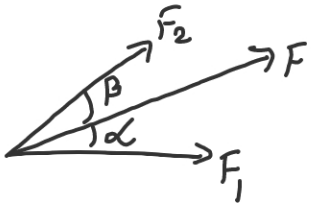
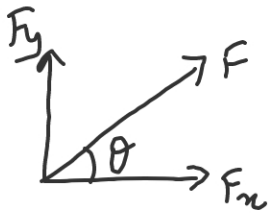
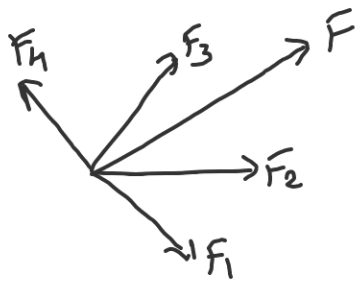
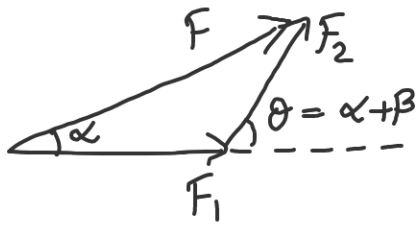
Resolution of forces

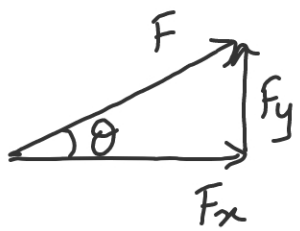


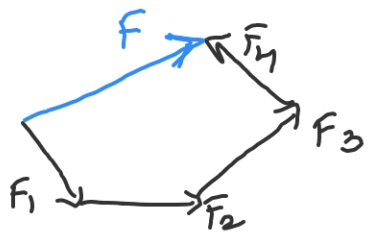




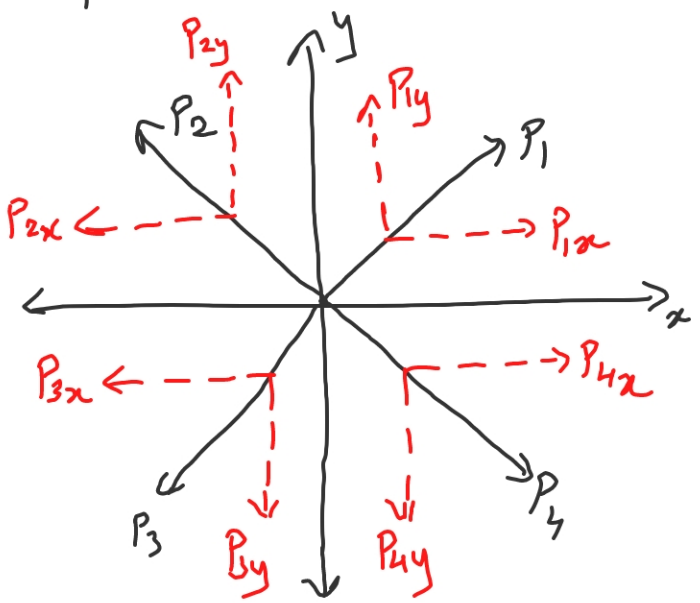
Composition of forces







Composition of forces by the method of resolution.



step:1 Finding components of all the forces in X & Y direction.

$P_{1x}, P_{2x}, P_{3x}, P_{4x}, P_{1y}, P_{2y}, P_{3y}$ & P_{4y}

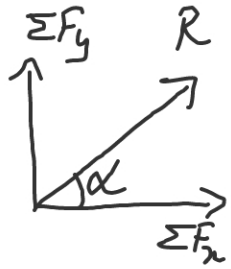
step 2: Find the algebraic sum of the resolved forces separately in X & Y direction

$$\Sigma F_x = P_{1x} + (-P_{2x}) + (-P_{3x}) + P_{4x}$$
$$= P_{1x} - P_{2x} - P_{3x} + P_{4x}$$

