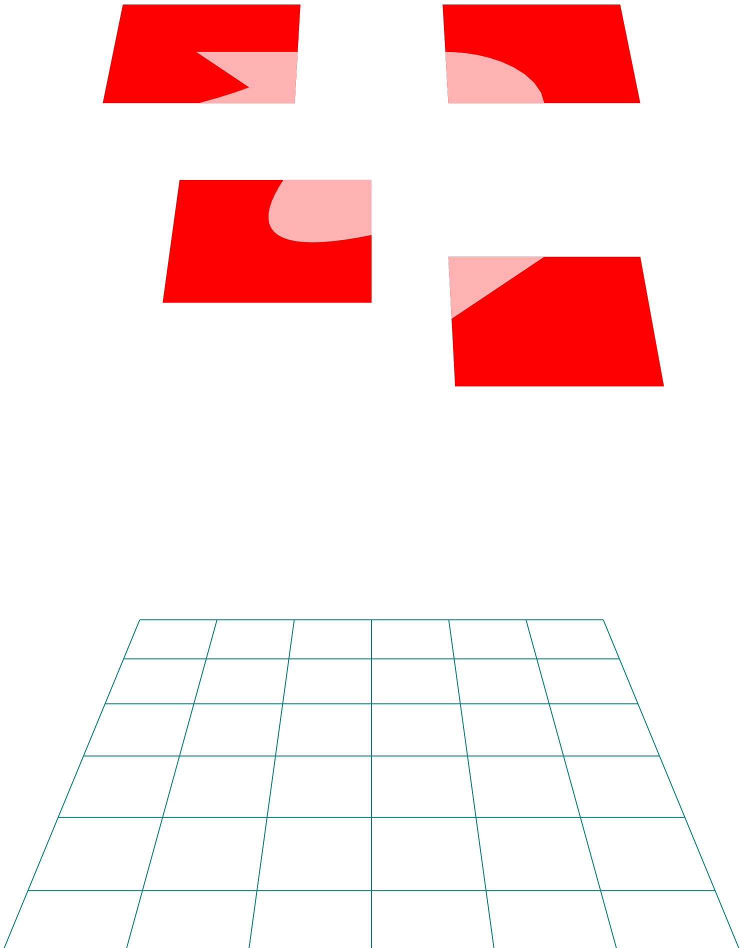


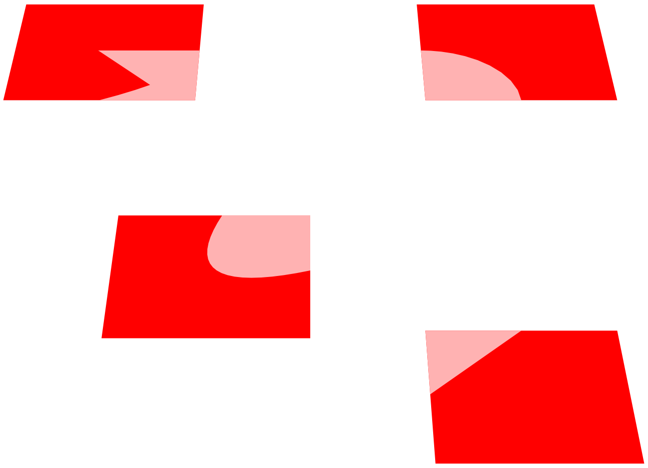


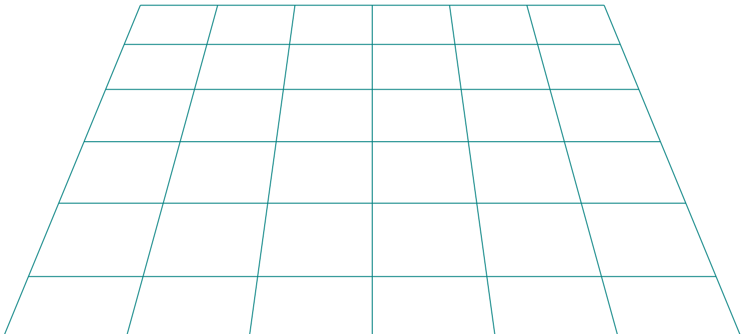


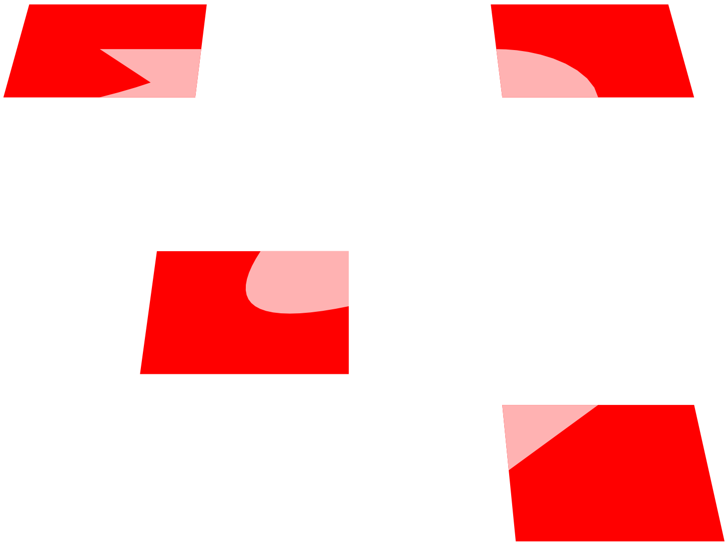


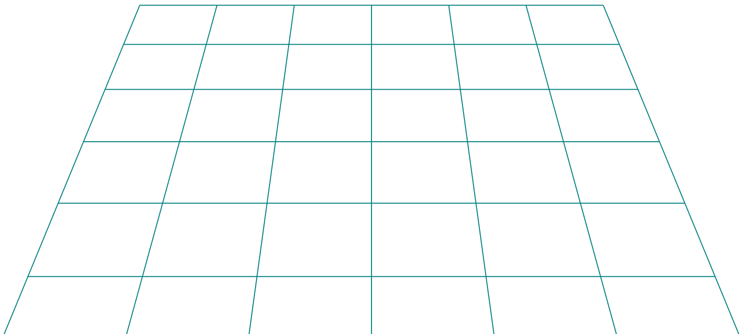


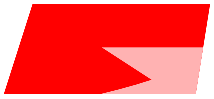


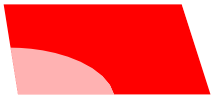


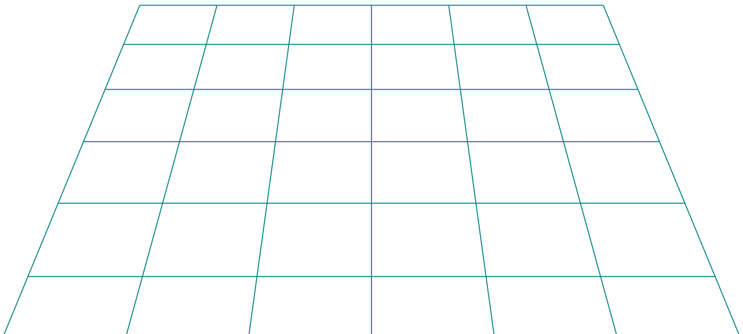


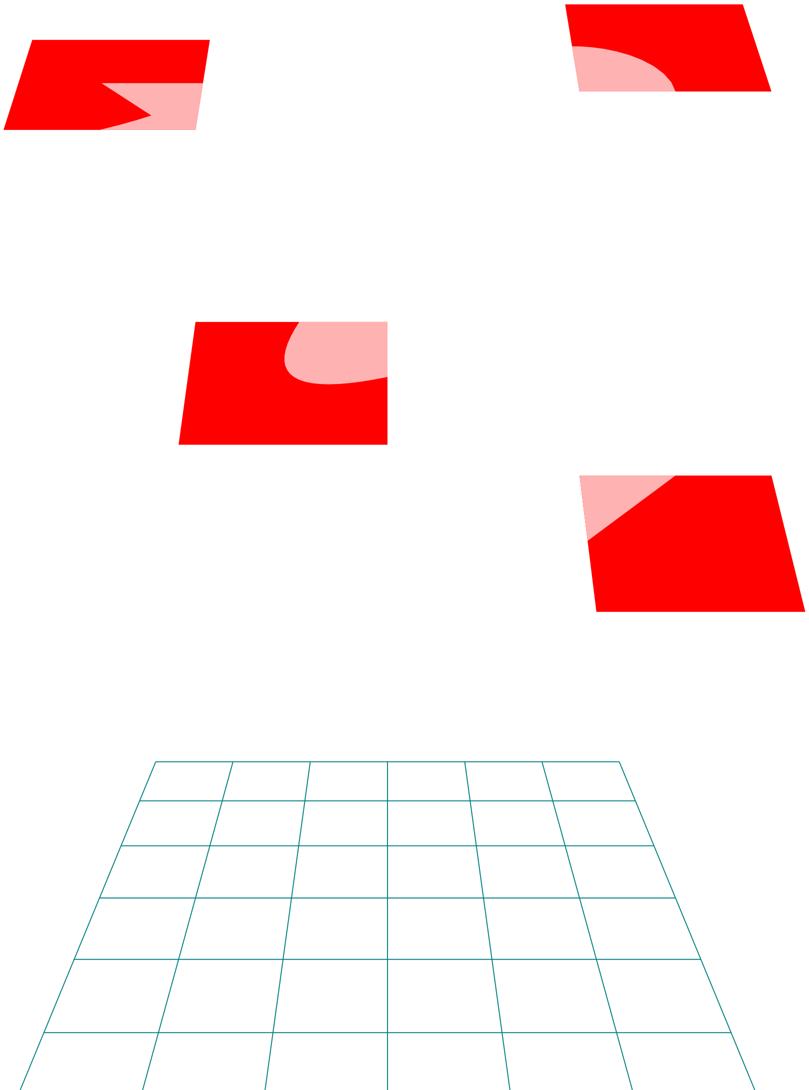


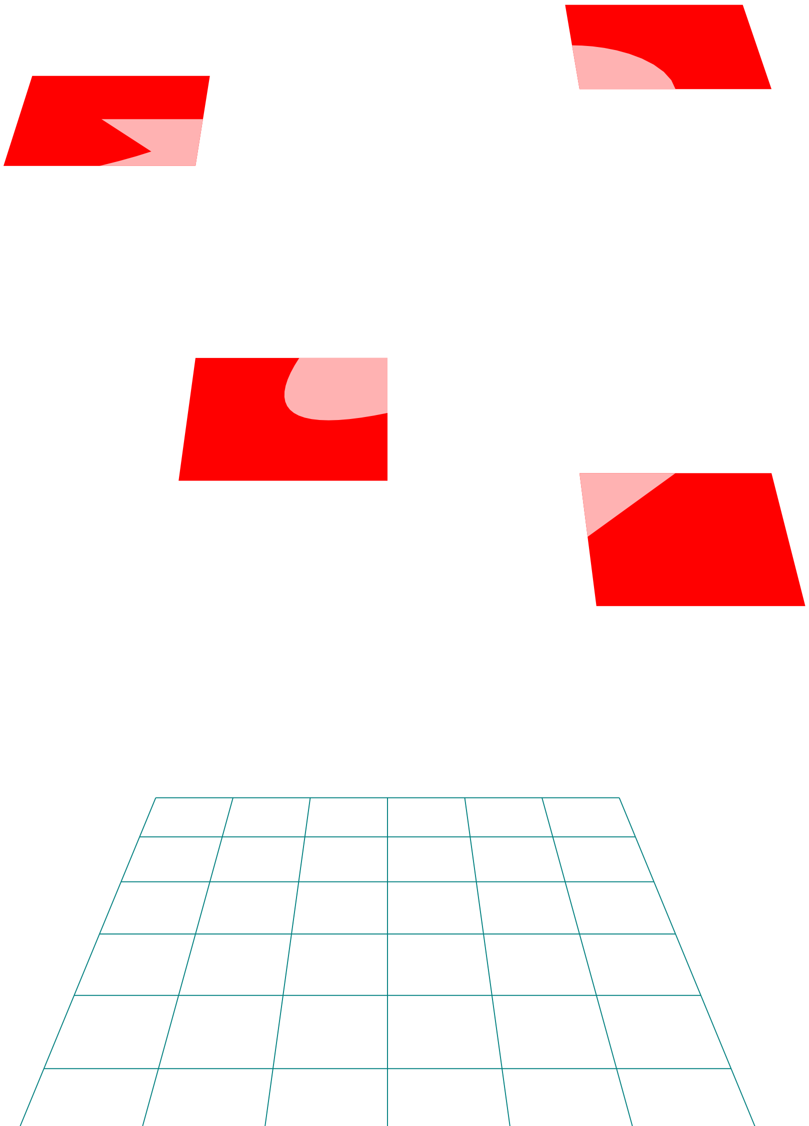


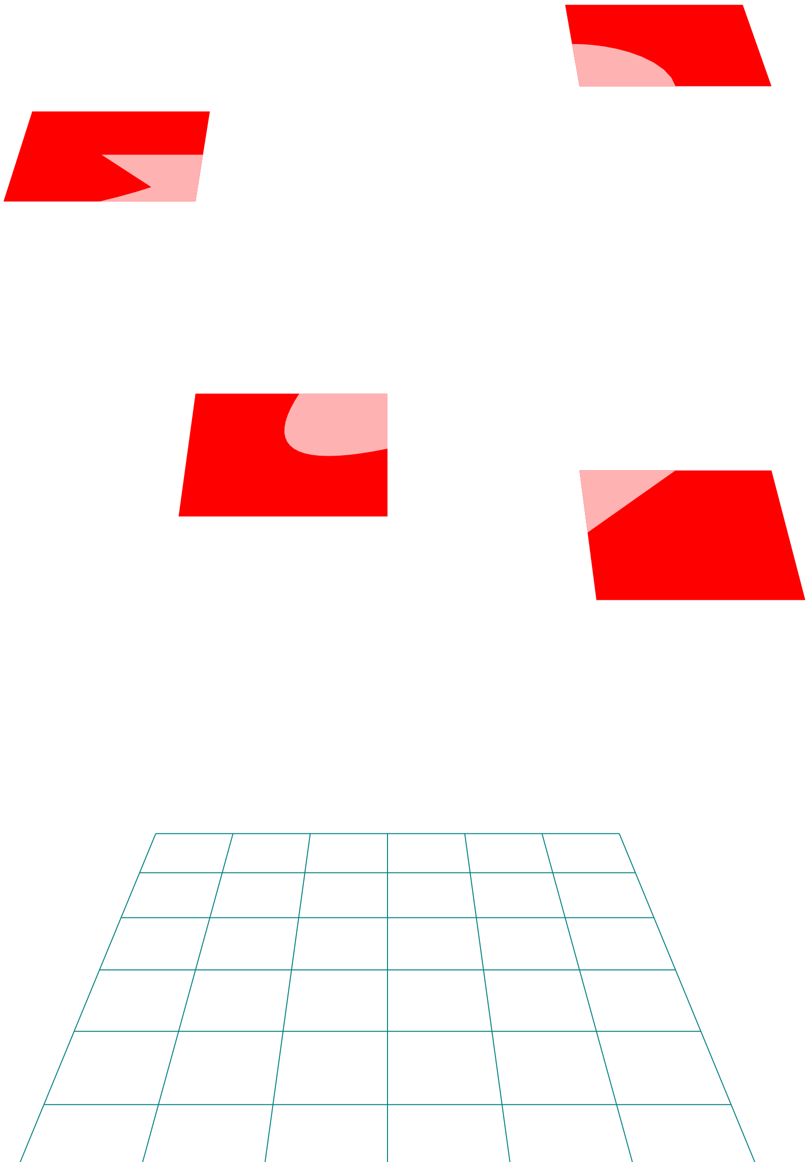


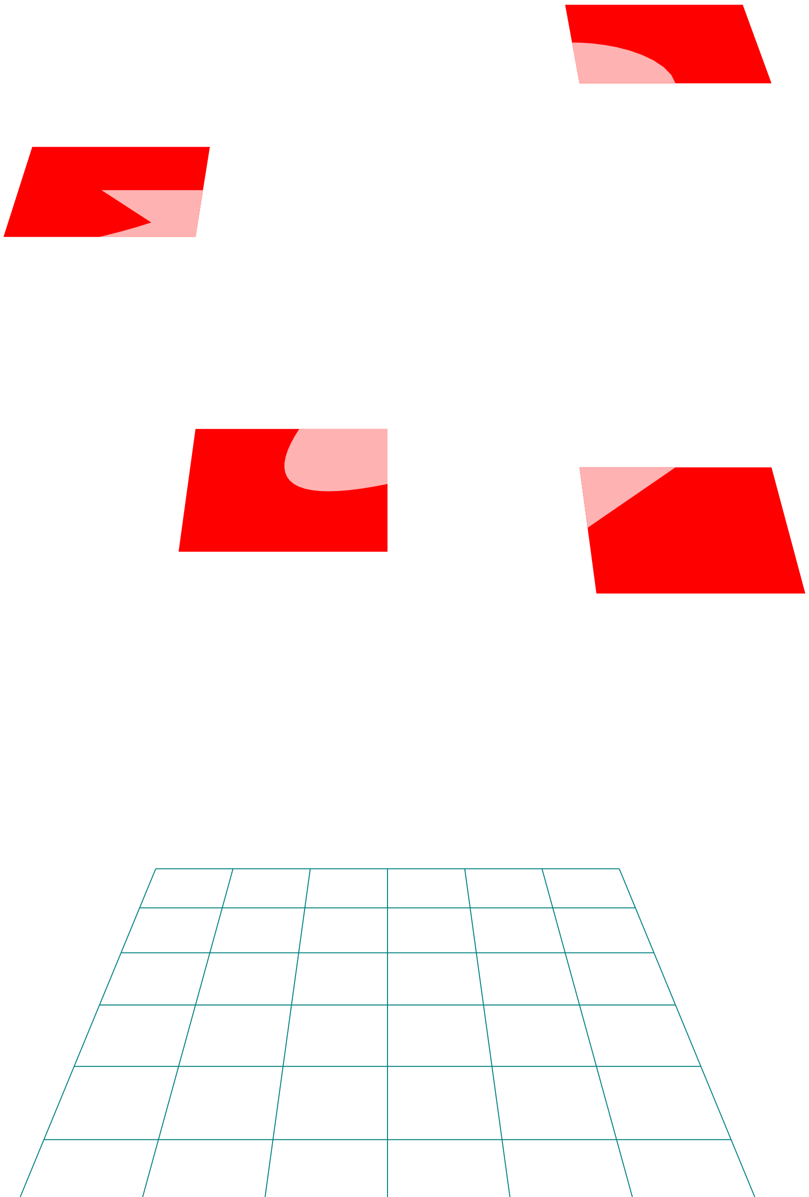


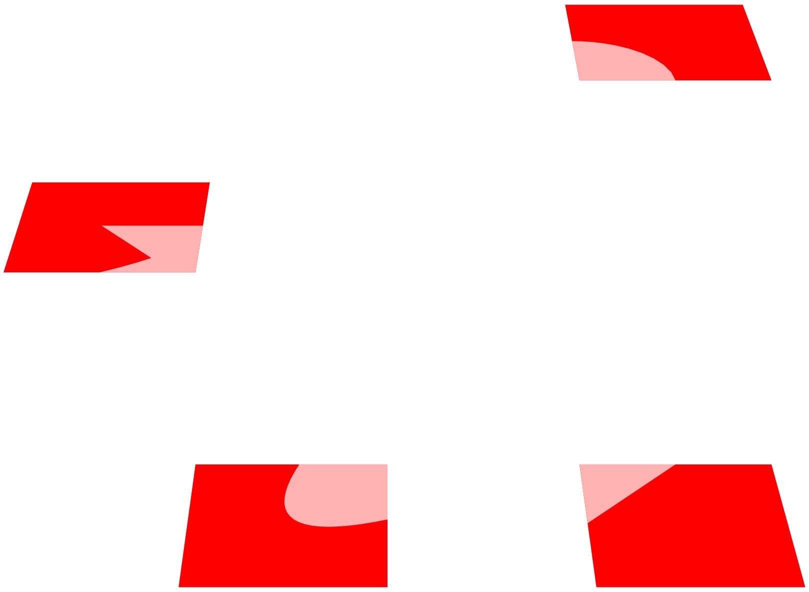


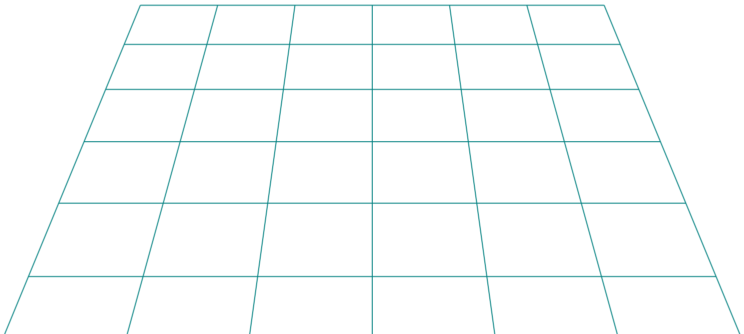


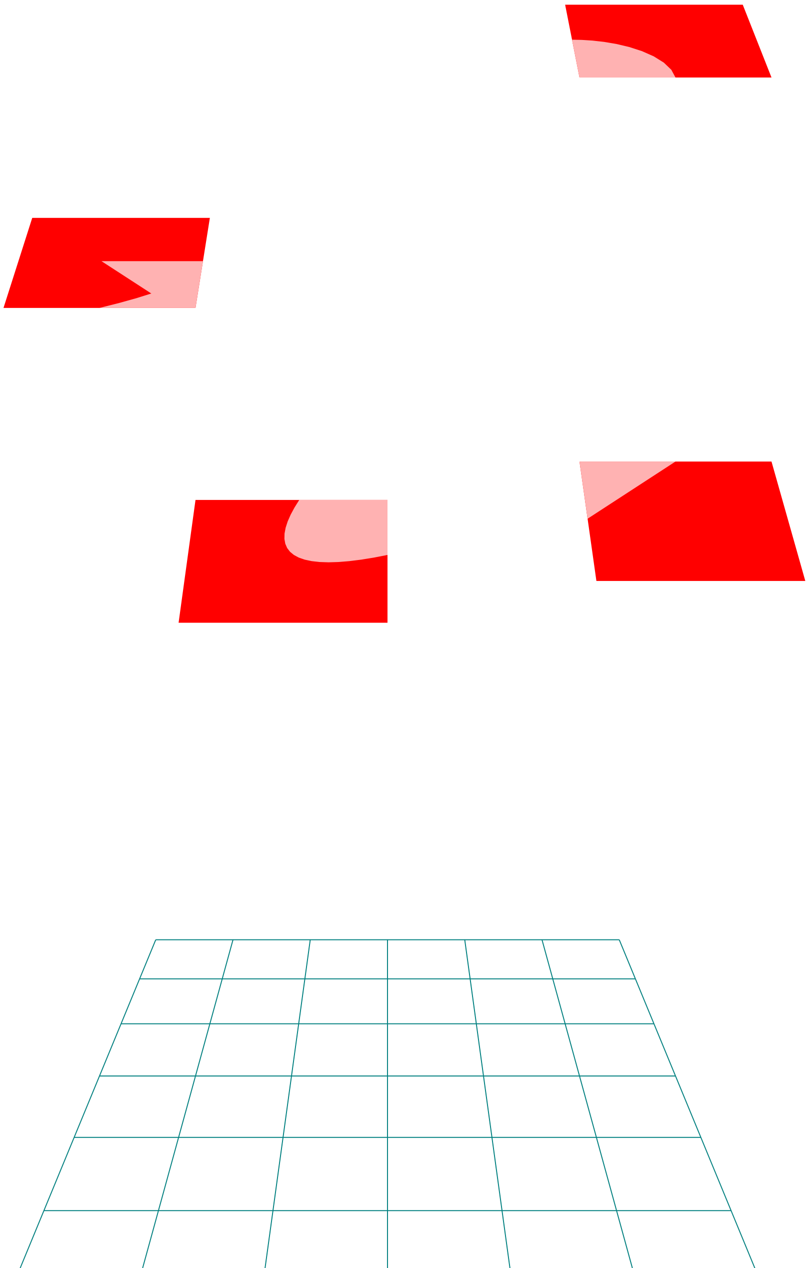


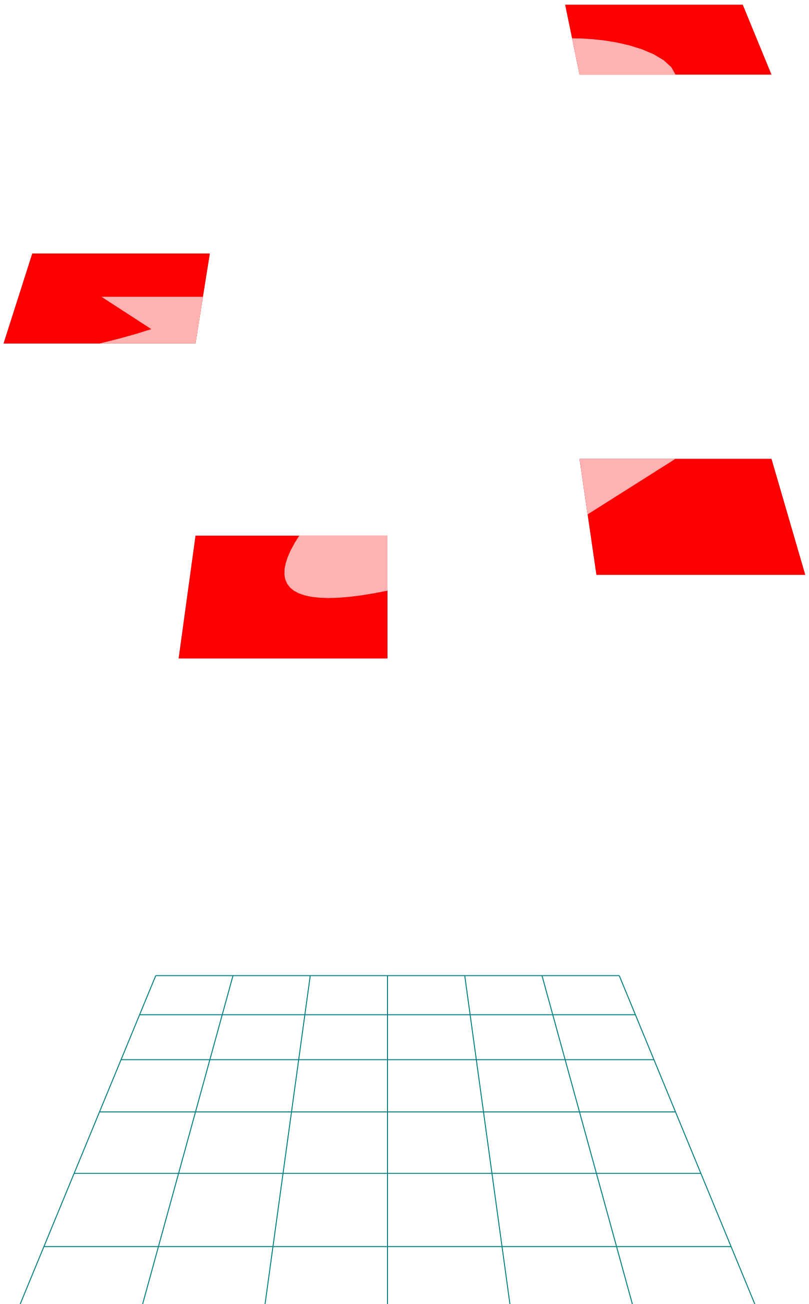


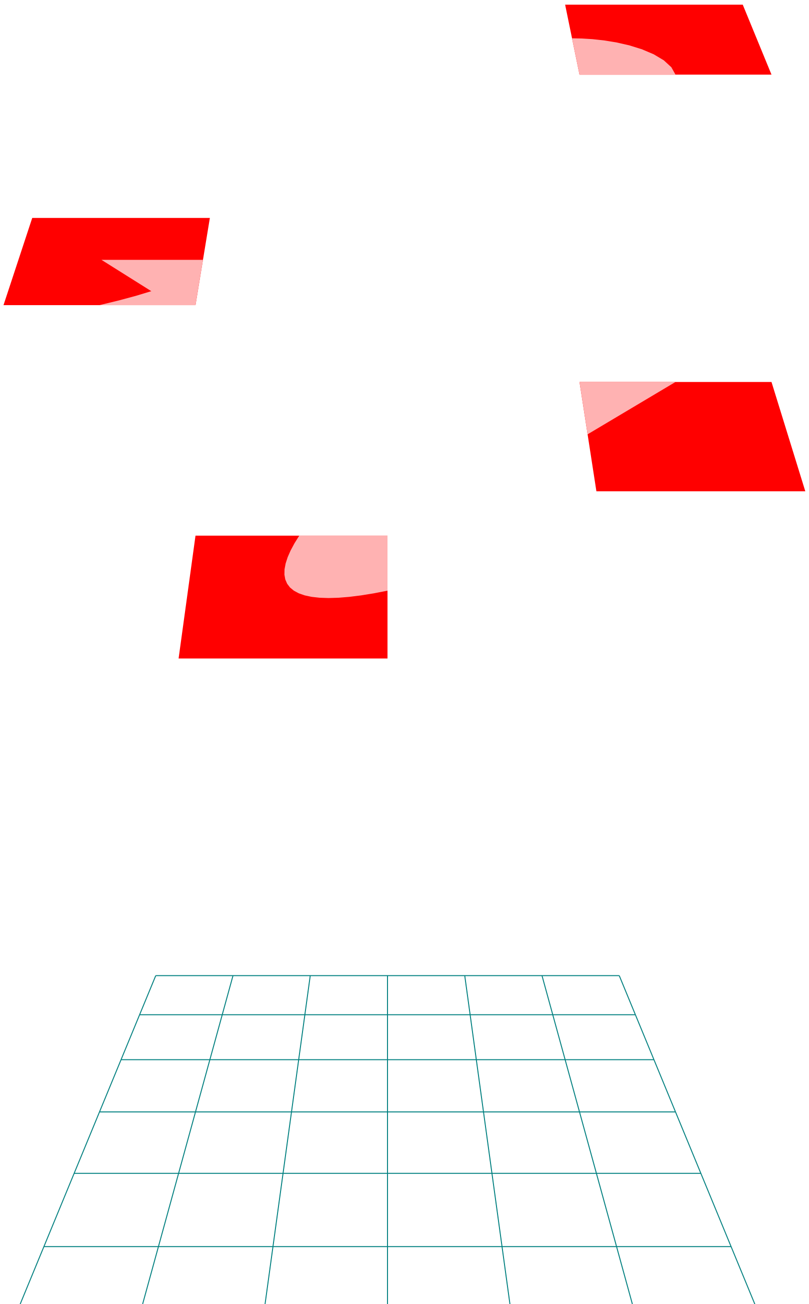


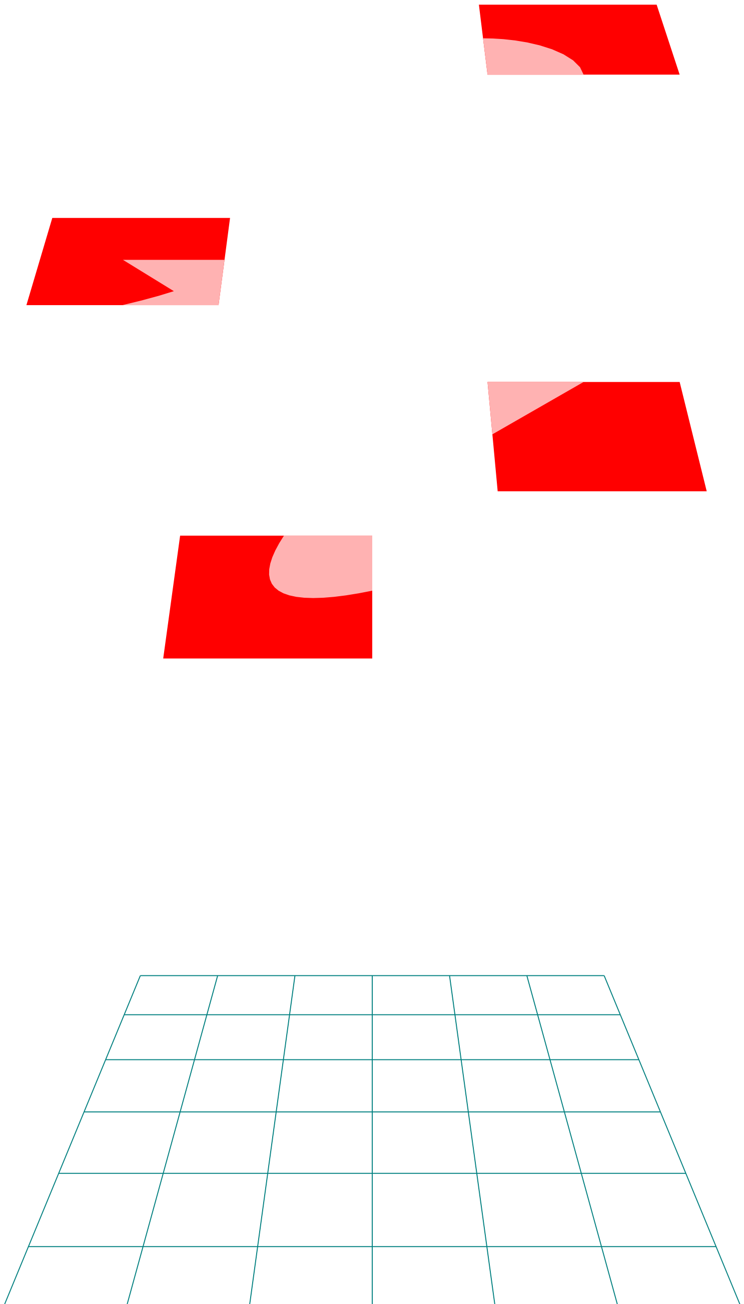


