Projective plane of order 3

The table to the right gives incidence relations for a projective plane of order 3. Incidence relations for an affine plane of order 3 are in the nonshaded part of the table.

|  | Points |  |  |  |  |  |  |  |  |  |  |  |  |
| ---: | ---: | ---: | ---: | ---: | ---: | ---: | ---: | ---: | ---: | ---: | ---: | ---: | ---: |
|  | Ordinary |  |  |  |  |  |  |  |  | At infinity |  |  |  |
| Lines | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| 1 | X | X | X |  |  |  |  |  |  | X |  |  |  |
| 2 |  |  |  | X | X | X |  |  |  | X |  |  |  |
| 3 |  |  |  |  |  |  | X | X | X | X |  |  |  |
| 4 | X |  |  | X |  |  | X |  |  |  | X |  |  |
| 5 |  | X |  |  | X |  |  | X |  |  | X |  |  |
| 6 |  |  | X |  |  | X |  |  | X |  | X |  |  |
| 7 | X |  |  |  | X |  |  |  | X |  |  | X |  |
| 8 |  | X |  |  |  | X | X |  |  |  |  | X |  |
| 9 |  |  | X | X |  |  |  | X |  |  |  | X |  |
| 10 | X |  |  |  |  | X |  | X |  |  |  |  | X |
| 11 |  | X |  | X |  |  |  |  | X |  |  |  | X |
| 12 |  |  | X |  | X |  | X |  |  |  |  |  | X |
| $\infty$ |  |  |  |  |  |  |  |  |  | X | X | X | X |

The figure to the right shows the affine plane of order 3. Each set of parallel lines has a different hue. There are four sets of parallel lines (red, green, blue, and purple.)


The figure to the right shows the projective completion of the affine plane. The points at infinity are added and parallel lines are extended to the relevant point at infinity. The line at infinity is not shown here.

