The purpose of this task was to investigate the most efficient method of meeting the requirements of the loaded truss visible in figure 1. The figure clearly demonstrates the starting and finishing nodes of a truss with an applied force. Practically, this 2D truss was to be situated with a parallel truss such that the equivalent acting force would be half of a 100kg load, thus, the single truss would need to withstand a force 490N.

Three truss designs were proposed and were compared using nodal analysis to determine the maximum force they would each withstand. In addition to this, the material efficiencies of the three designs were also considered in the final decision. The investigations’ objective was to test the most optimised design to justify the decision made by the team.

Chart, scatter chart

Description automatically generated

Figure 1: Original Truss Problem