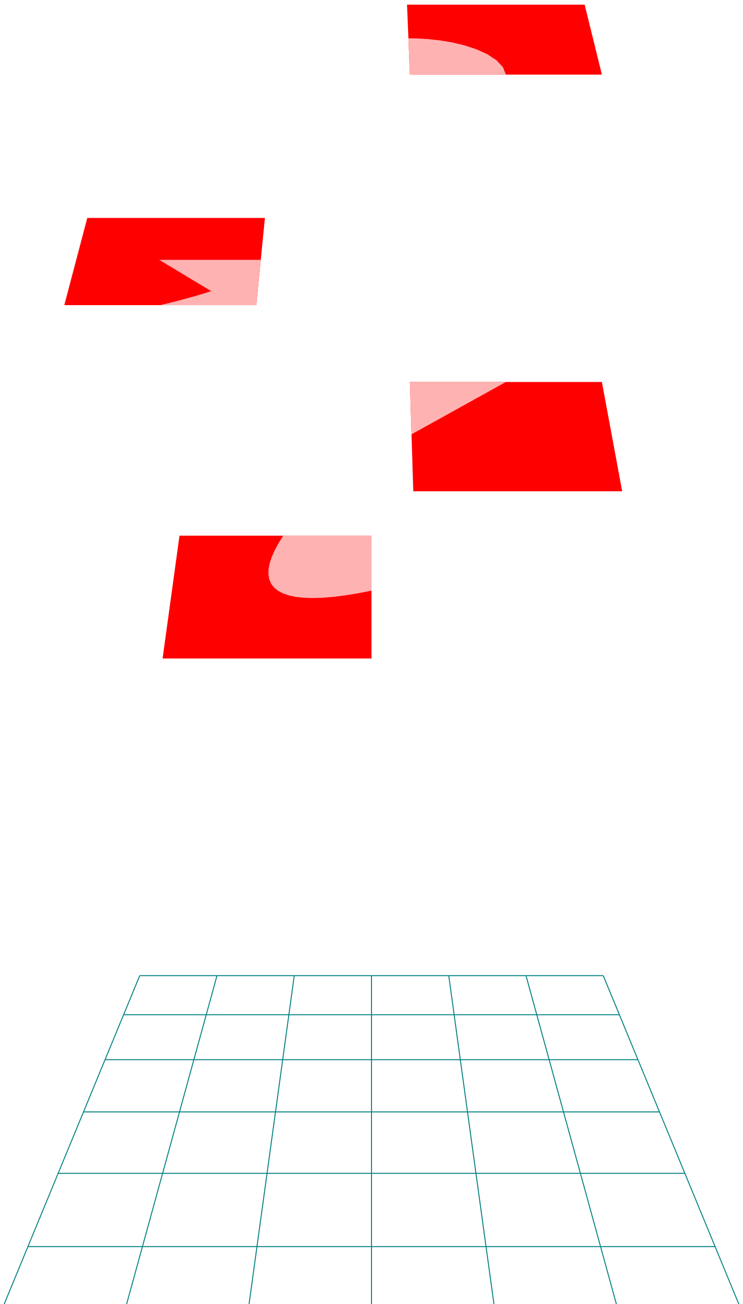


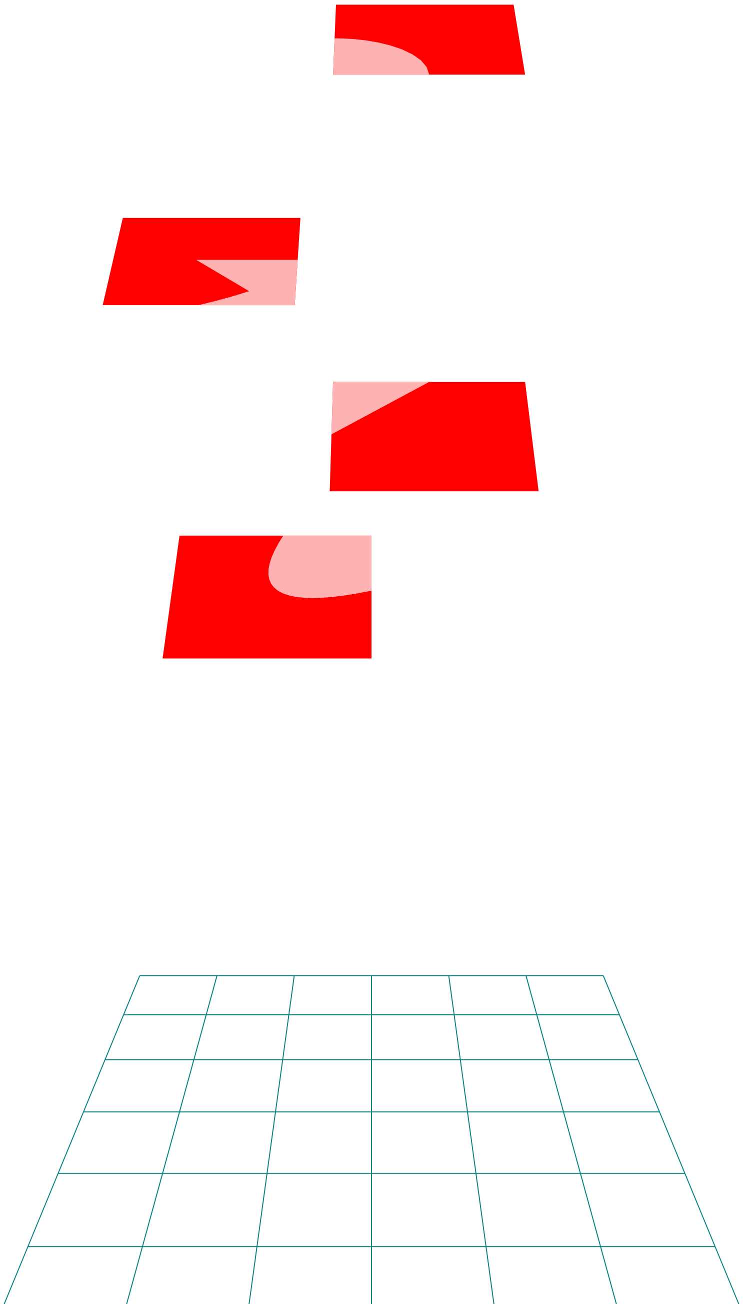


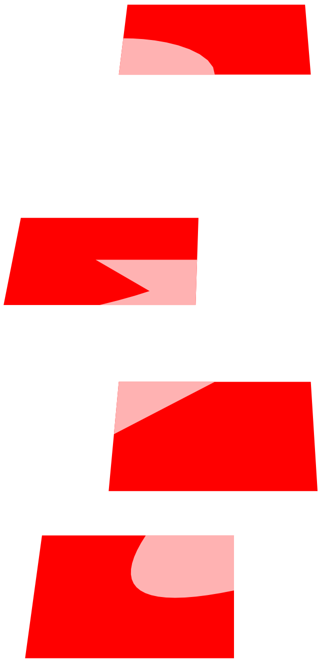


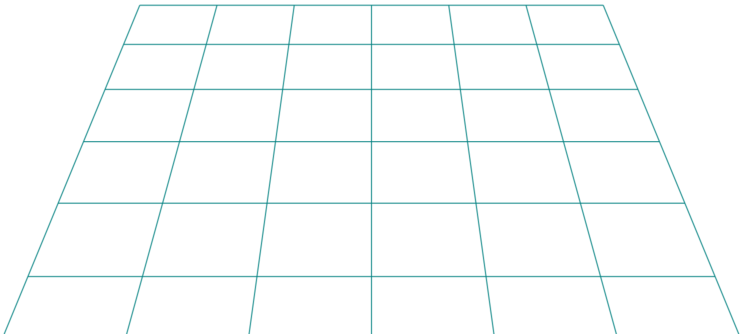


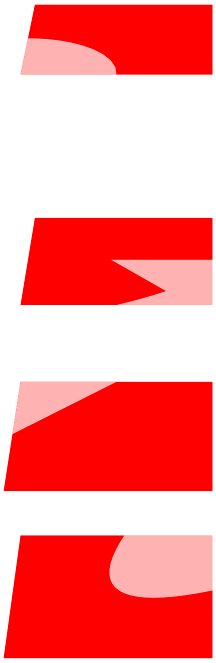


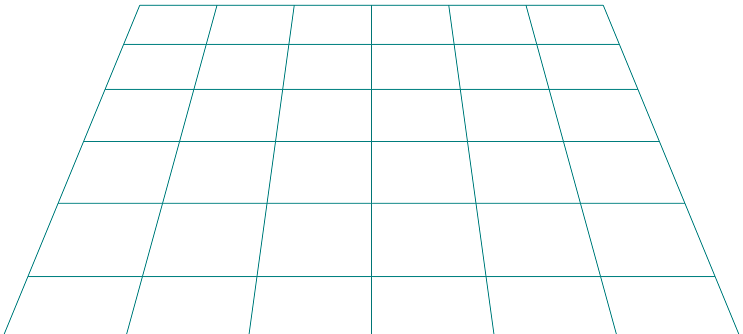


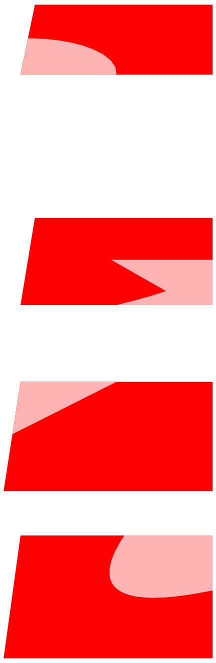


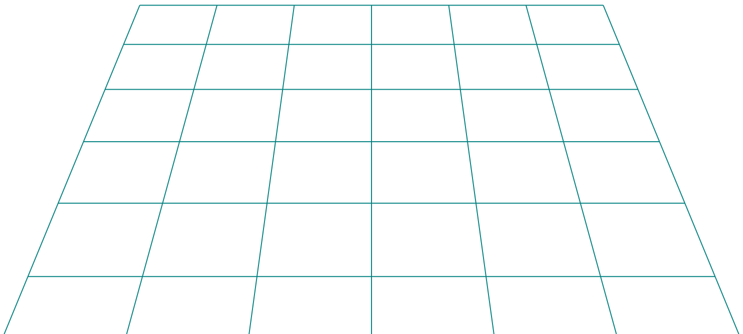


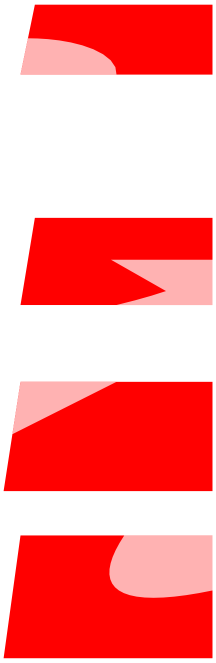


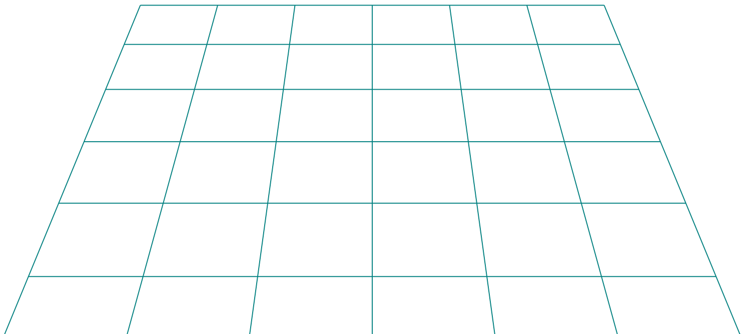


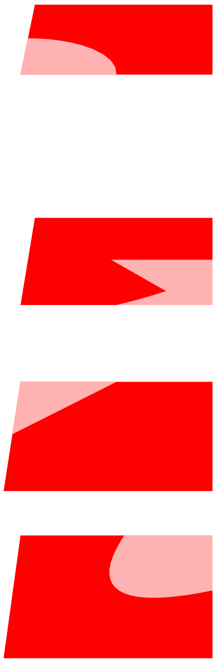


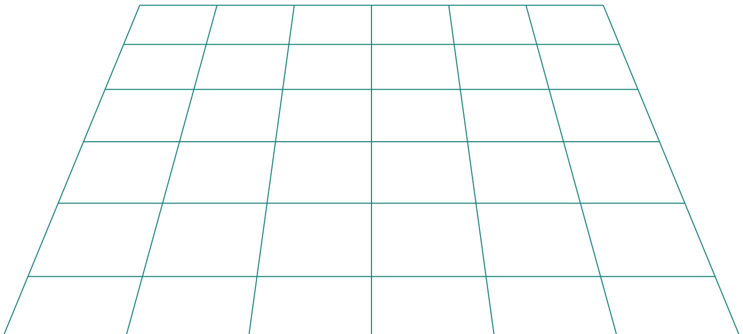


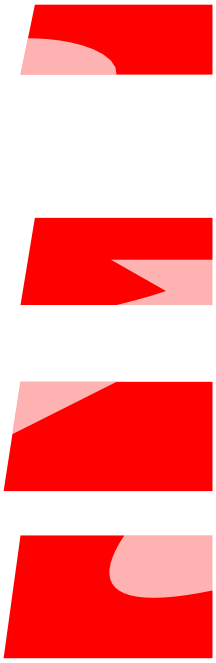


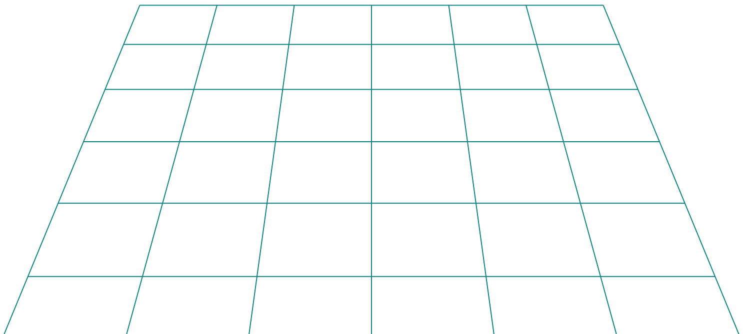


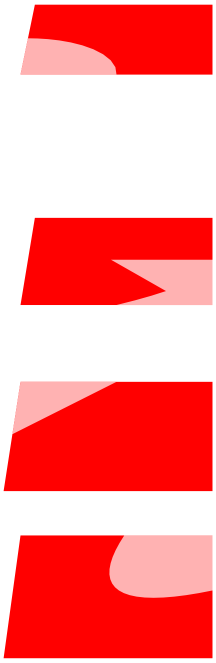


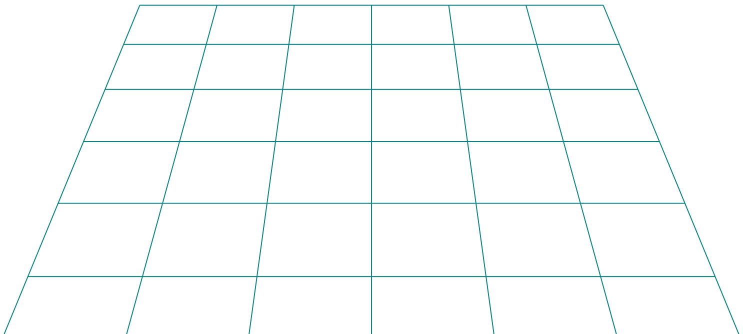


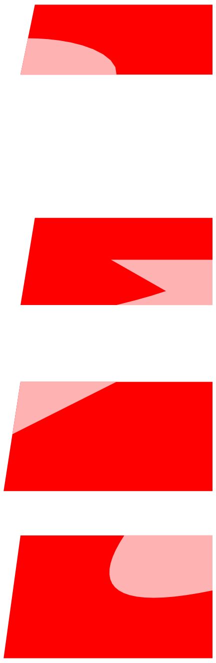


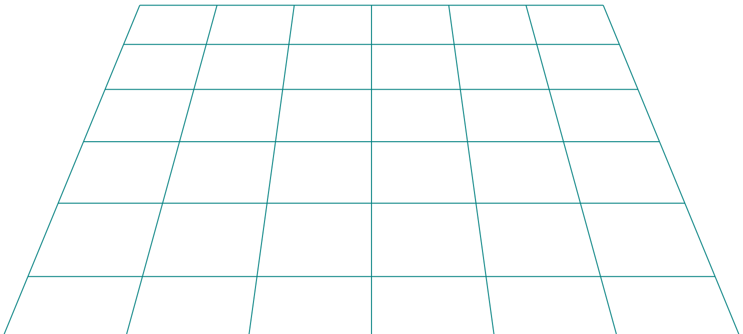


