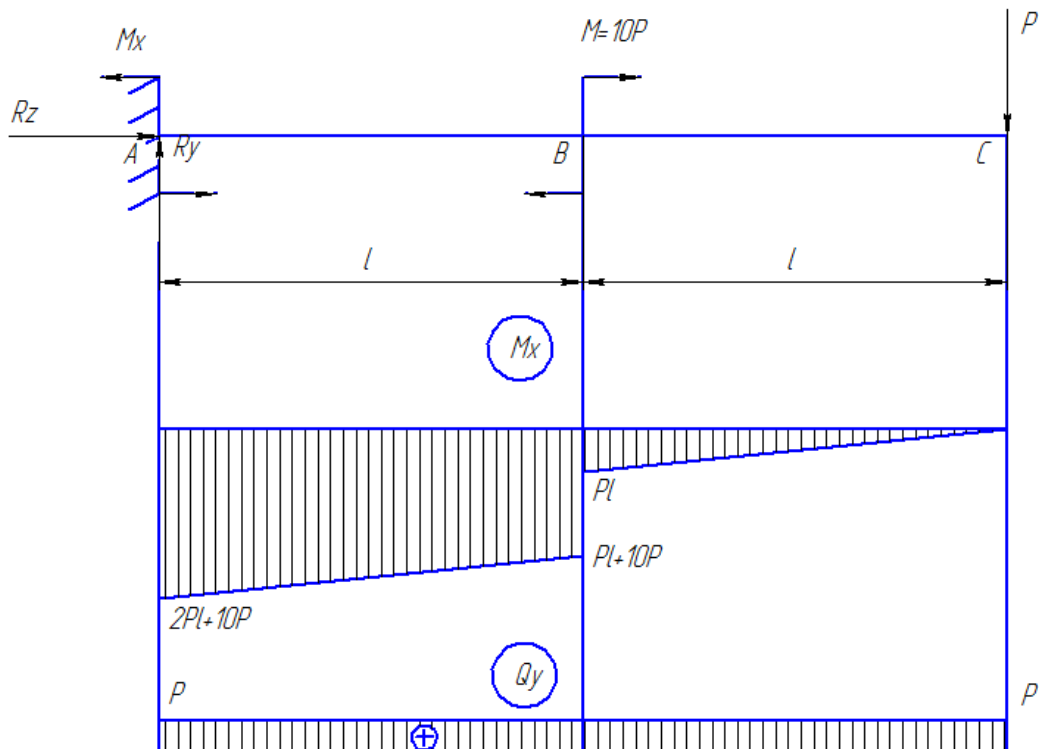


Task:

For a cantilever beam with a point load and a moment, and yield strength of the material specified with young's modulus how do we calculate the point load as well as moment, applied moment is proportional to load as follows ($M=10 P$).

Solution:

If you mean bending moments and shear forces then:



$$\Sigma M_{Ax_i} = 0, \quad \Sigma Q_{y_i} = 0, \quad \Sigma Q_{z_i} = 0, \quad R_z = 0$$

$$\Sigma M_{Ax_i} = M_x - M - 2Pl = M_x - 10P - 2Pl = 0$$

$$M_x = 10P + 2Pl$$

$$\Sigma Q_{y_i} = R_y - P = 0$$

$$R_y = P$$

Answer:

$$M_x = 10P + 2Pl$$

$$R_y = P$$