

Problem 1. In Figure 1, the top and bottom horizontal lines are parallel, and the three vertical lines are parallel (and perpendicular to the horizontal lines also if you wish). The rest of the diagram is completed by constructing the diagonals of the two rectangular regions. Show that the solid line connecting the intersections of the two pairs of diagonals is parallel to the horizontal line. In other words, if the lines, except the solid line, are parallel, then the figure is a certificate that the solid line is also parallel to the horizontal lines.

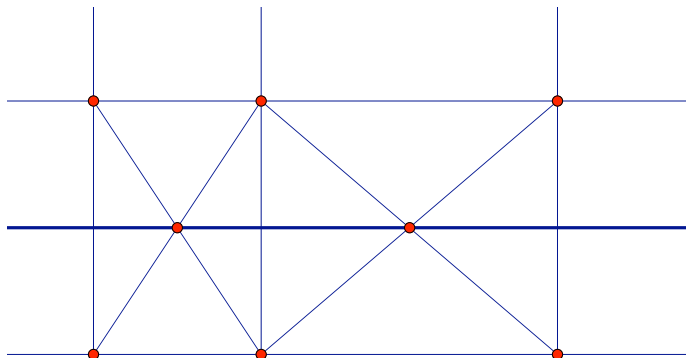


Figure 1:

Problem 2. Figure 2 is an artist's rendition (i.e. projection) of Figure 1 in one-point perspective such that the horizontal lines remain parallel in the picture plane. Show that Figure ?? is also a certificate that the solid line parallel to the horizontal lines.

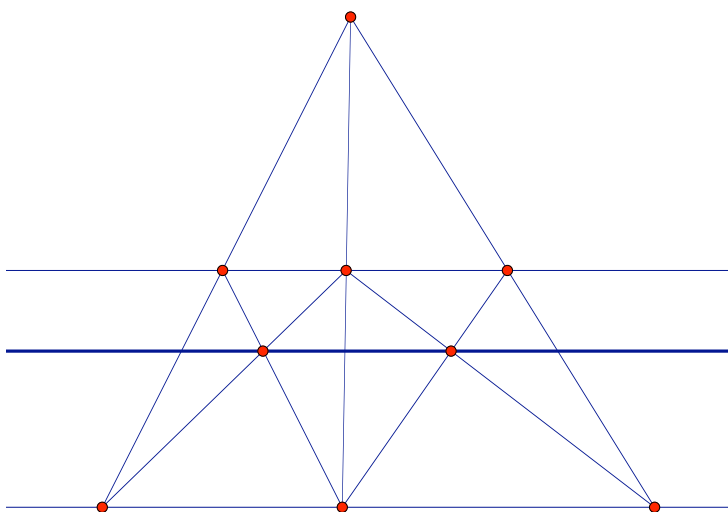


Figure 2:

Problem 3. Figure 3 is an artist's rendition (i.e. projection) of Figure 1 in two-point perspective. In this case show that this figure is a certificate that the extension of the projection of the horizontal lines and the solid line are all incident to the same point.

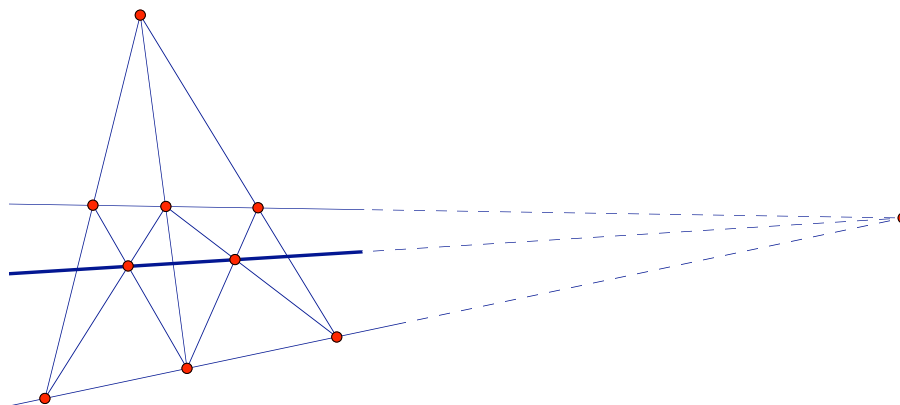


Figure 3:

Problem 4. Show how Figure 3 can be used to draw a line from a point on a sheet of paper to a point off the paper that is the intersection of two lines on the paper.