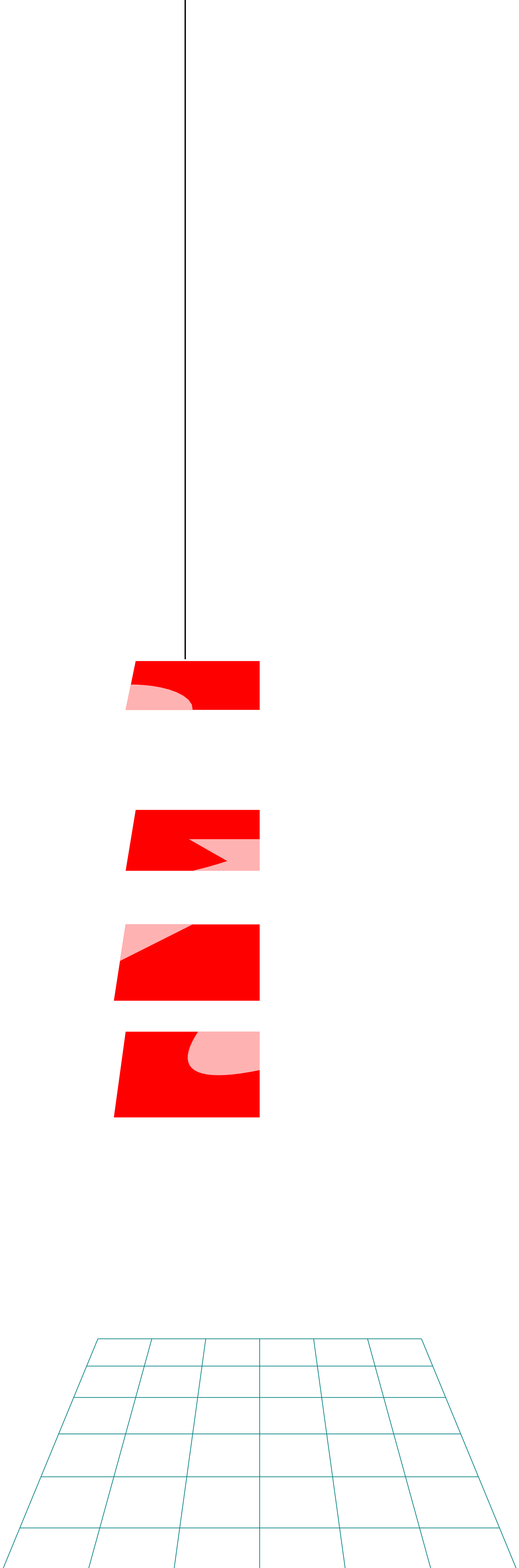


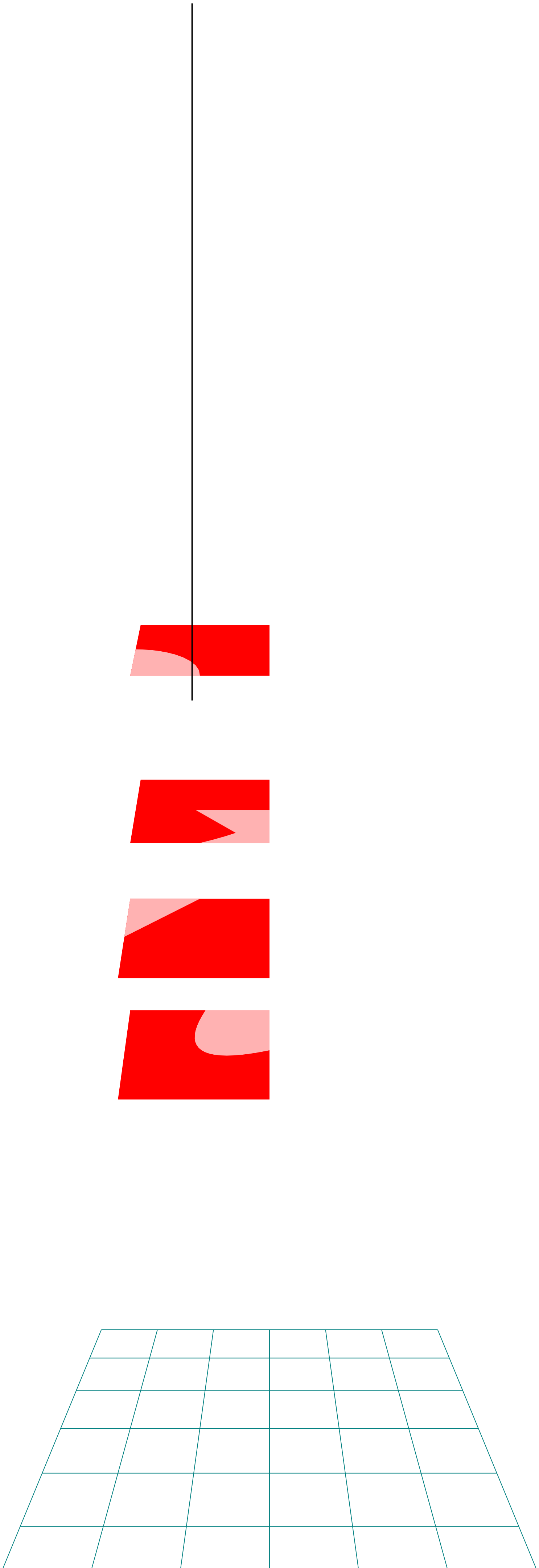


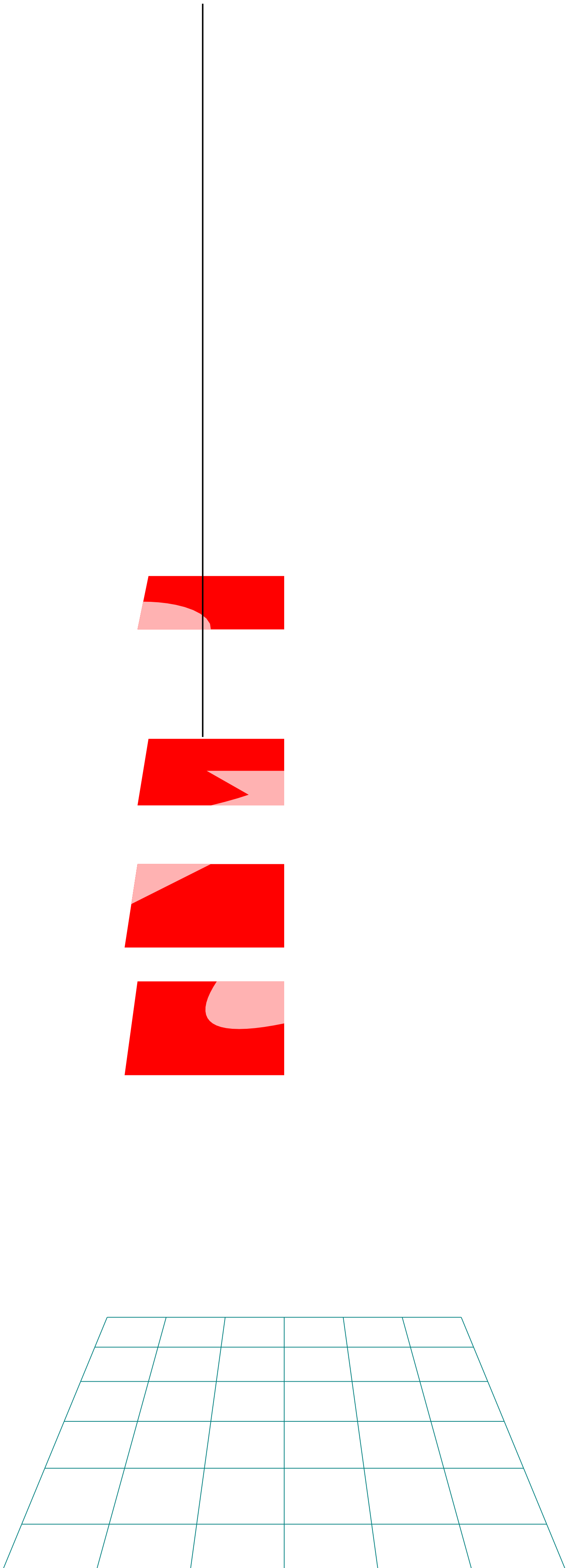


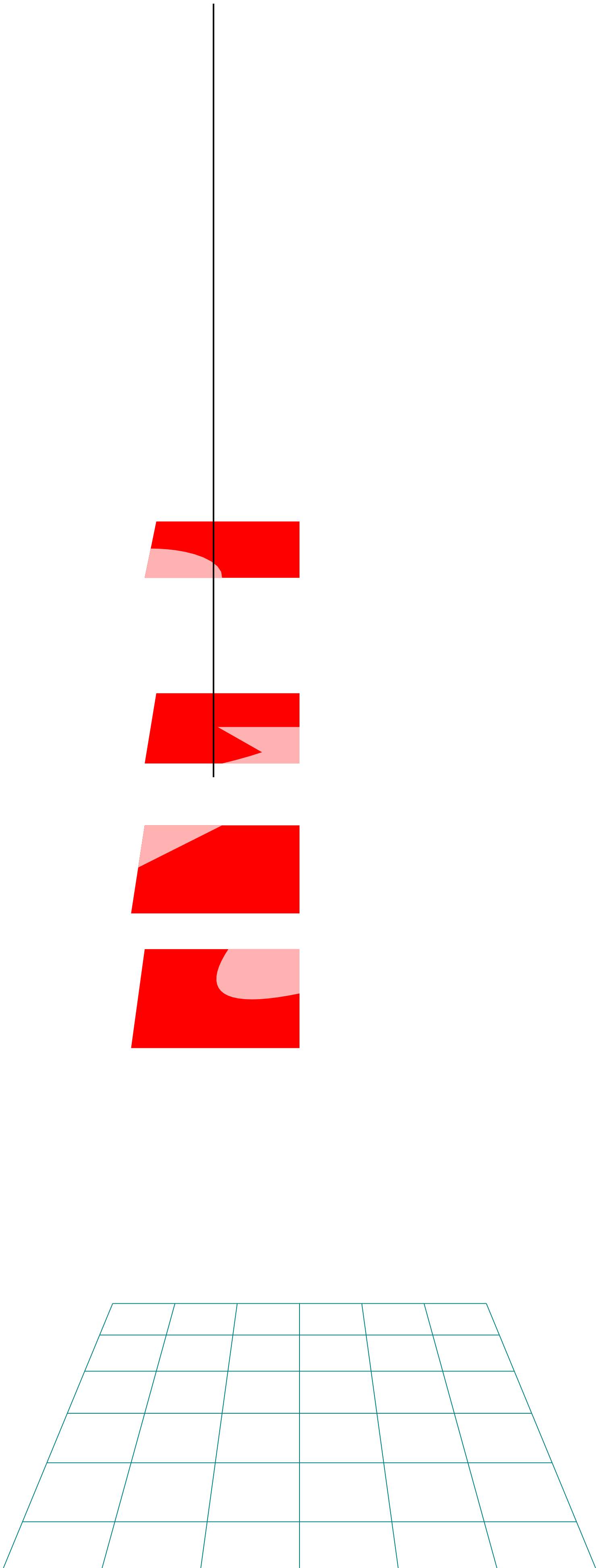


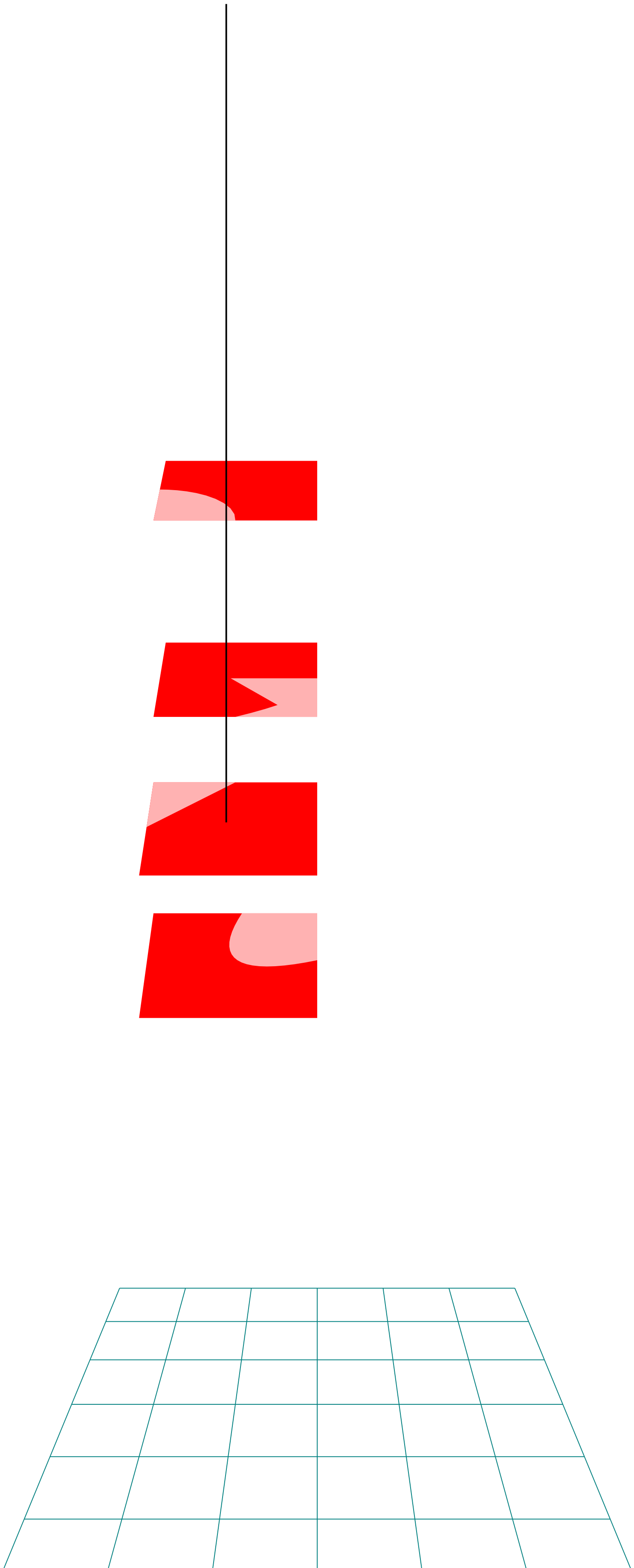


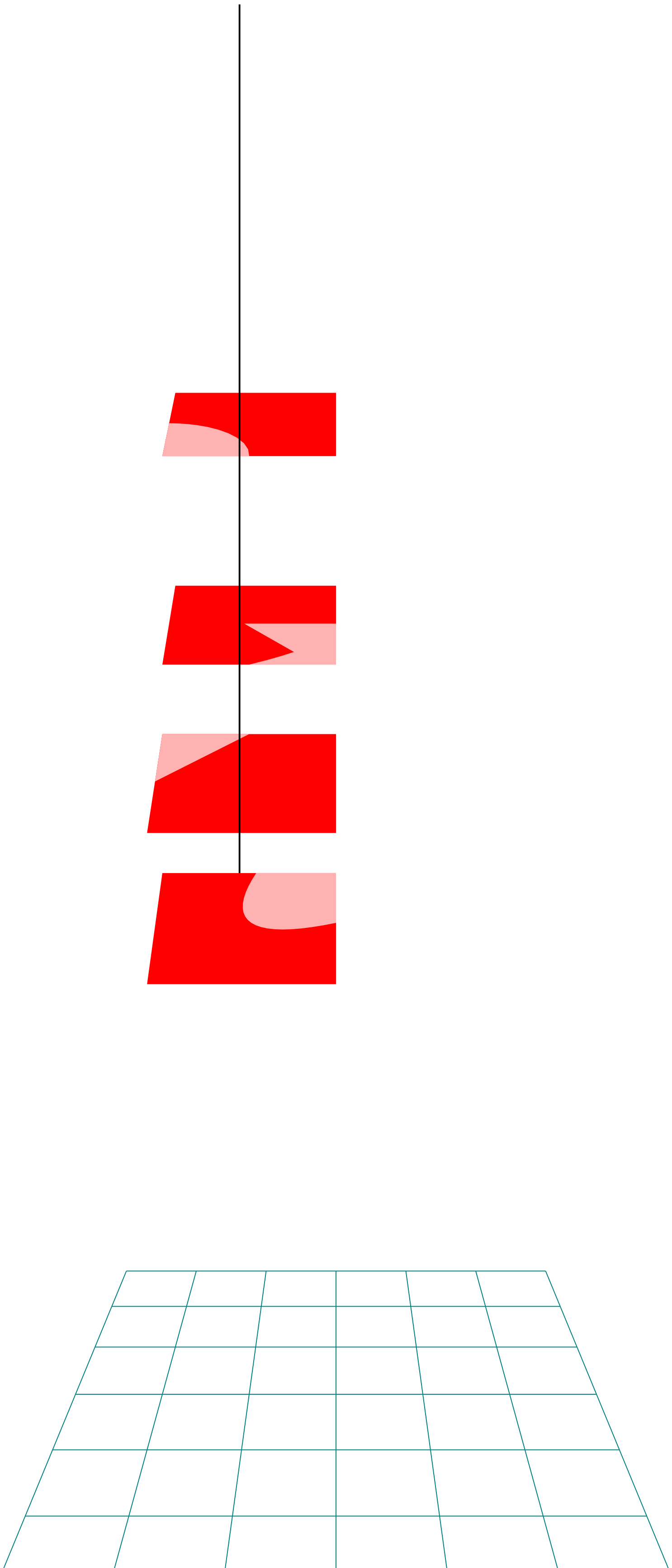


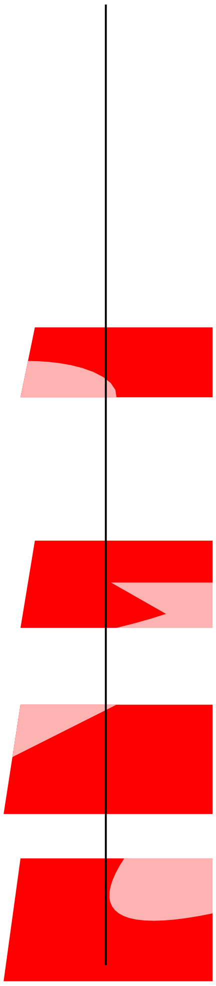


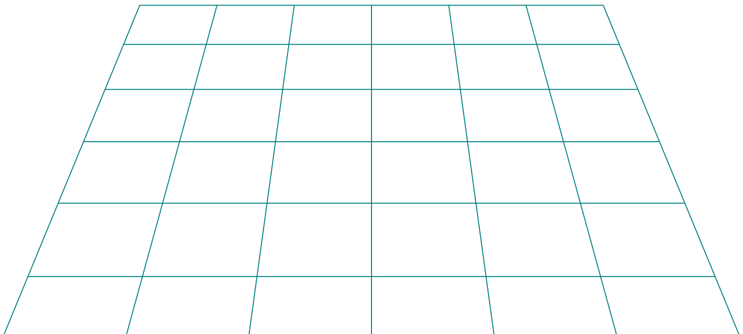


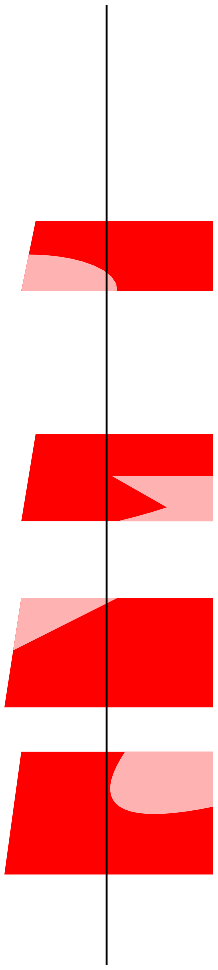


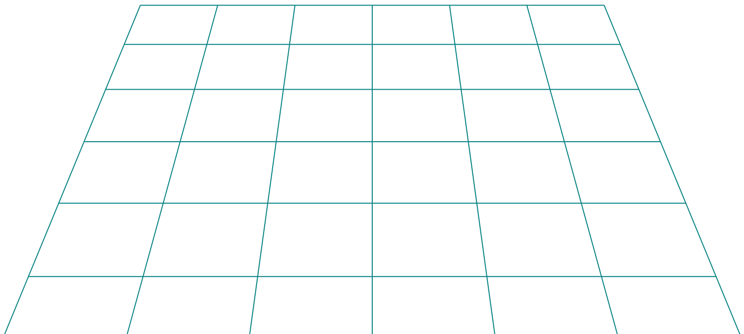




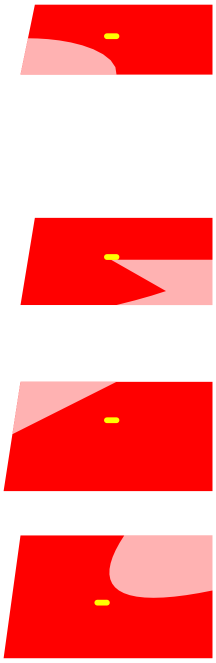


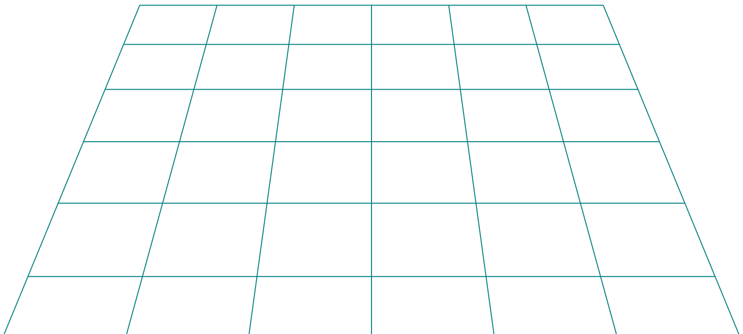


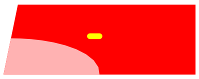


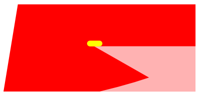


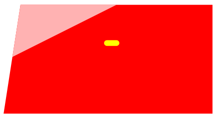
The line passes through the same point on all four surfaces. This is a point where the shape does not cover the surface.

