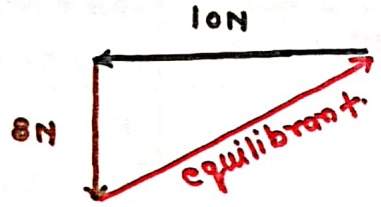
Equilibrant force and its determination:-

↦ Equilibrant force is the only force, which joins the system of forces acting on a body to keeps the body in static equilibrium.

↦ This force is collinear, equal and opposite to the resultant of system of forces.

↦



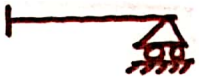
↦ from pythagorean theorem-

Resultant of these 2-forces = 12.8N which is also the magnitude of equilibrant forces/force.

↦ Angle can be found by trigonometry.

TYPE OF SUPPORTS:-

(1) Roller



(2) Pinned

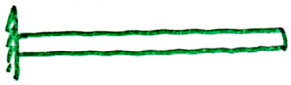
(3) Fixed

(4) Simpe

TYPE OF BEAMS:-

(1) Simply Supported:-

(2) Cantilever:-



(3) Overhanging:-

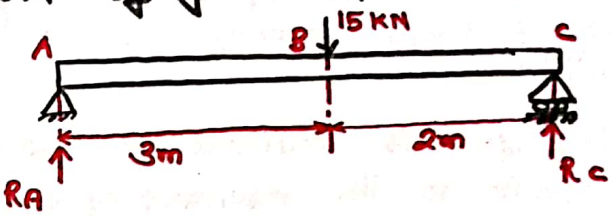
(4) Fixed:-

(5) Continuous:-

ANALYSIS FOR SIMPLY SUPPORTED BEAM:-

Question:- Find the reactions at the support of given beam.

Solve:-



Taking Moments About A :-

$$R_c \times (3+2) - 15 \times 3 = 0$$

$$5R_c = 45$$

$$[R_c = 9\ KN]$$

OR

$$R_A + R_c = 15$$

$$R_A + 9 = 15$$

$$R_A = 15 - 9$$

$$[R_A = 6\ KN]_{Ans}$$

2nd -

Taking Moment about C -

$$R_A \times (2+3) - 15 \times 2 = 0$$

$$5R_A = 30$$

$$[R_A = 6\ KN]_{Ans}$$