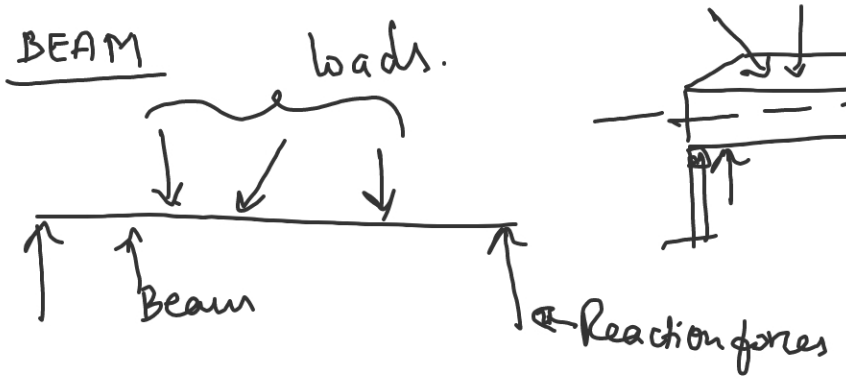
$$\Sigma F_y = P_{1y} + P_{2y} + (-P_{3y}) + (-P_{4y})$$
$$= P_{1y} + P_{2y} - P_{3y} - P_{4y}$$

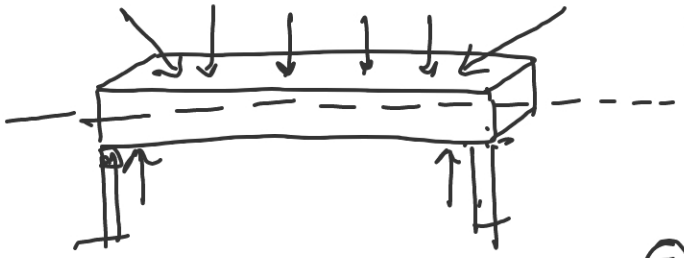
$$R = \sqrt{(\Sigma F_x)^2 + (\Sigma F_y)^2}$$

$$\alpha = \tan^{-1} \frac{\Sigma F_y}{\Sigma F_x}$$



BEAM





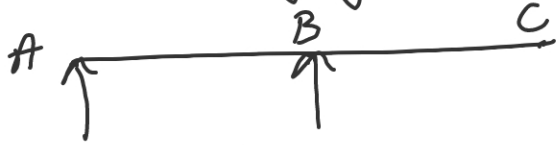
④ Fixed beam

③ Propped cantilever

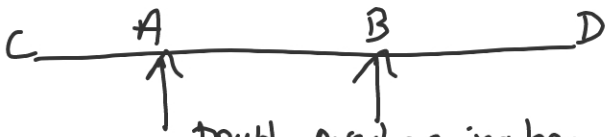
① Simply supported beam

② Cantilever beam

③ Overhanging beam

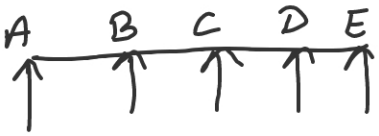


Single overhanging beam



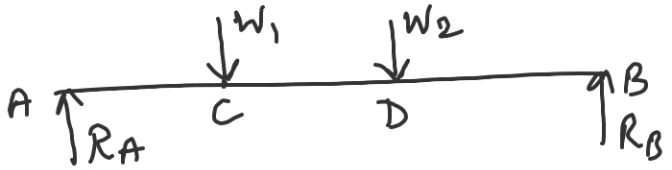
Double overhanging beam.

⑥ Continuous beam

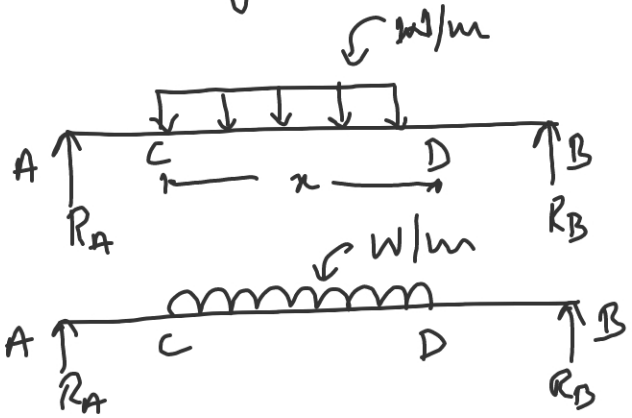


Types of loadings:

① Point load or concentrated load.



② Uniformly distributed load (UDL)



③ Uniformly Varying load : (UVL)