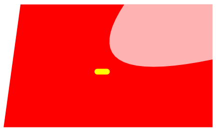


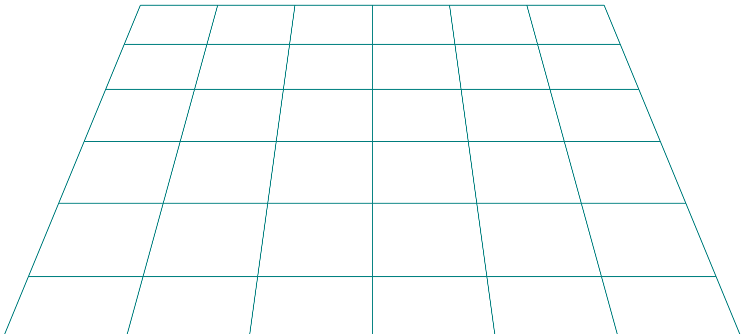


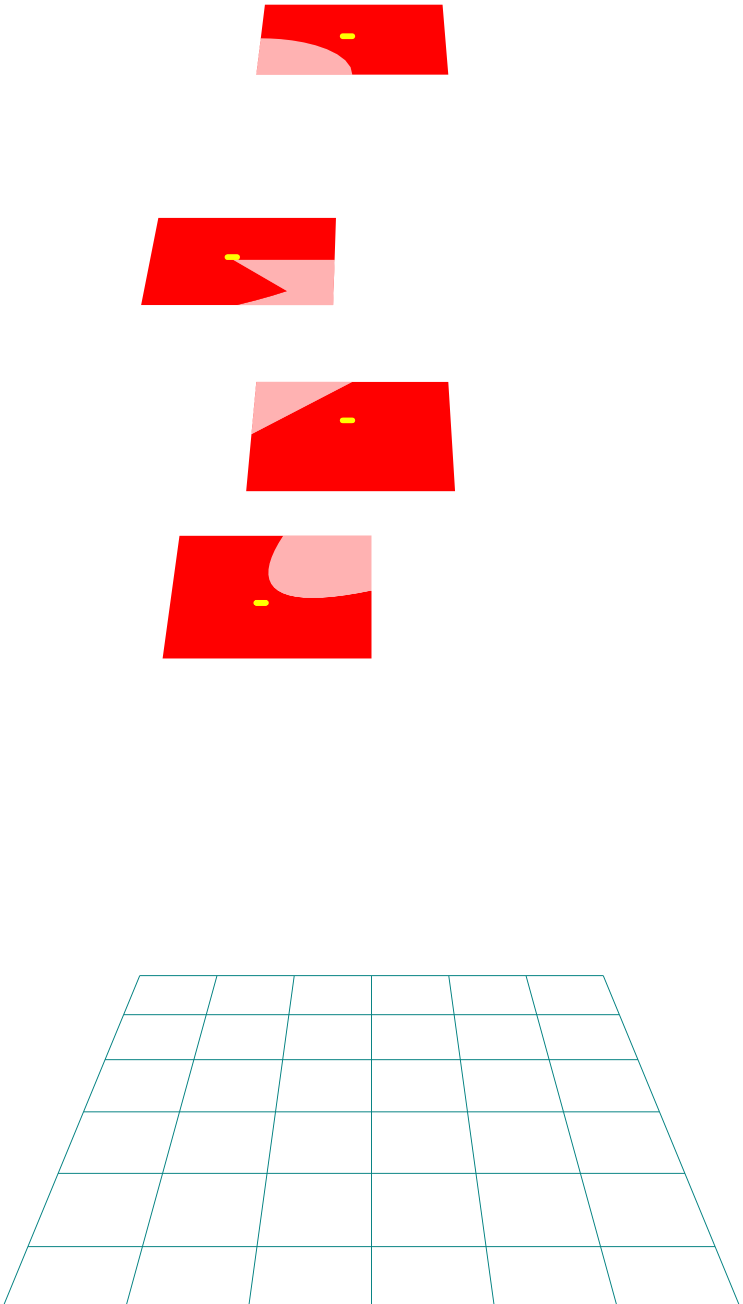


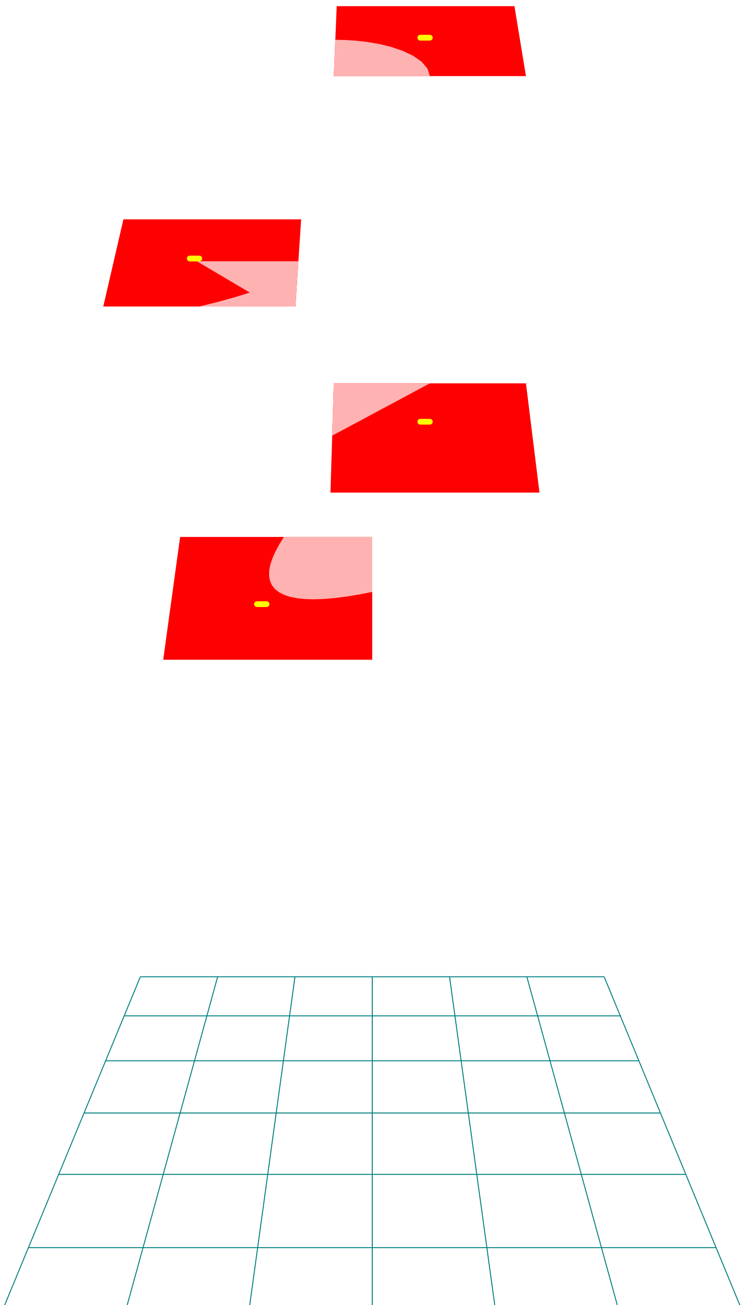


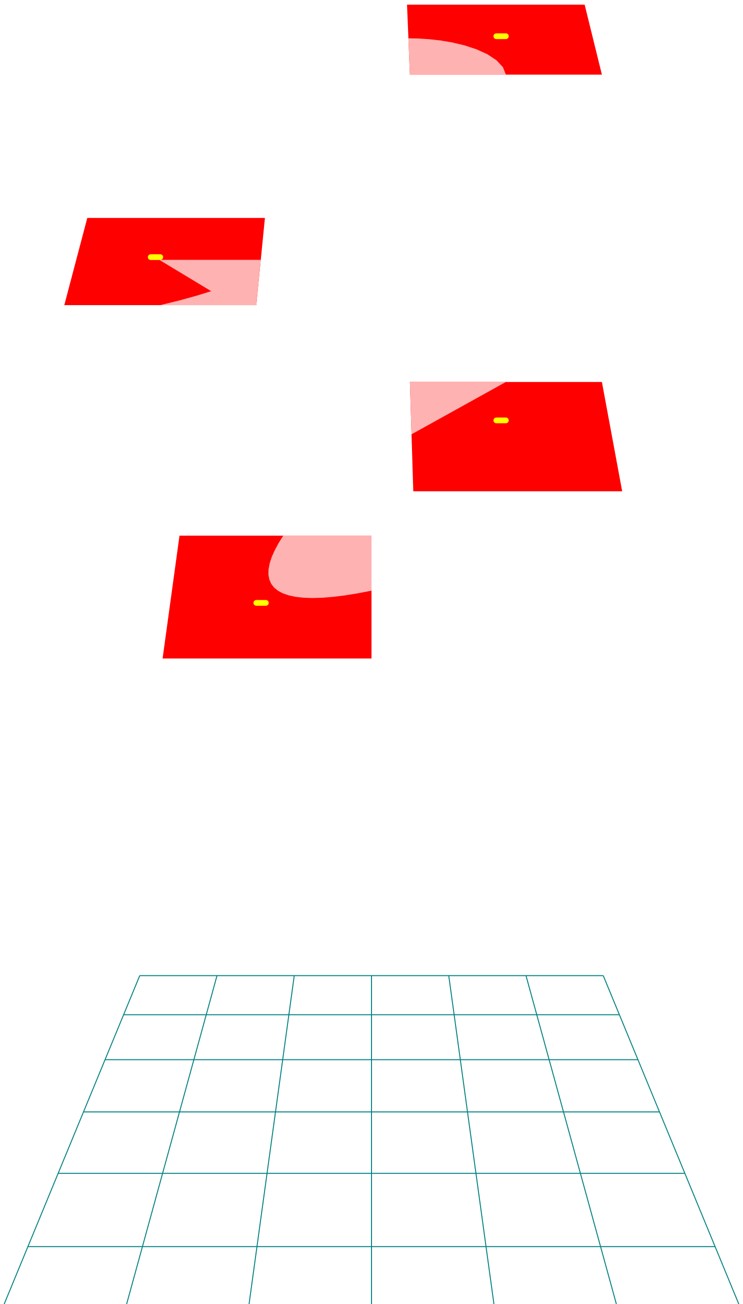


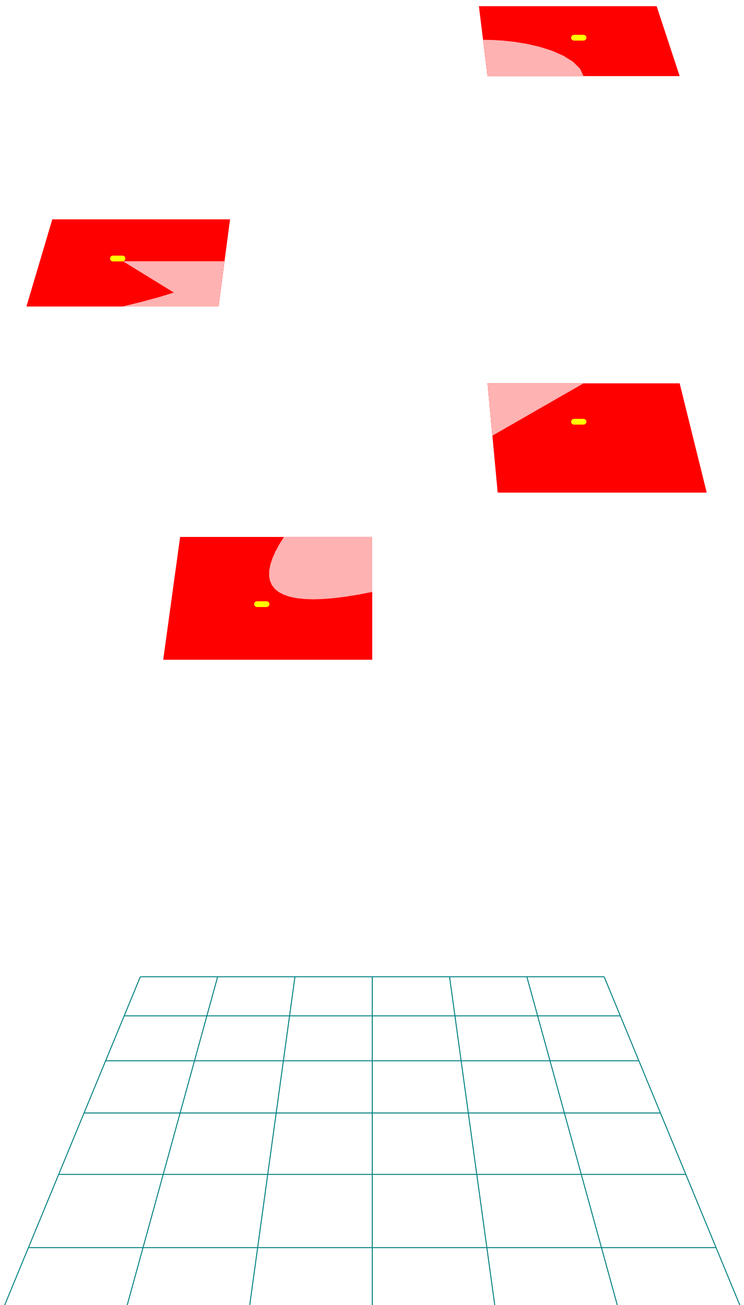


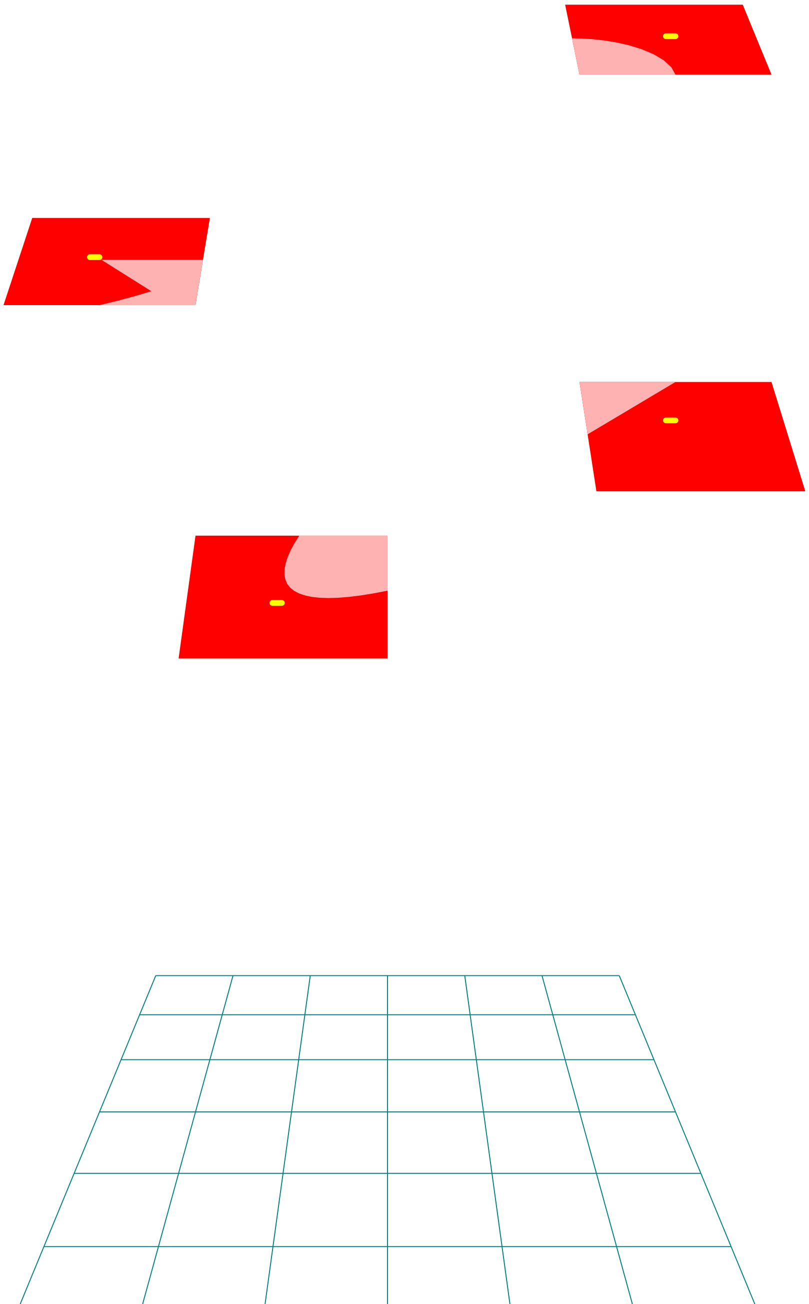


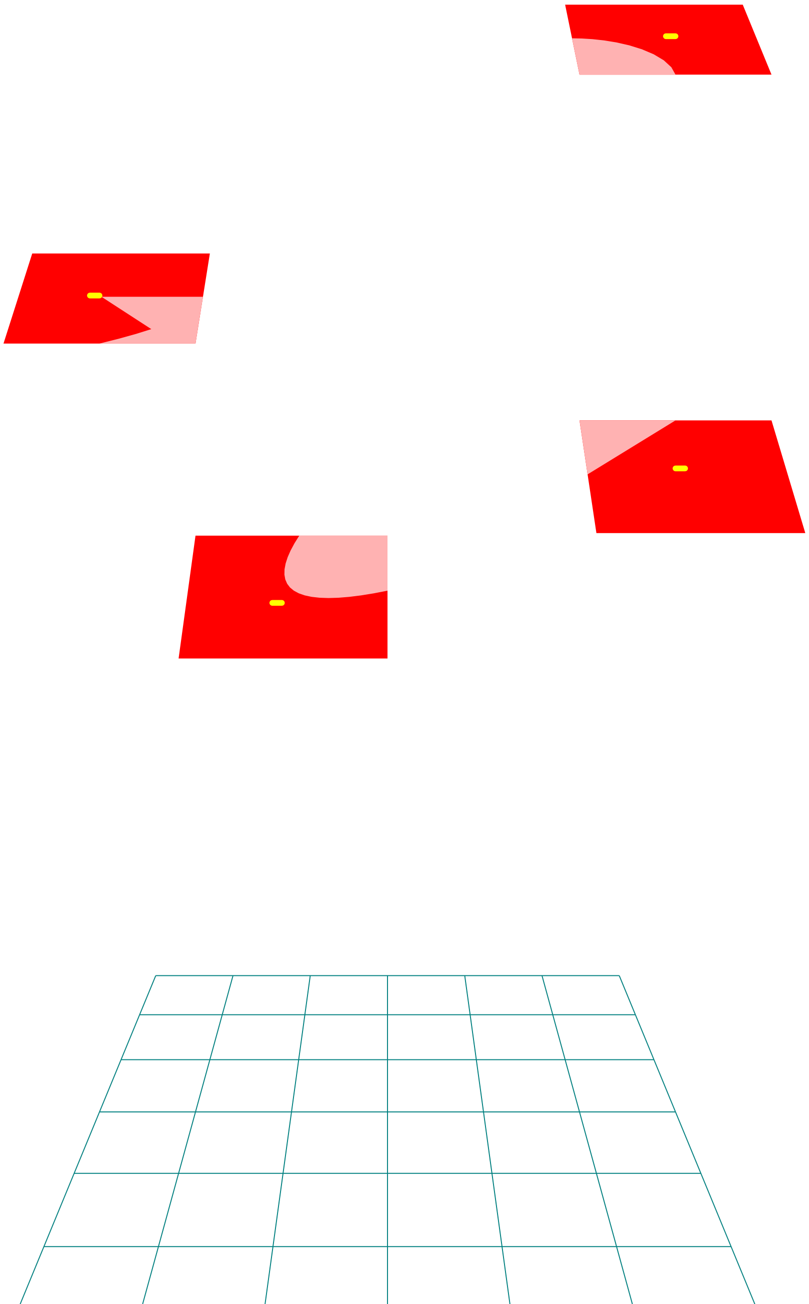


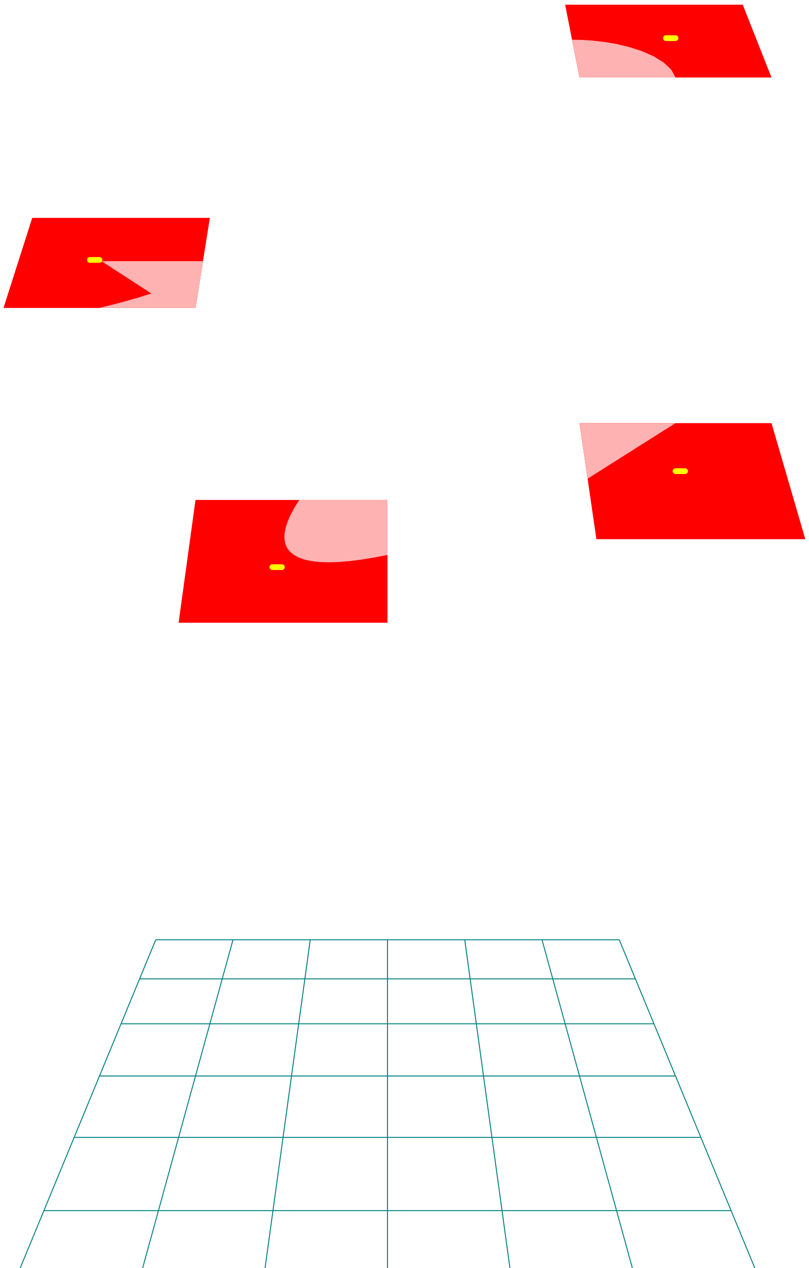


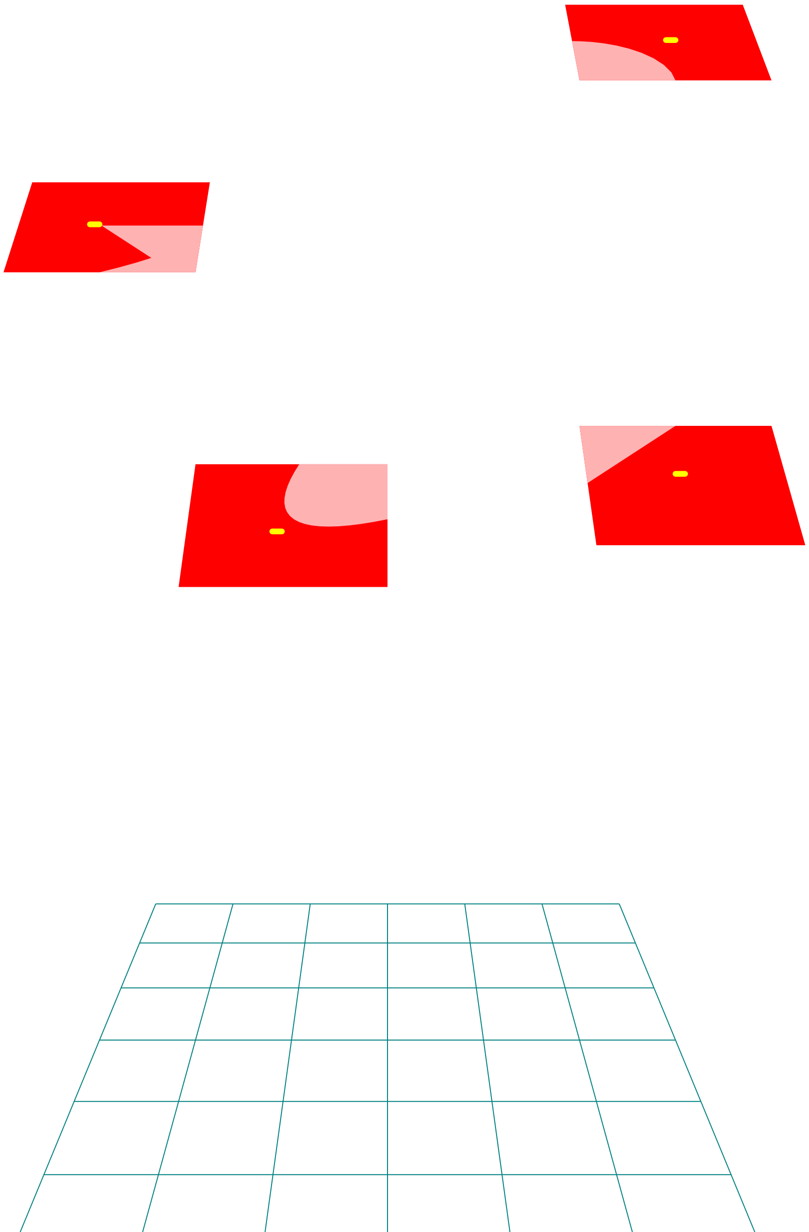


