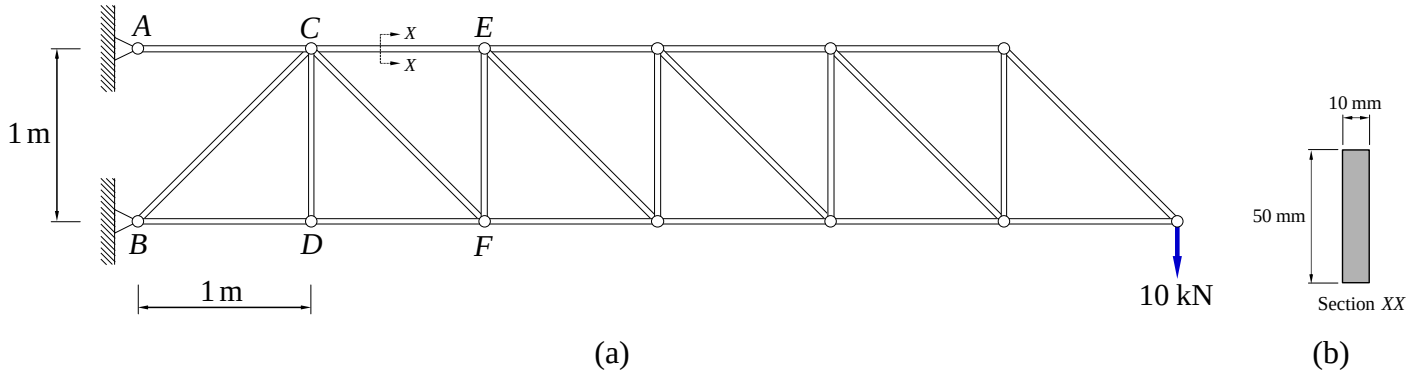
Example 1.1.4 – The plane, pin-jointed truss shown in Figure 1(a) is loaded vertically with a single downward force of 10 kN at the end. Horizontal and vertical members are 1 m long. The truss is mounted on pinned supports at *A* and *B*.

a) Calculate the horizontal and vertical components of reactions at *A* and *B*.

b) Calculate the forces in the five members connecting joints *C*, *D*, *E*, and *F*.

c) Calculate the direct stress in element *CE*, assuming a solid rectangular cross-section of 10 mm × 50 mm for all truss members, as shown in Figure 1(b).



(a) (b)

Figure 1: (a) A long pin-jointed truss and (b) cross-section of all its members.