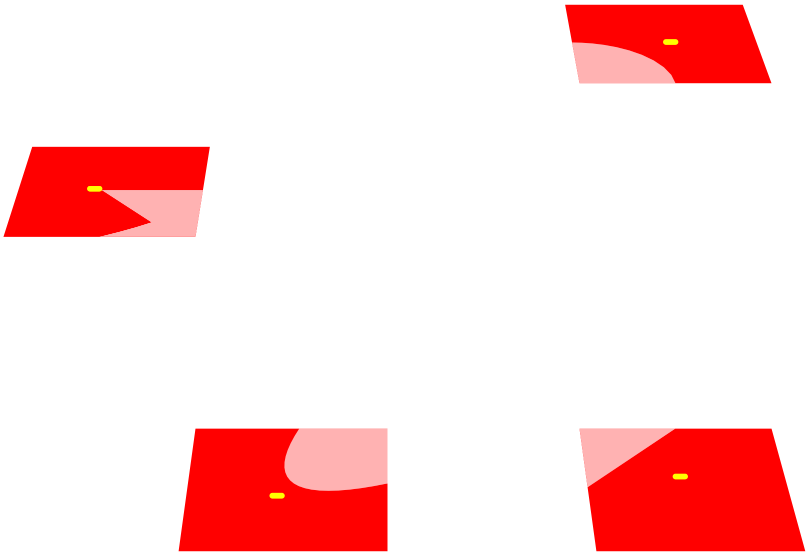


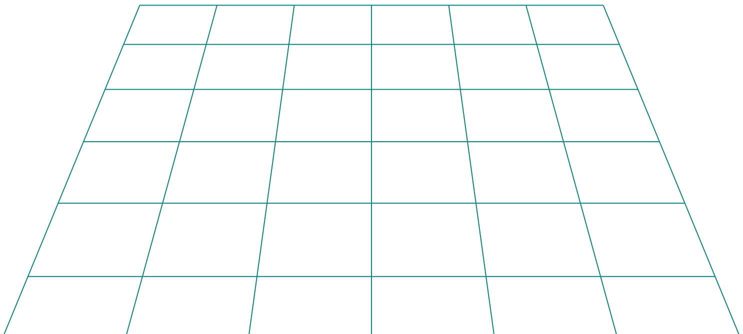


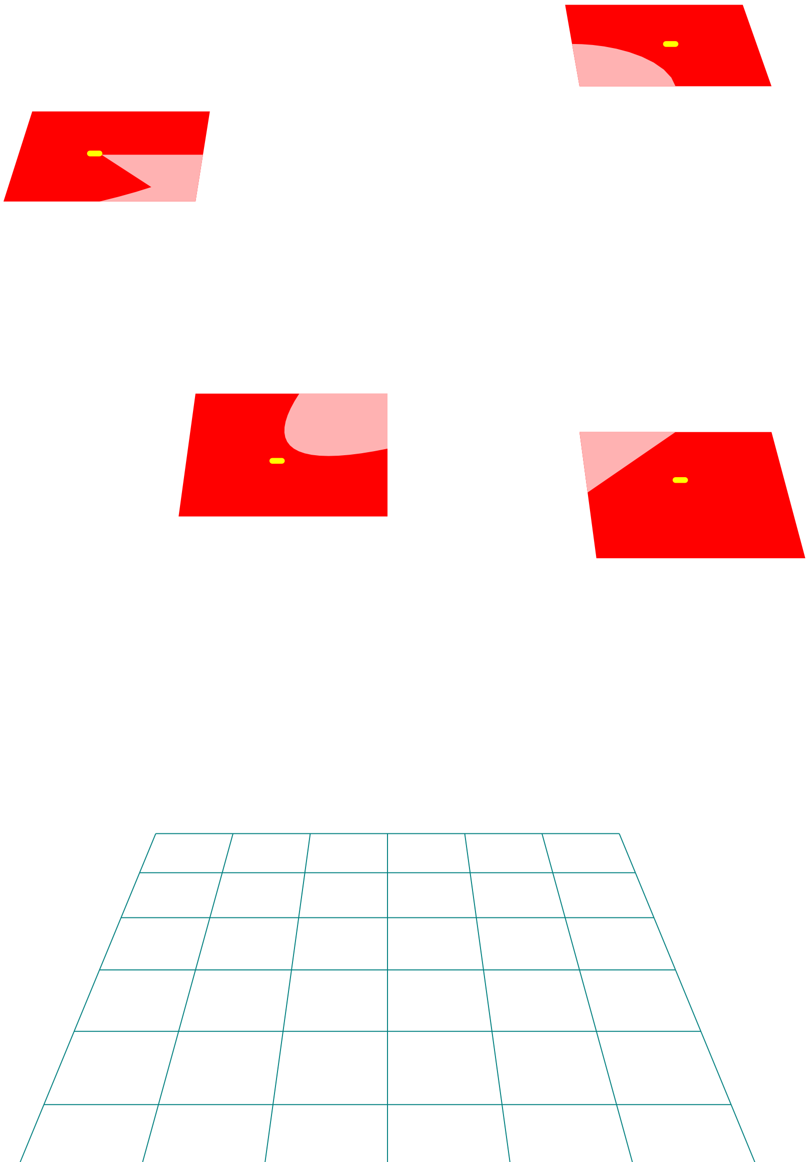


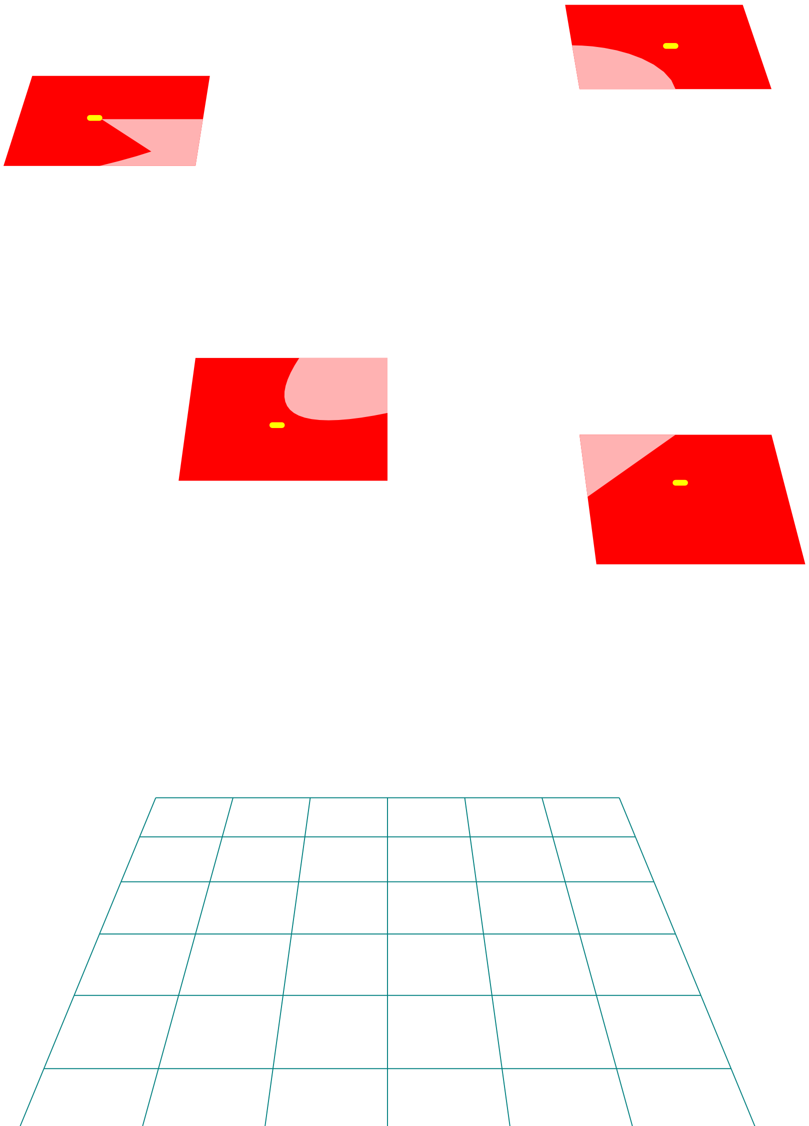


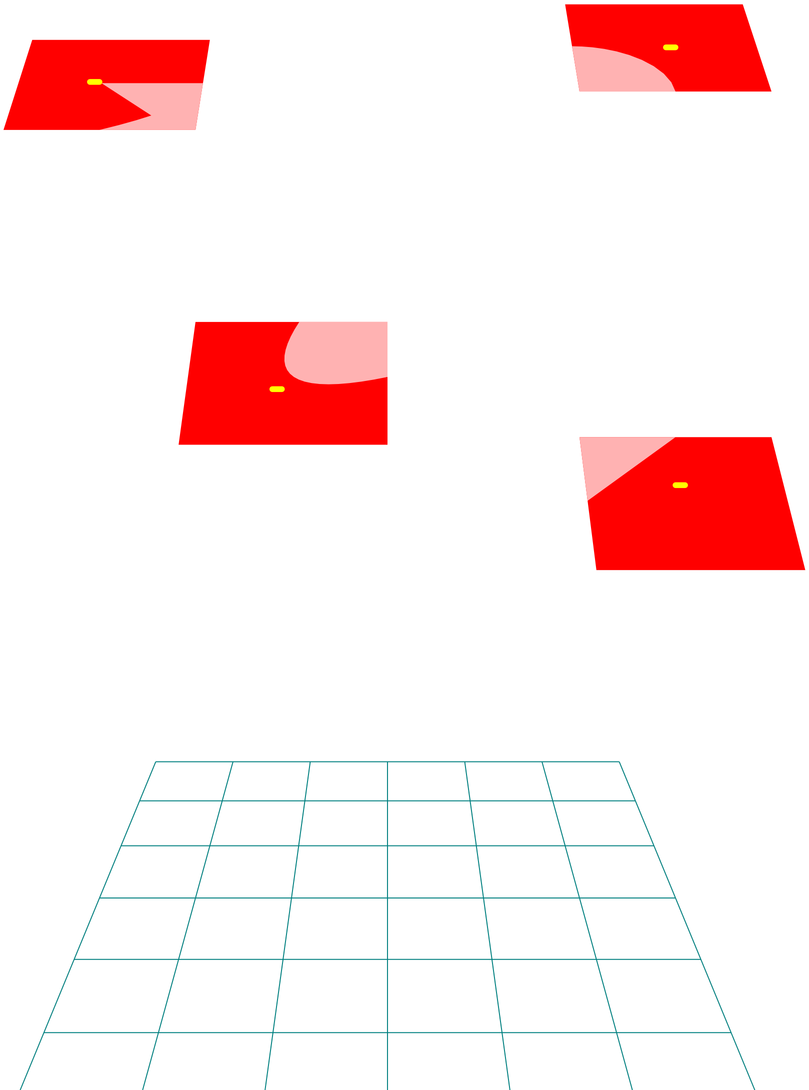


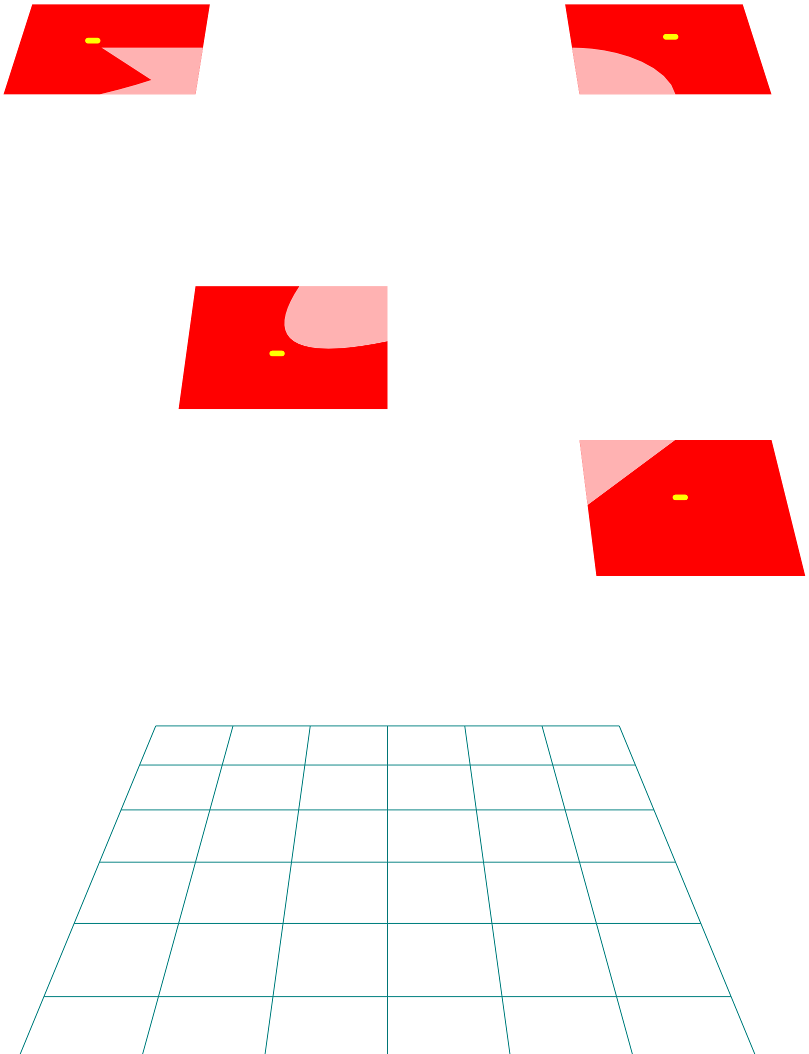


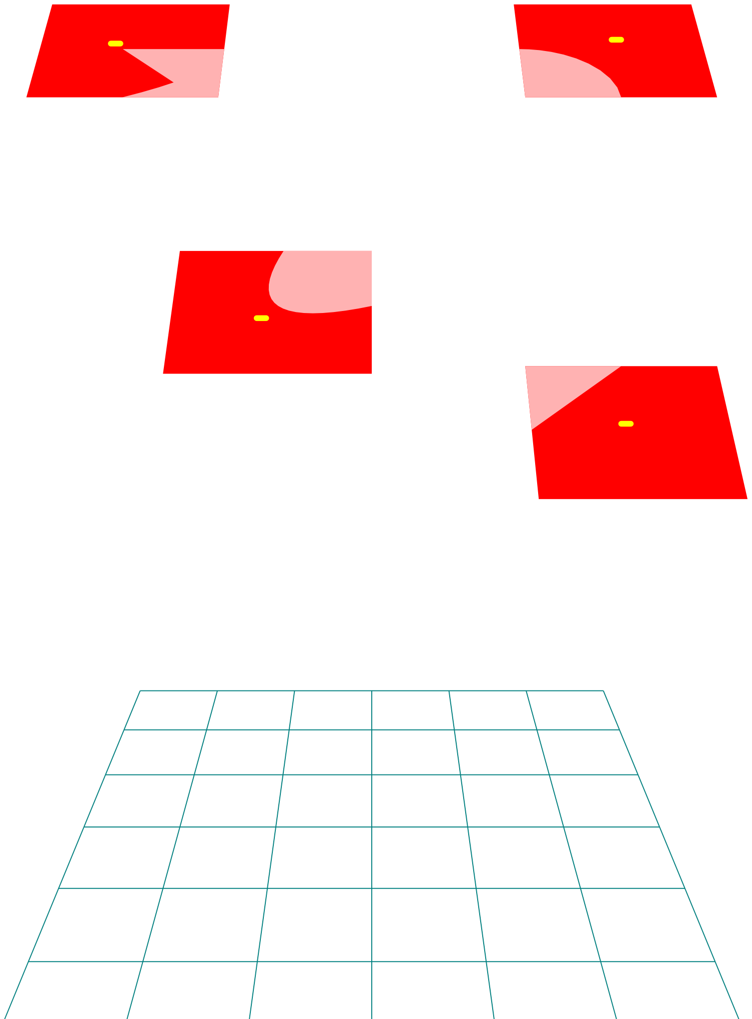


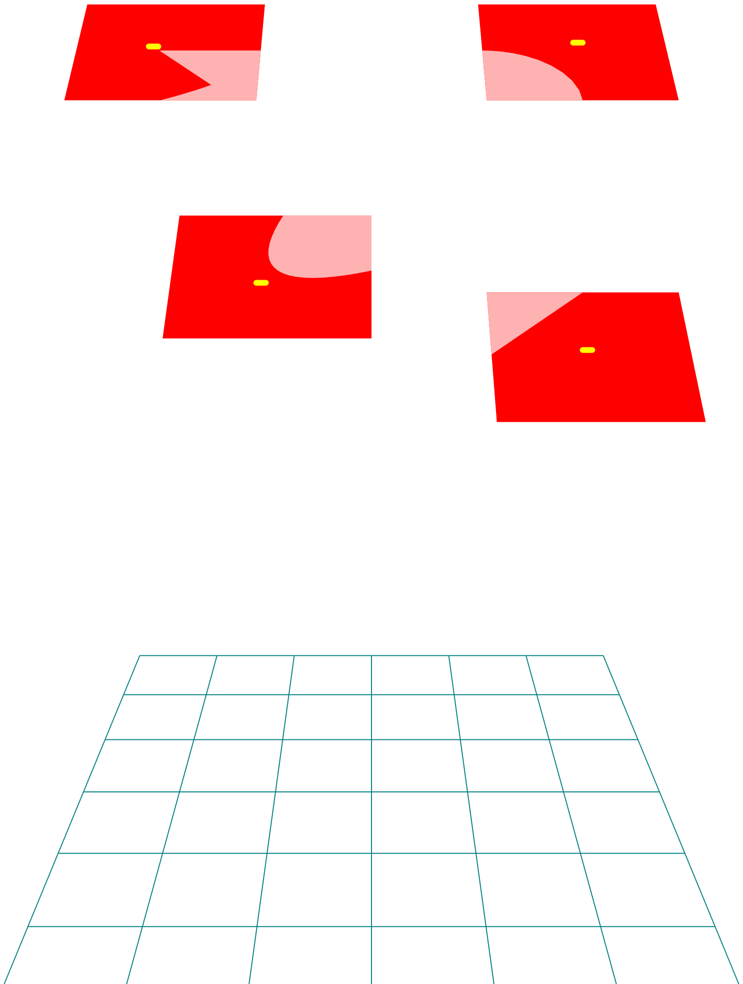


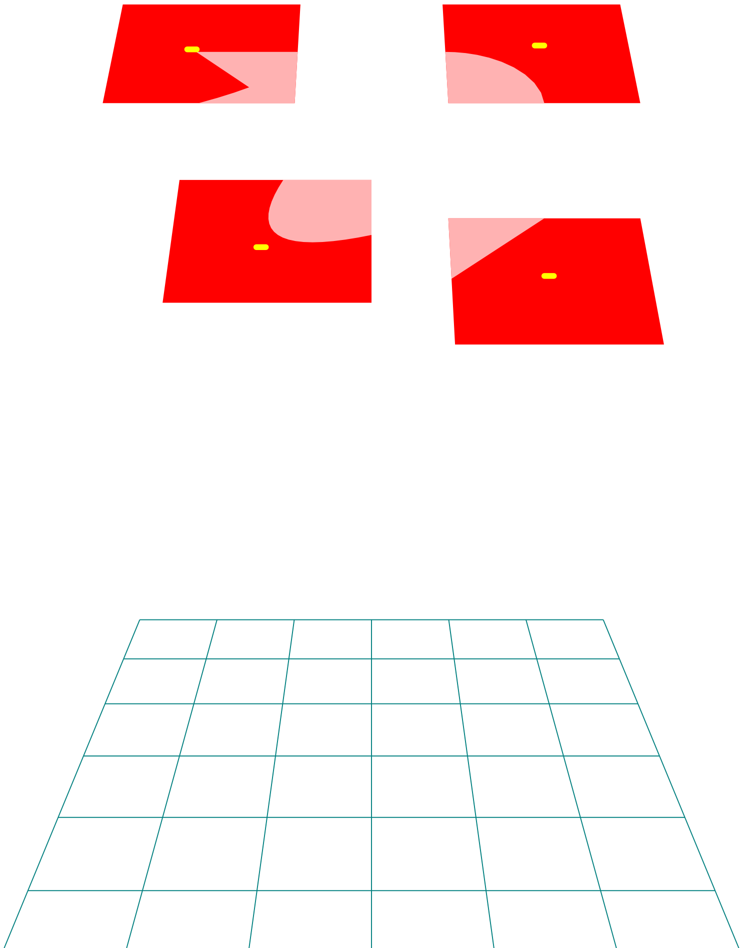


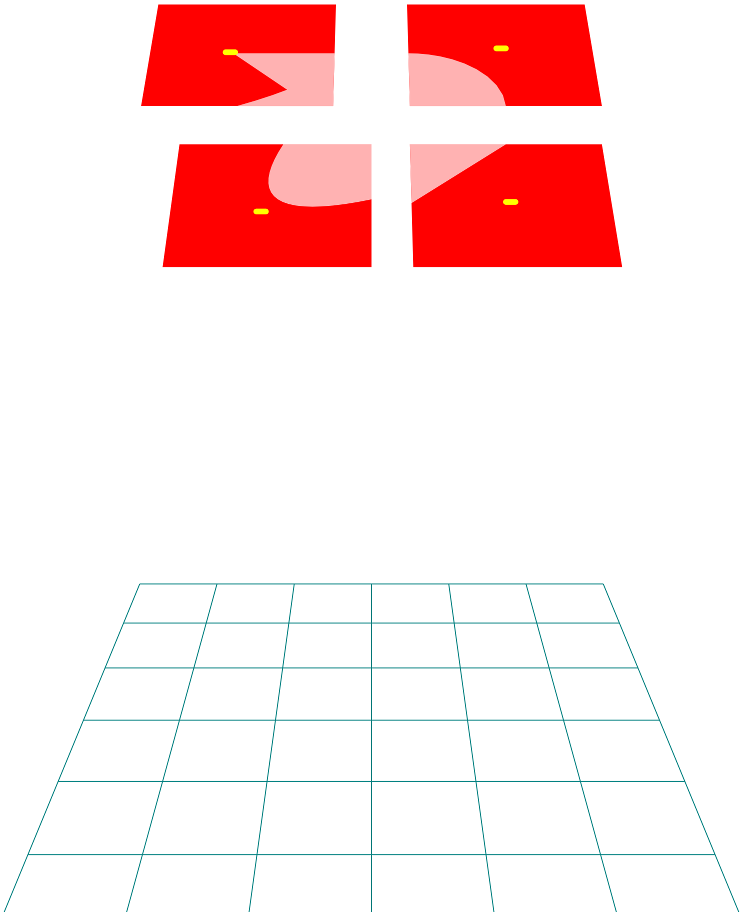


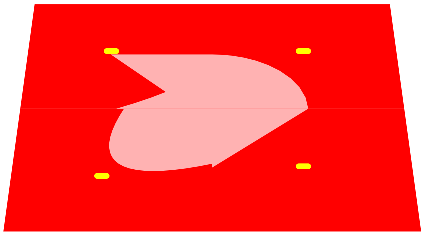


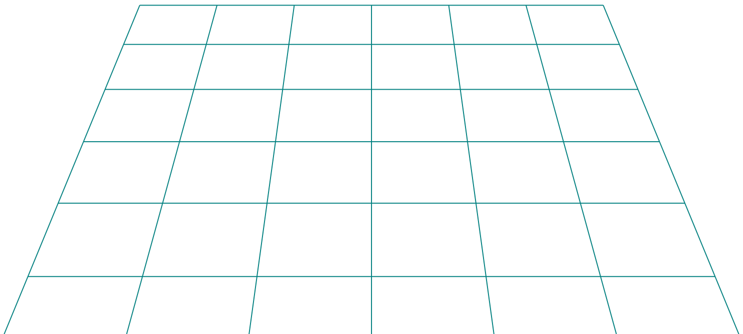


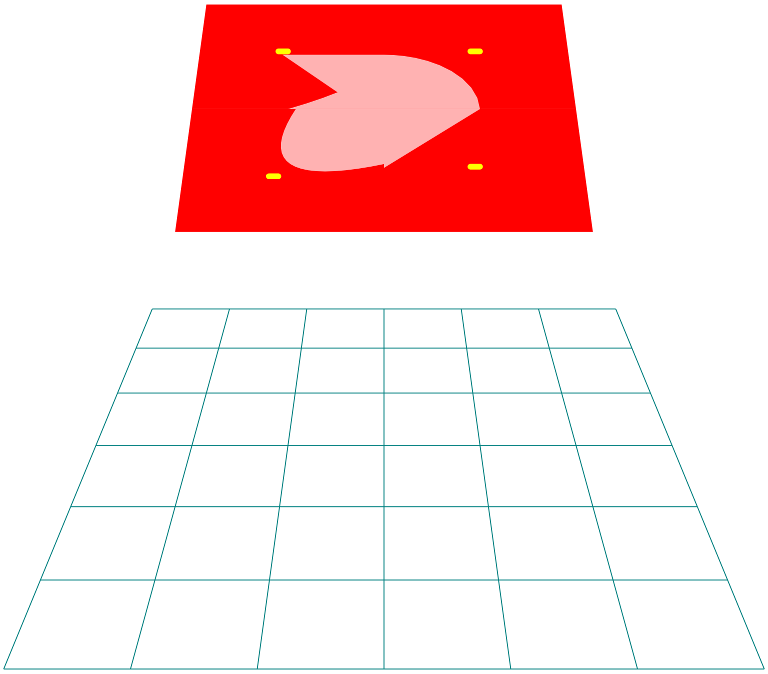


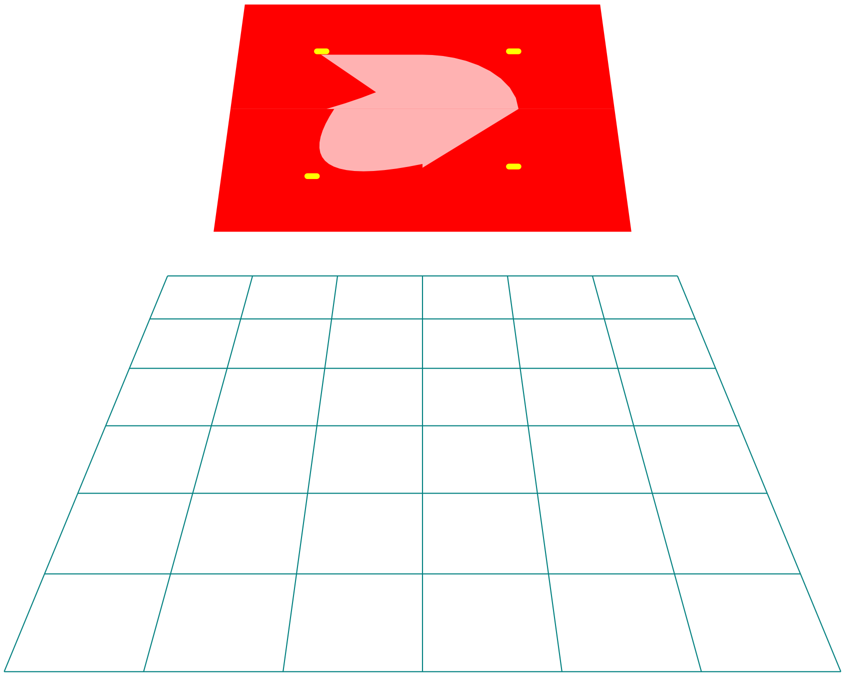


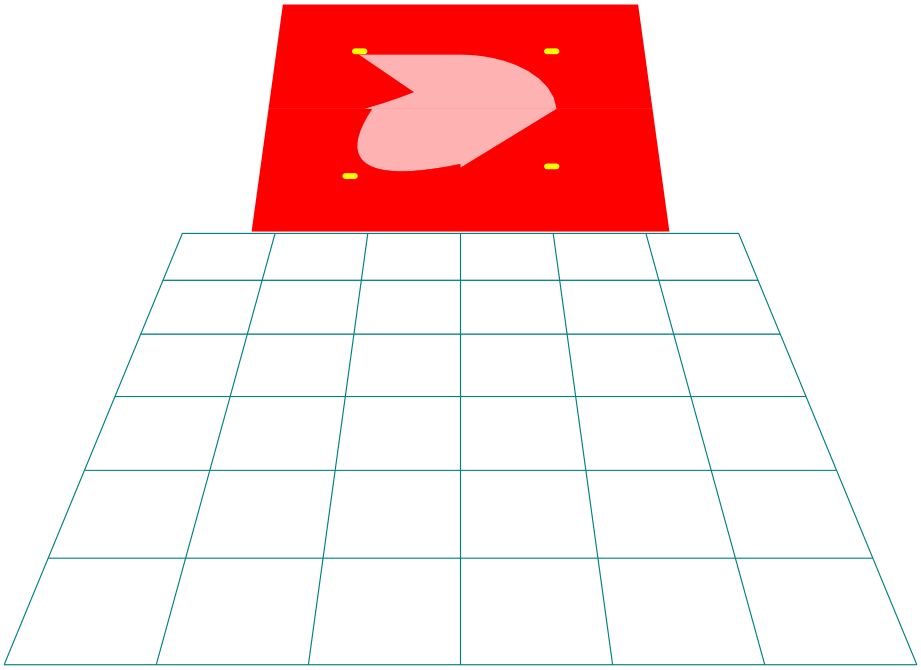


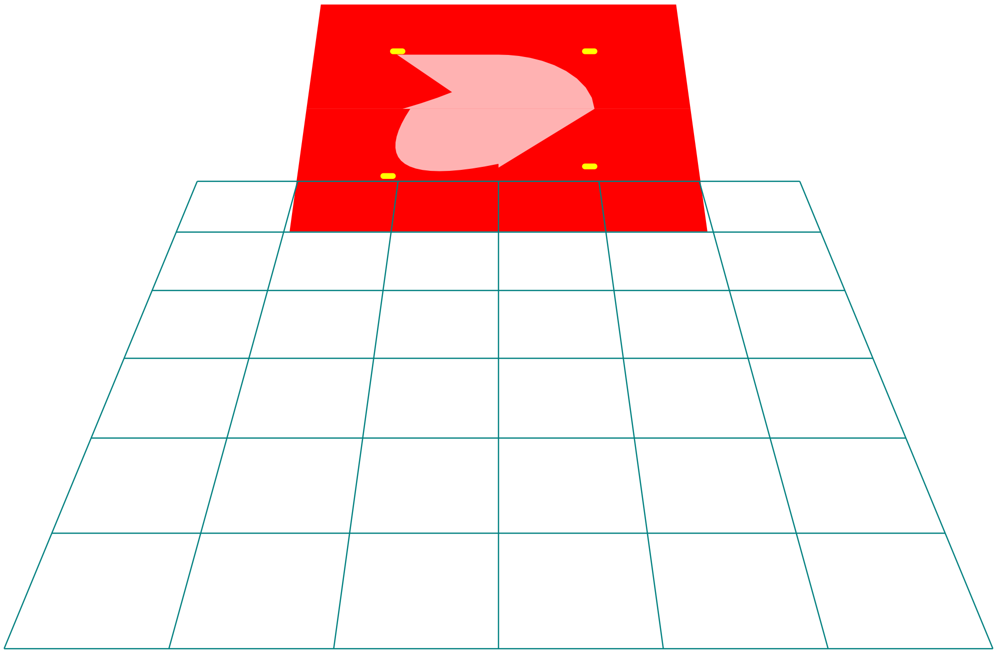


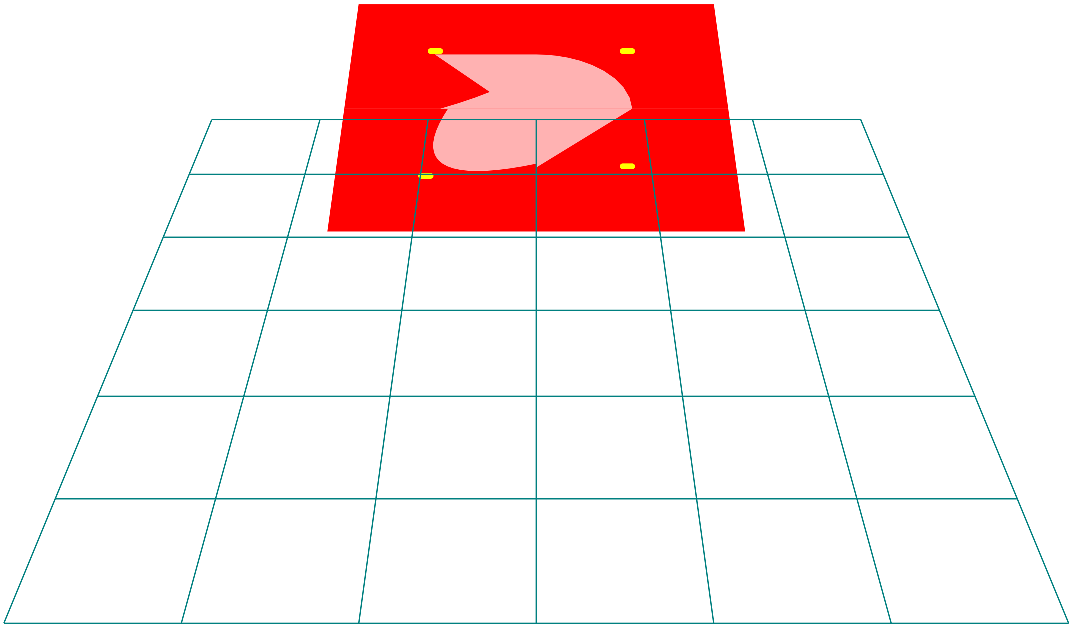


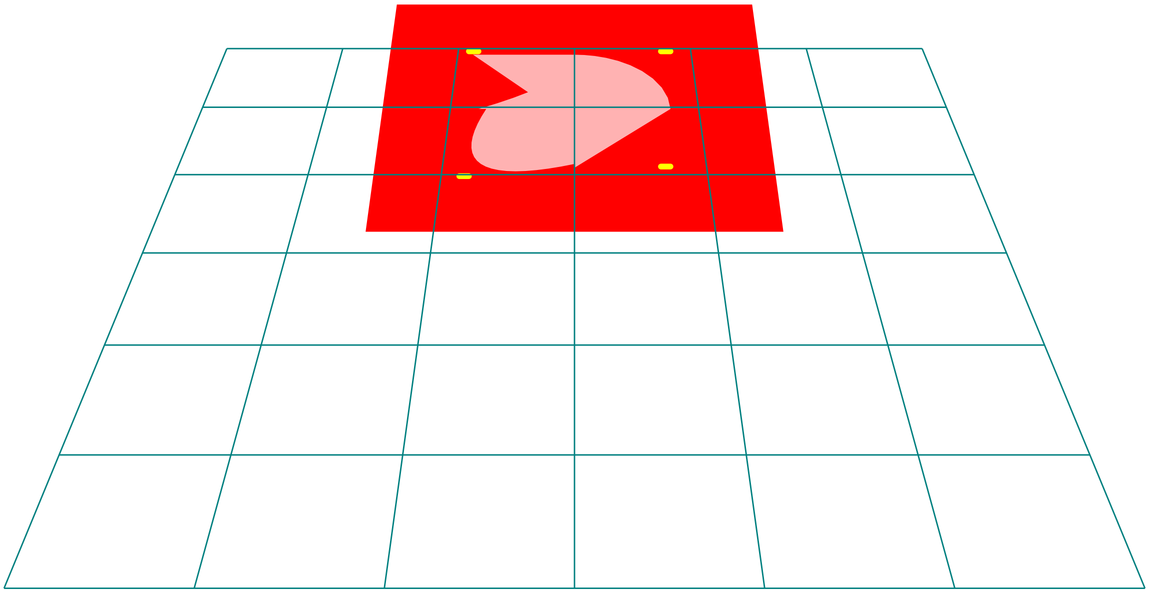


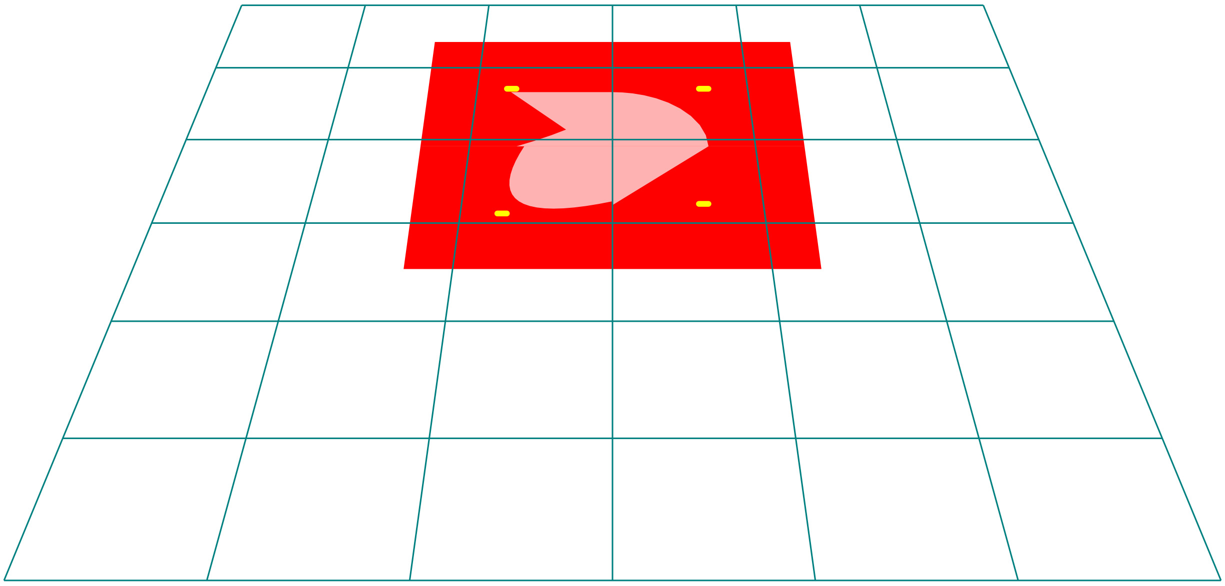


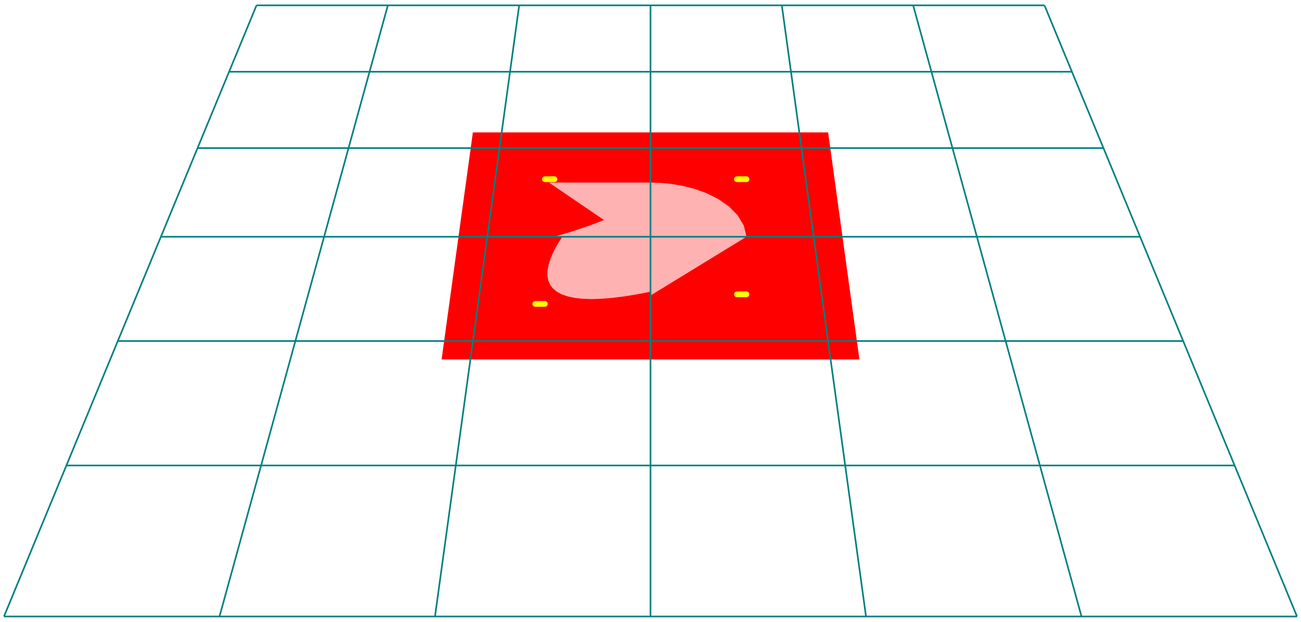


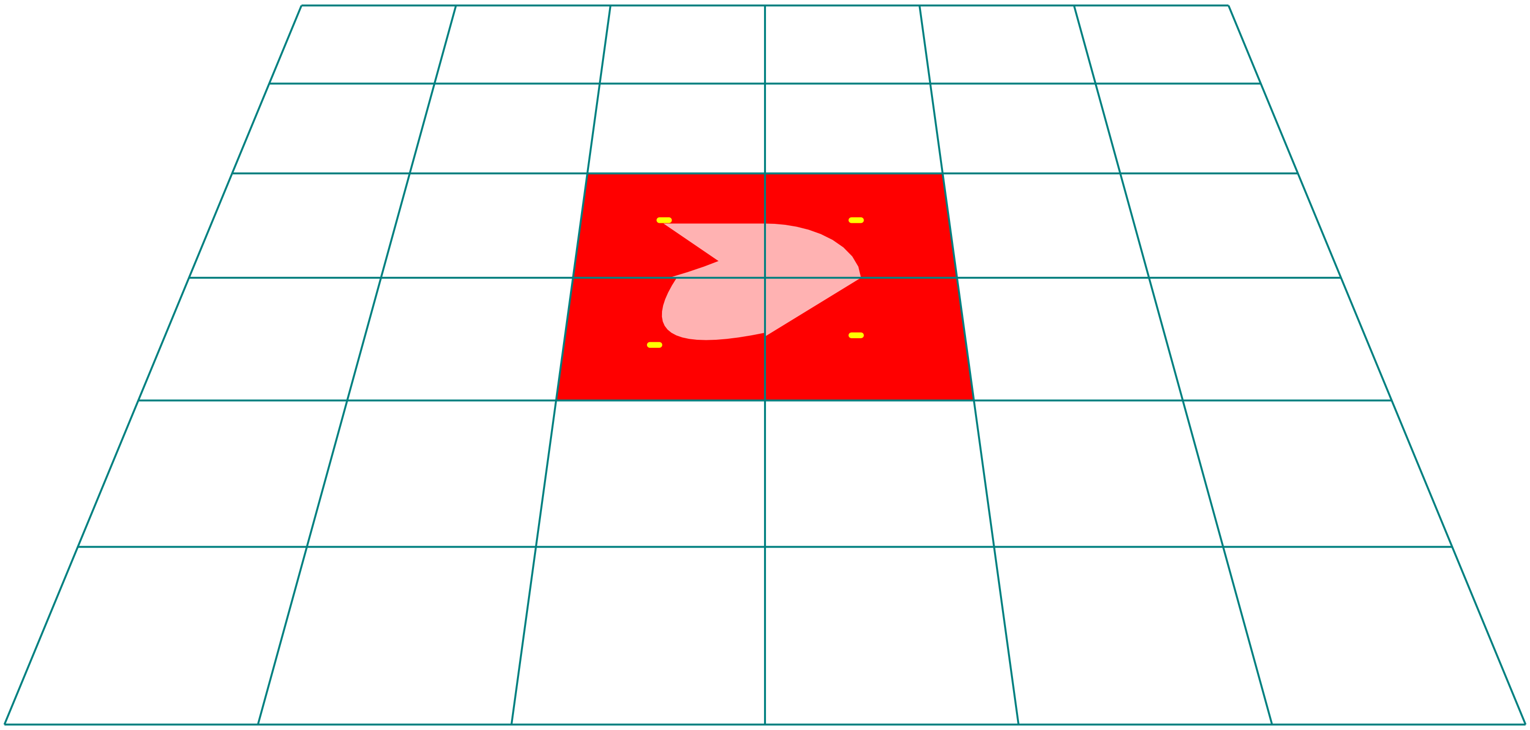


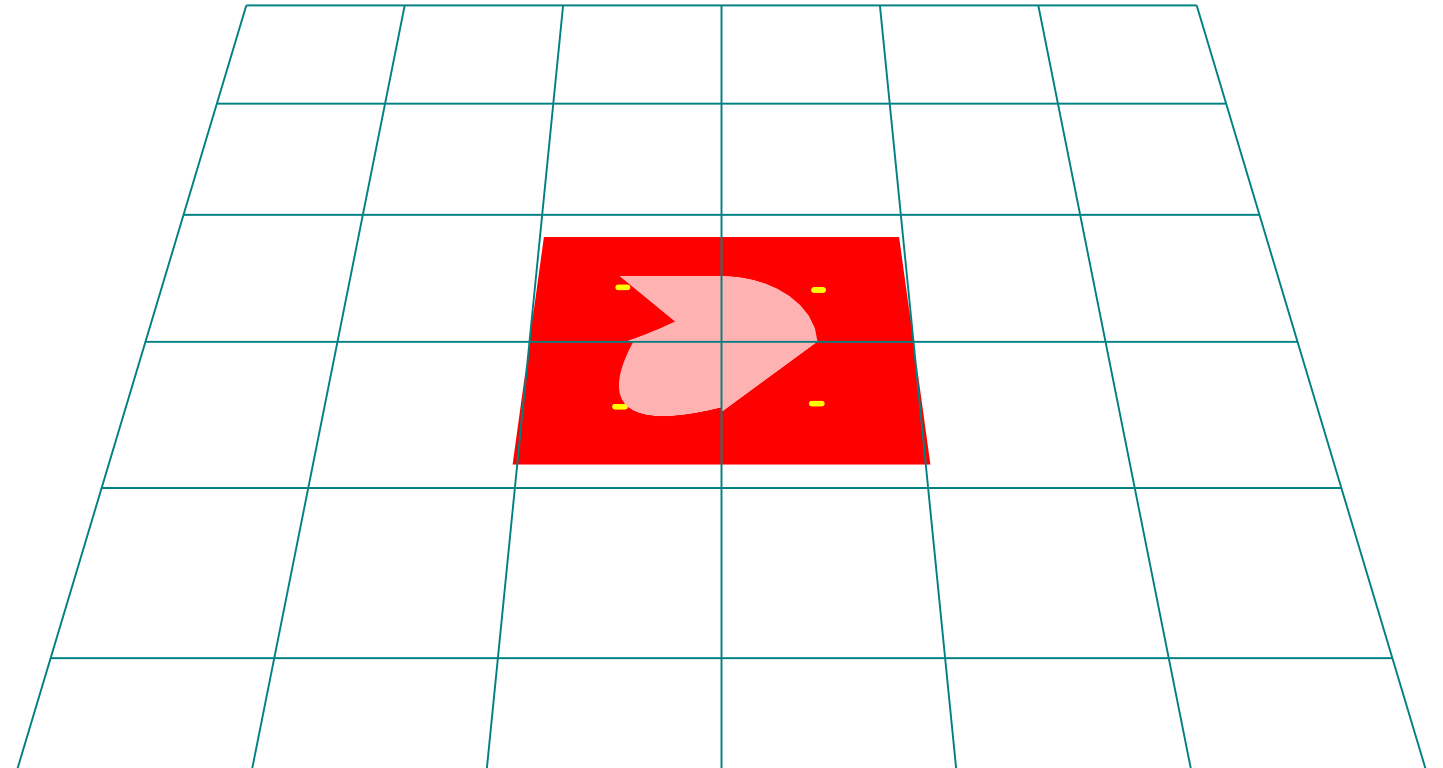


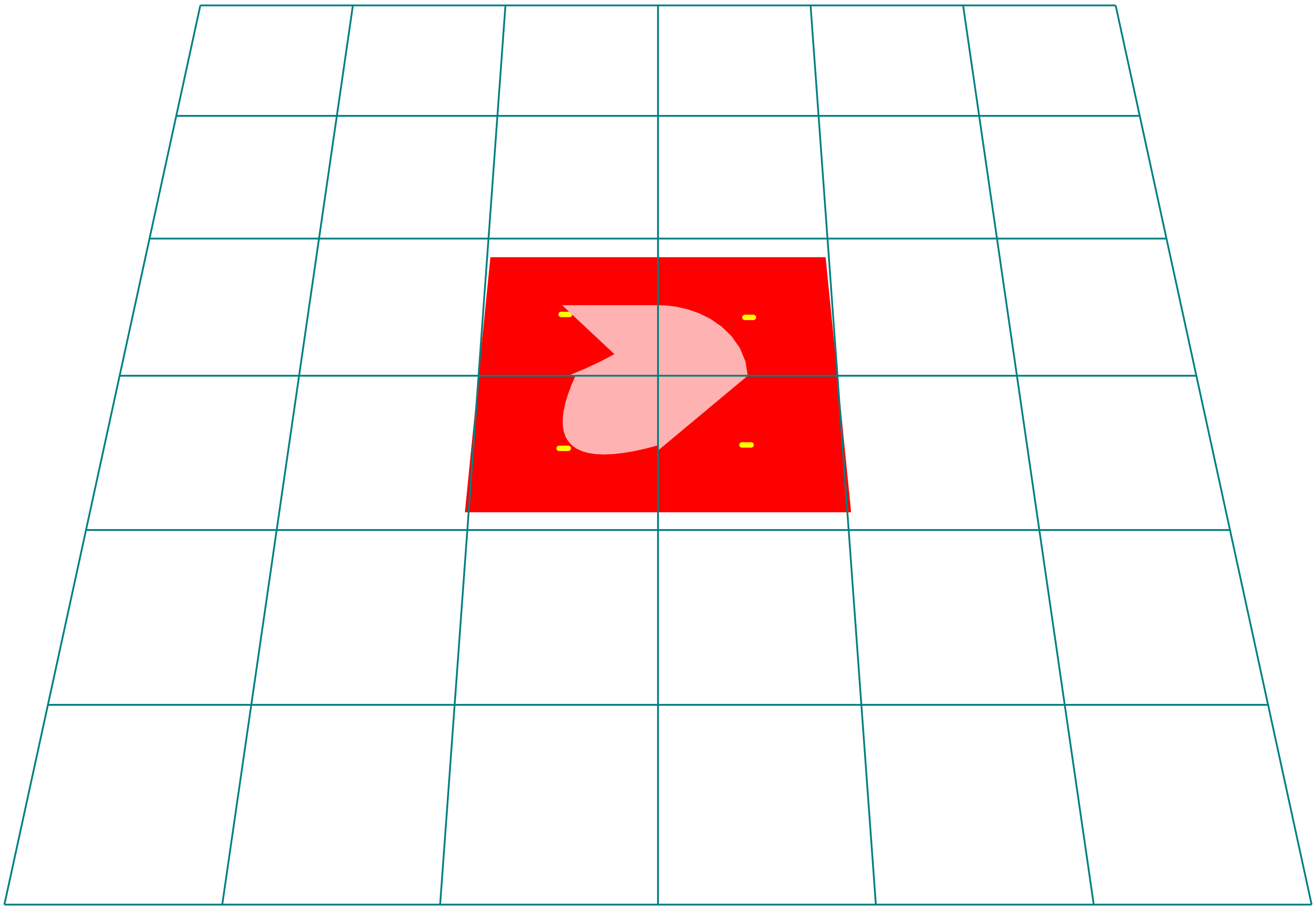


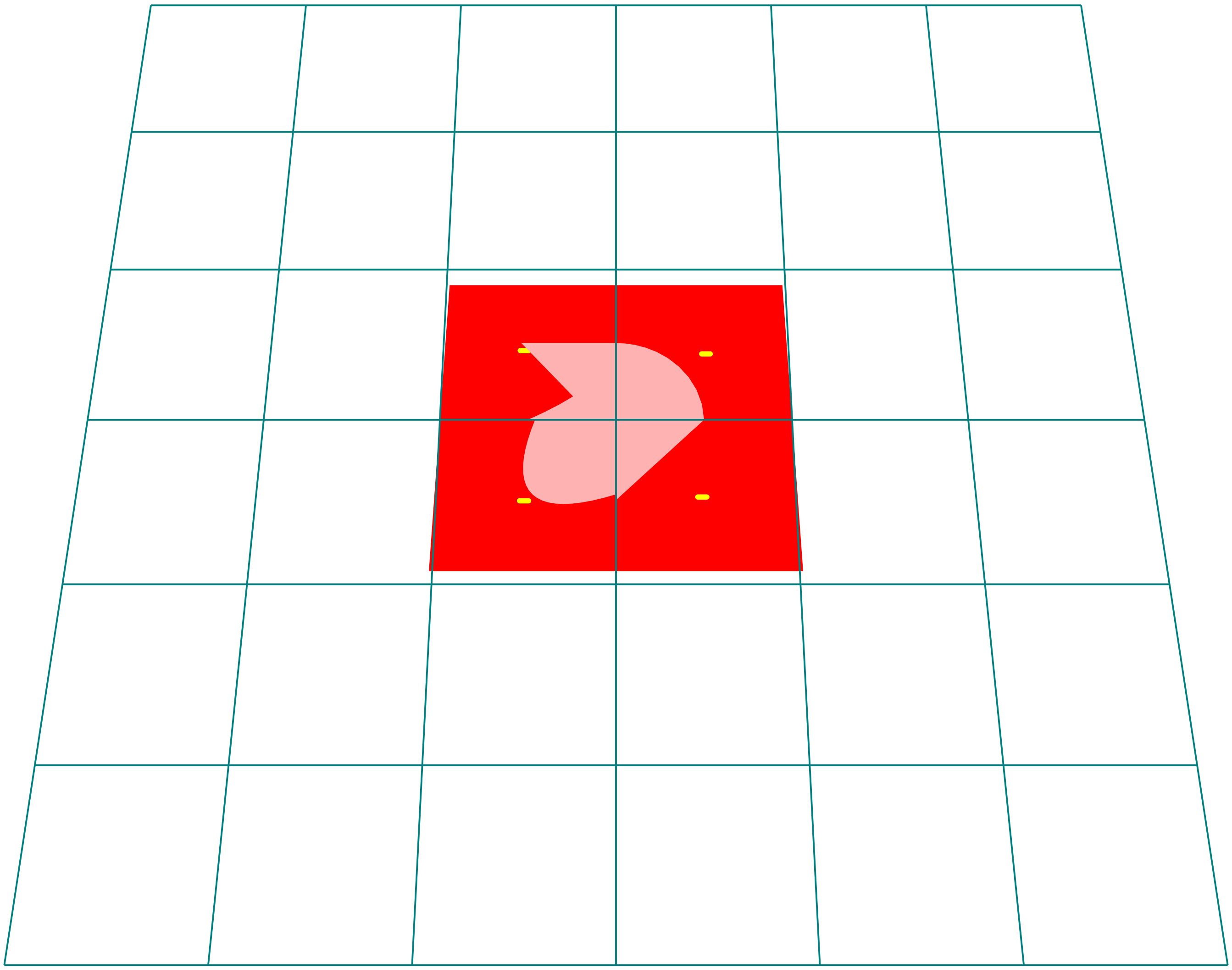


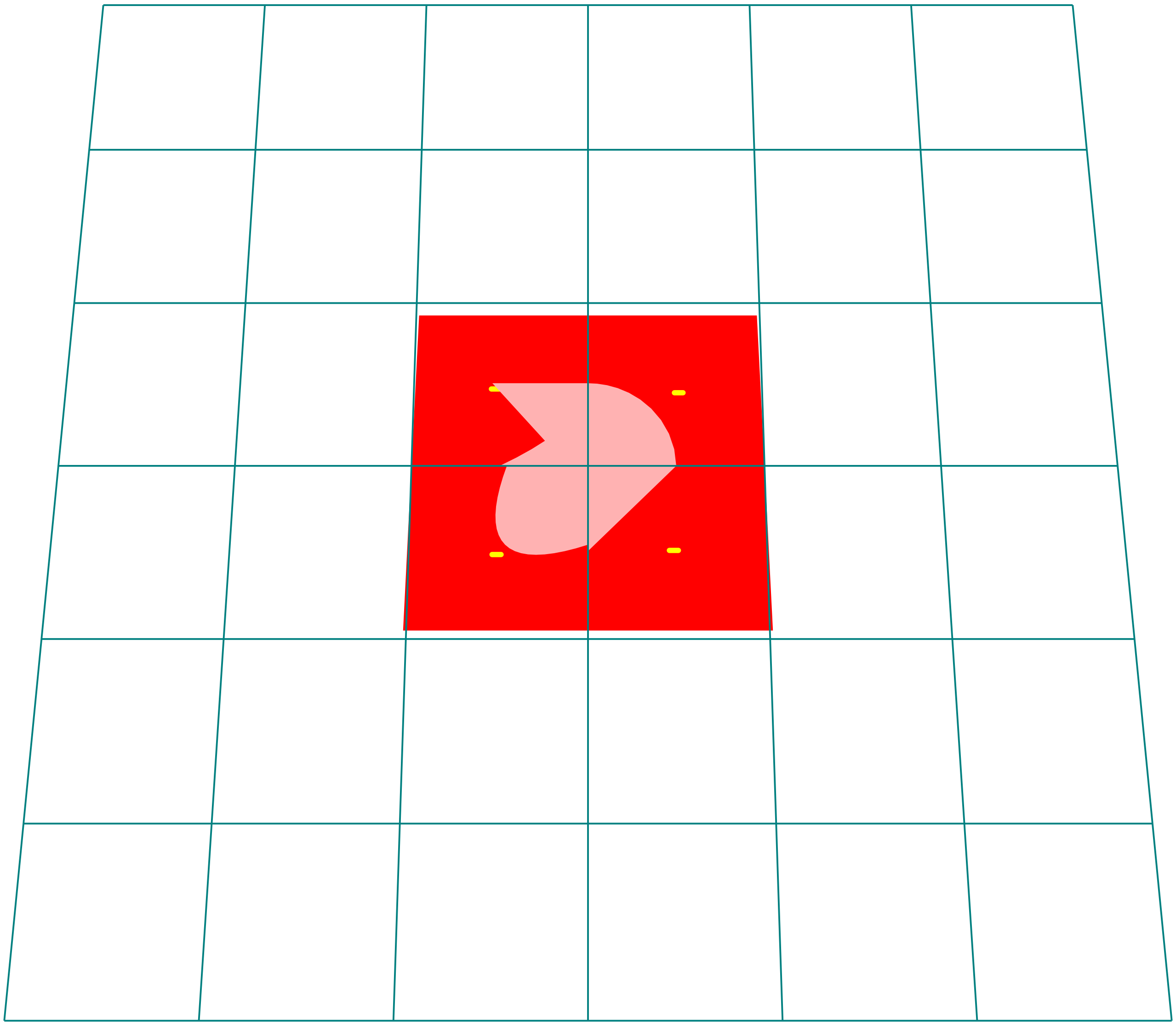


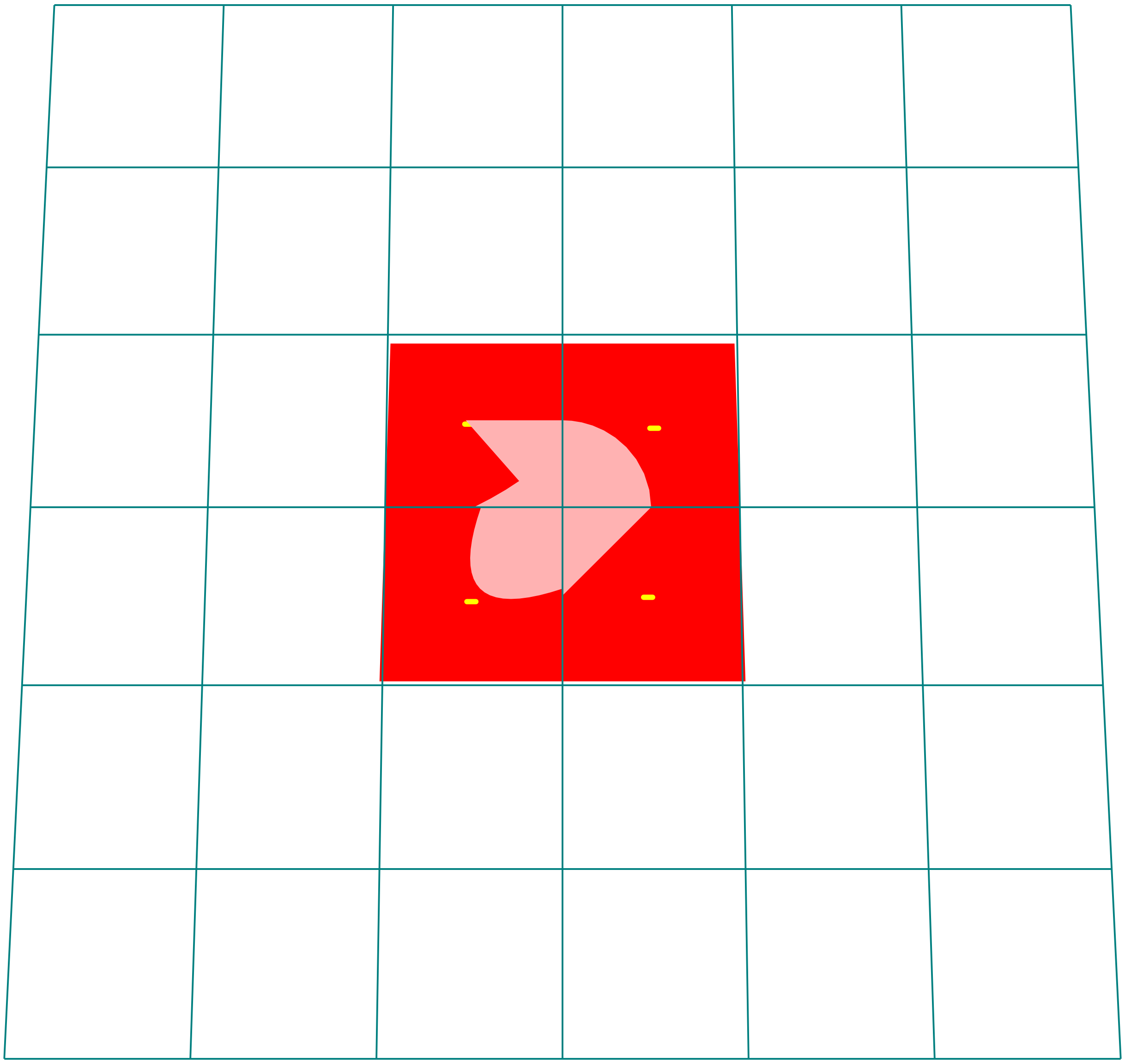


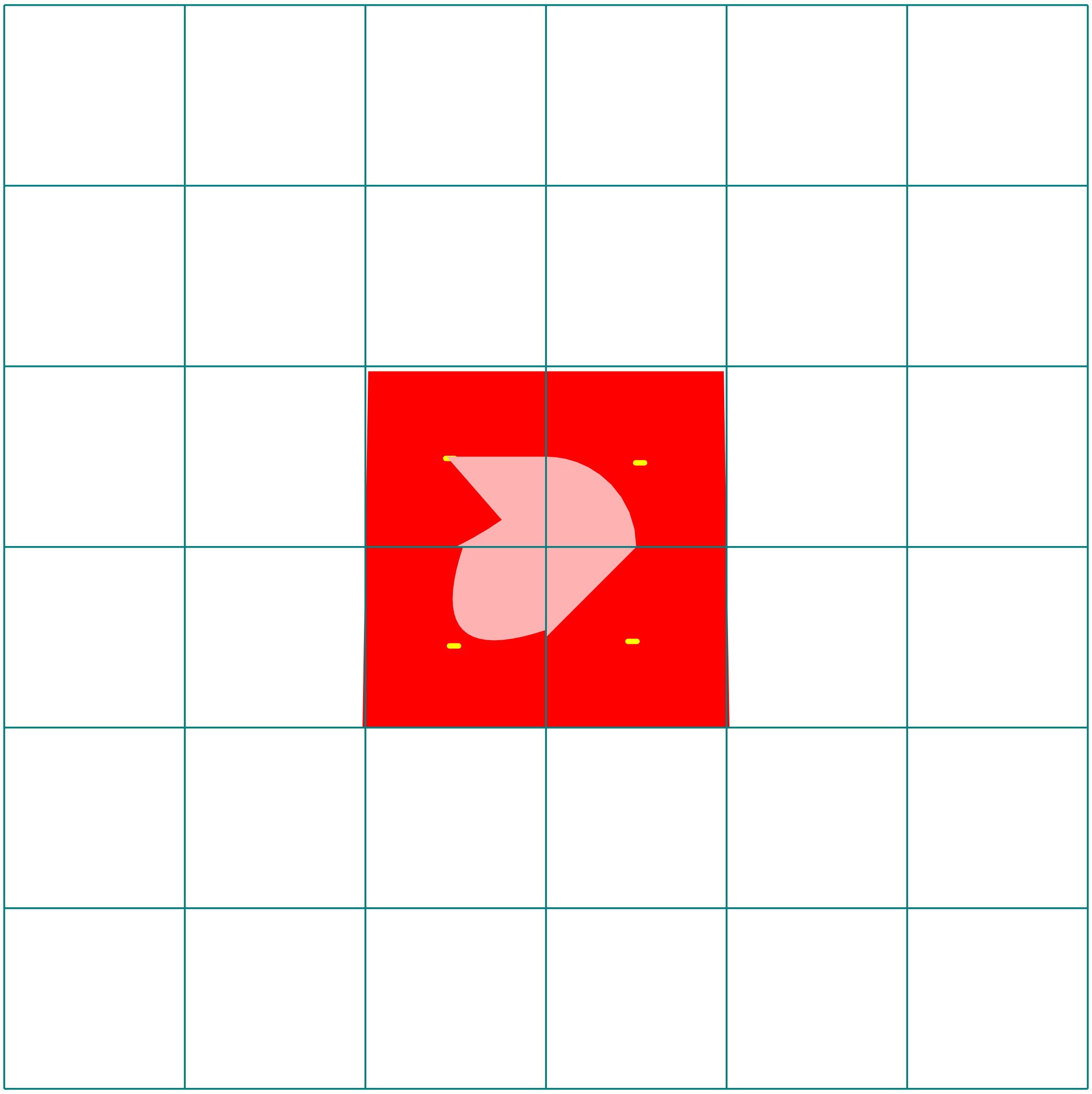




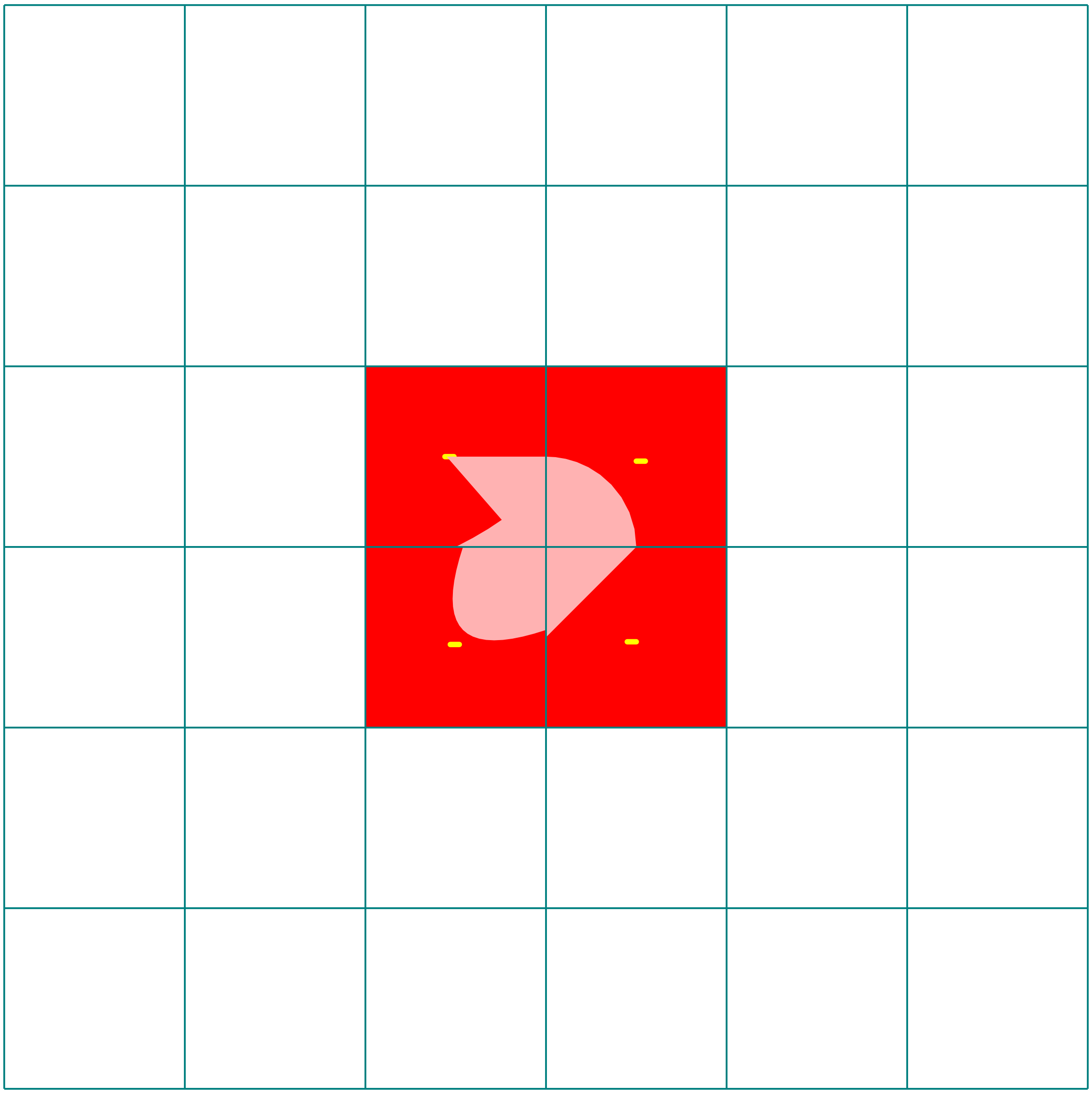


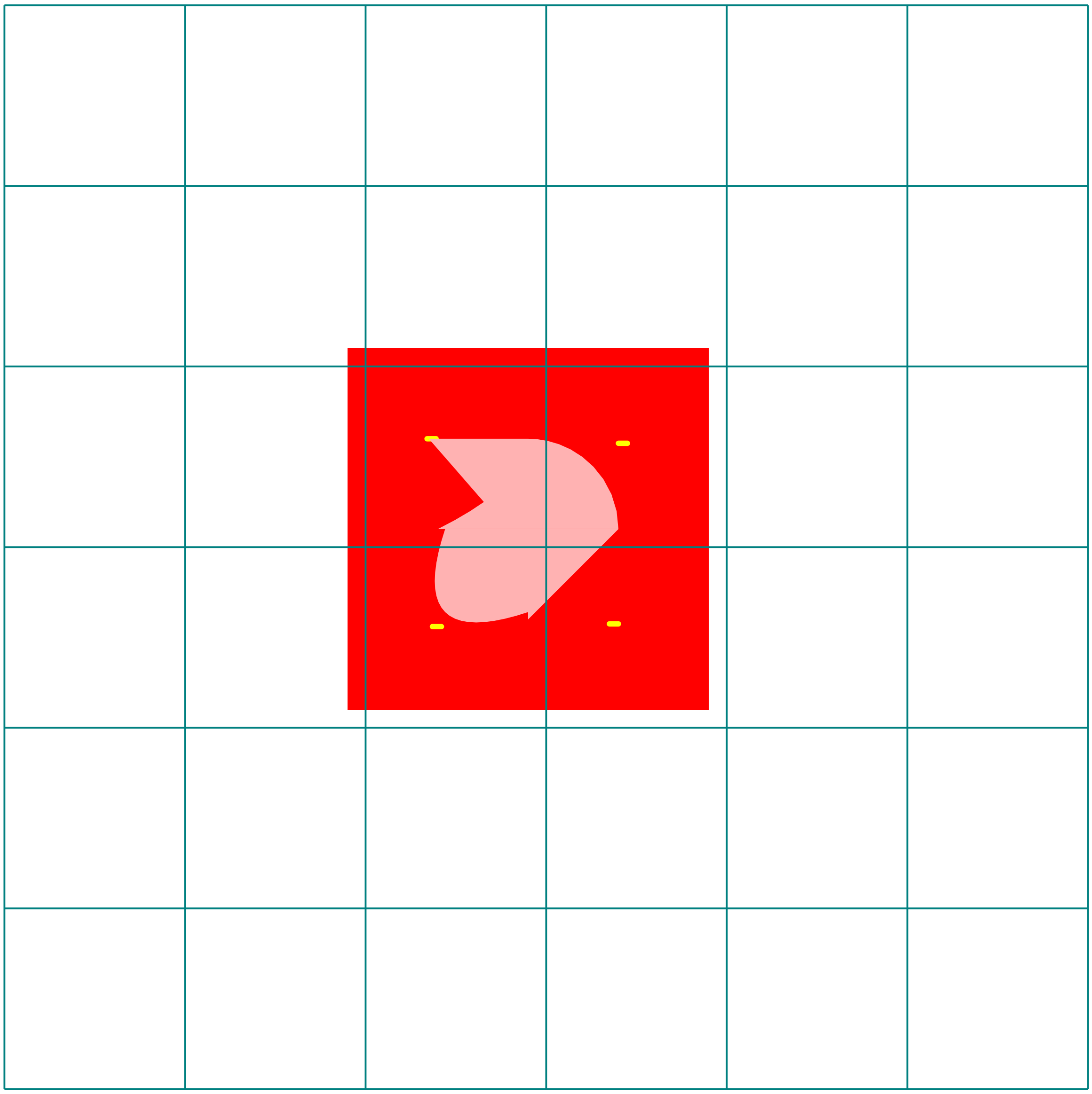


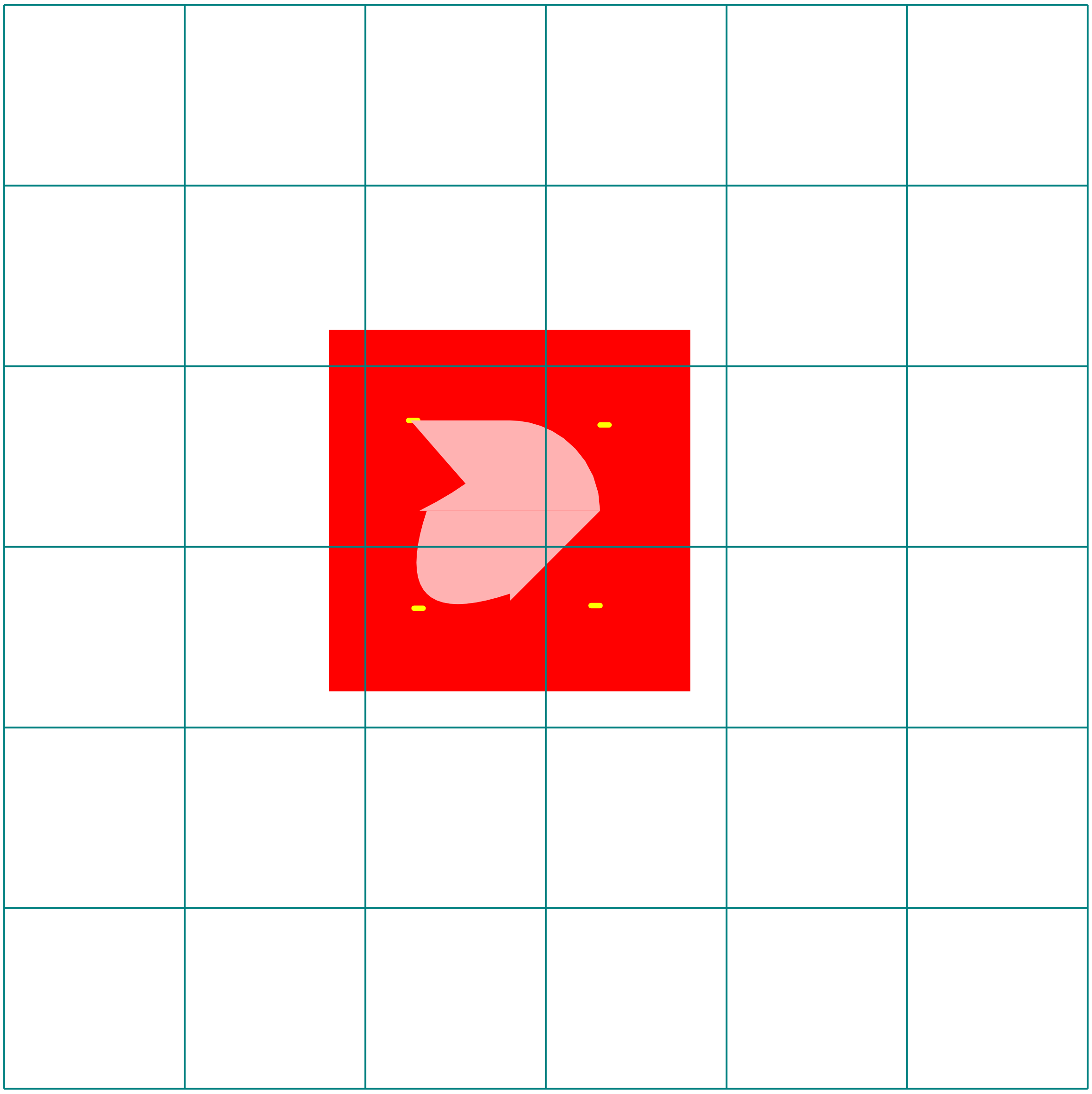


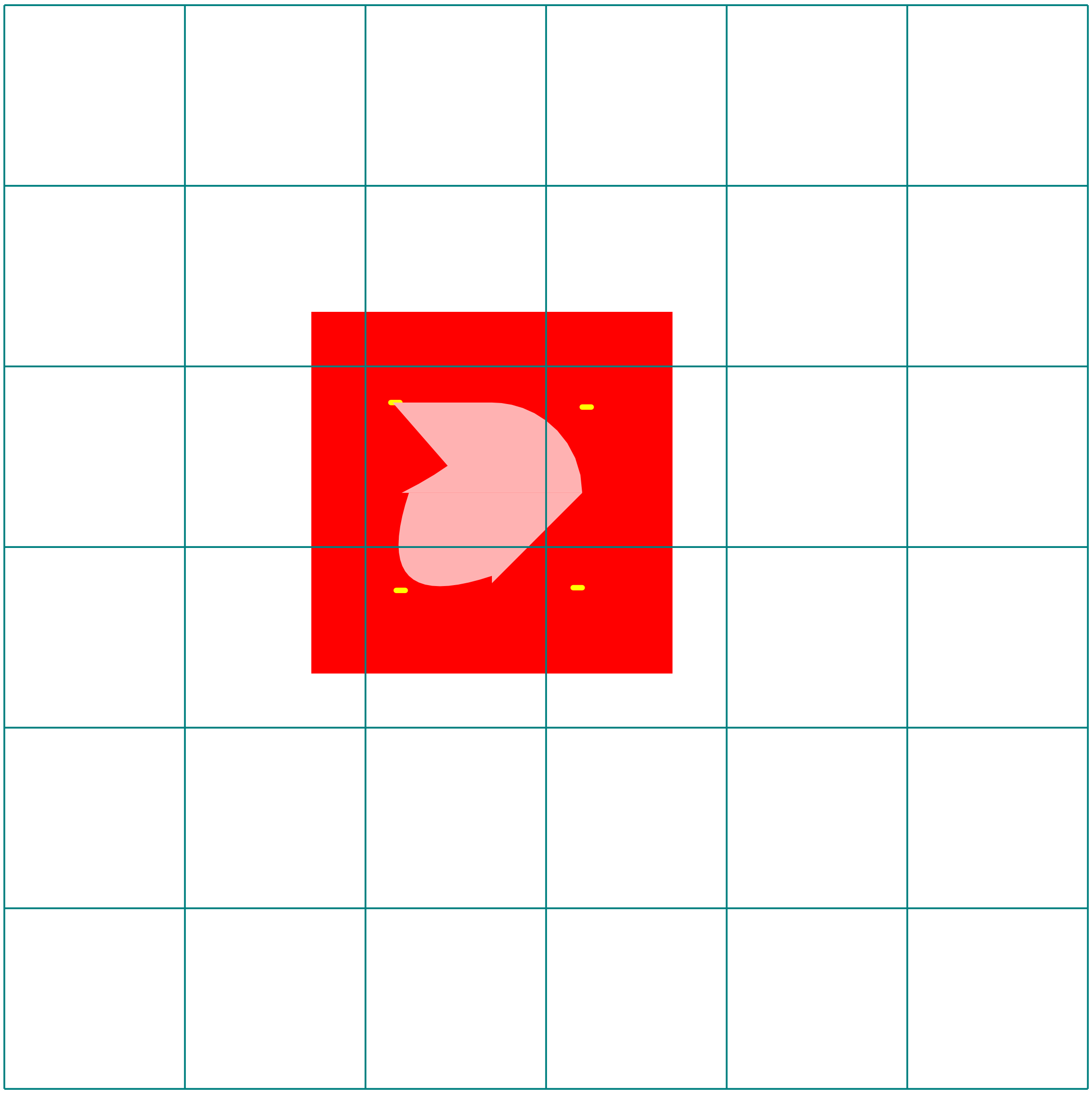


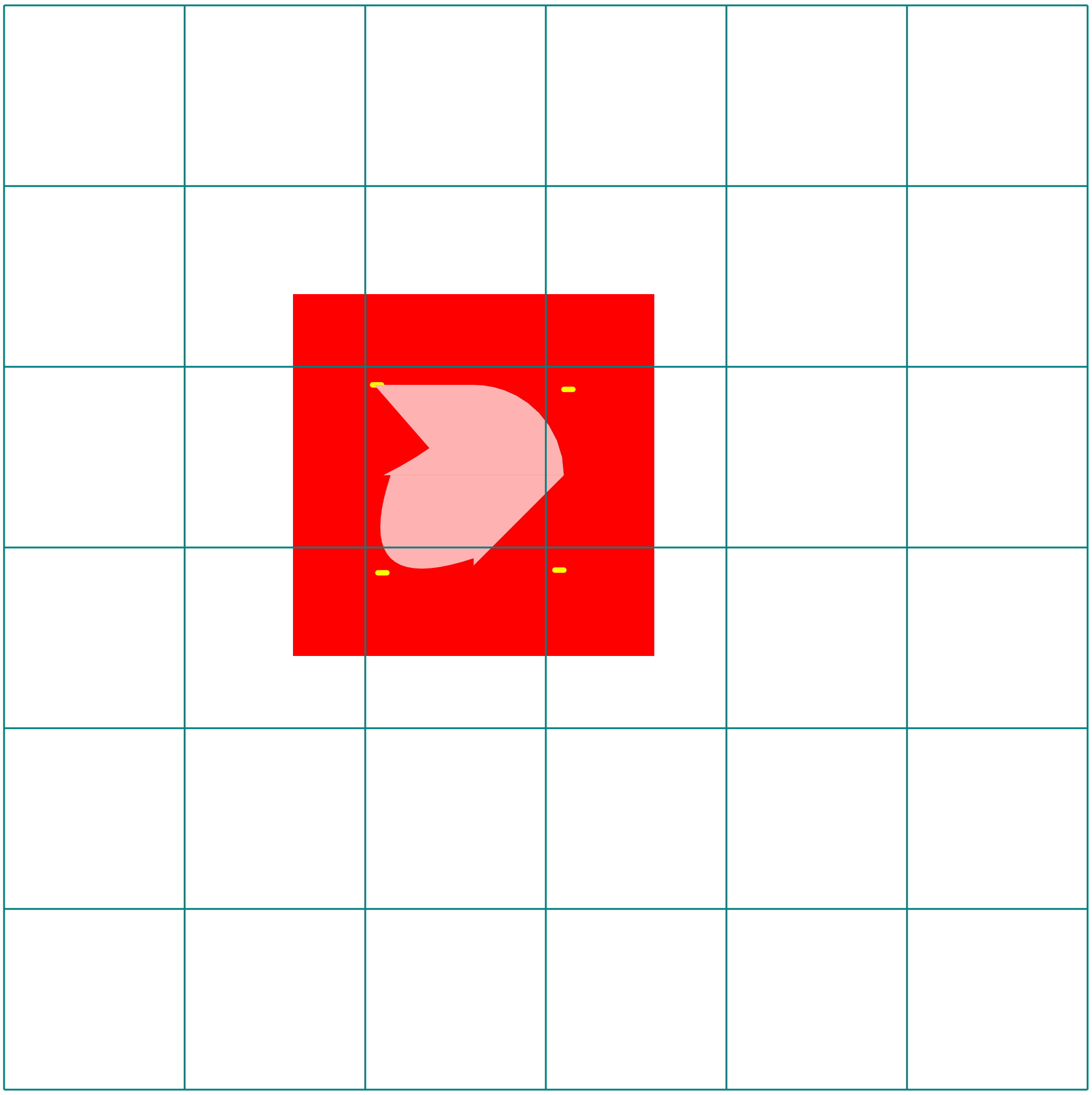
Now we can simply move the shape so that yellow points match any 4 corners of the grid

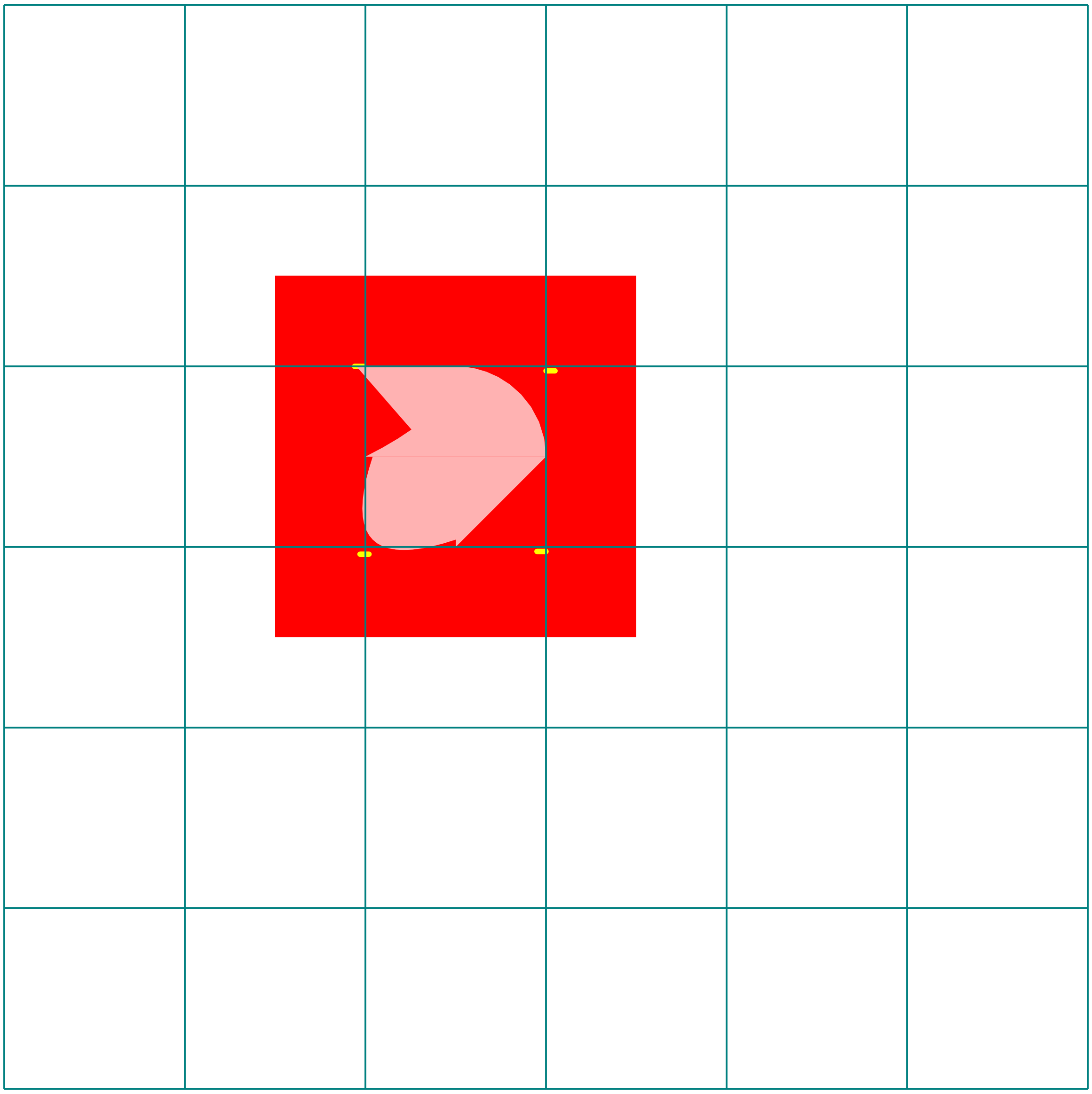












As we can see, the shape fits nicely within the grid, and no lines are crossing it. This shows that the area of the shape is infact less than 1.