ENGINEERING MECANICS

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Beams

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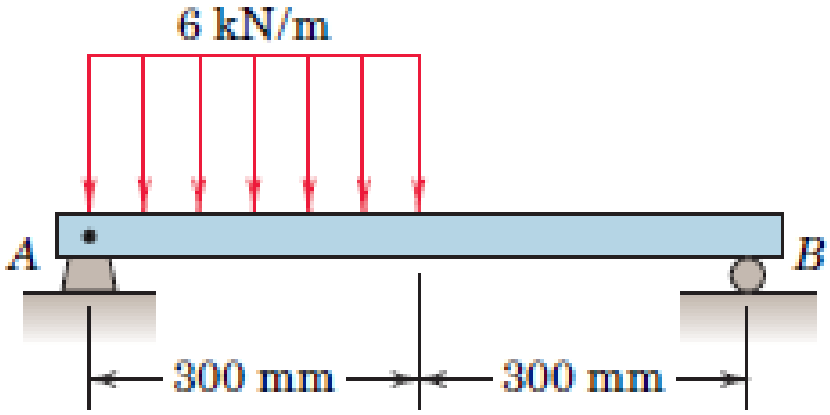
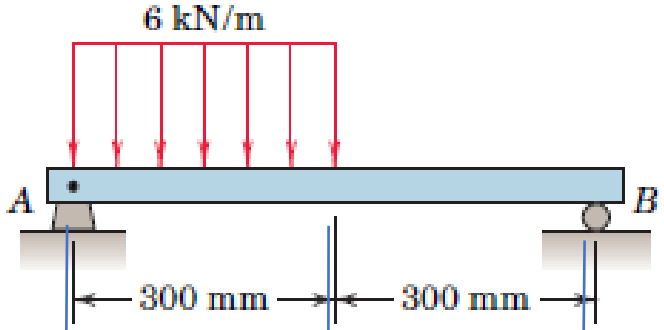
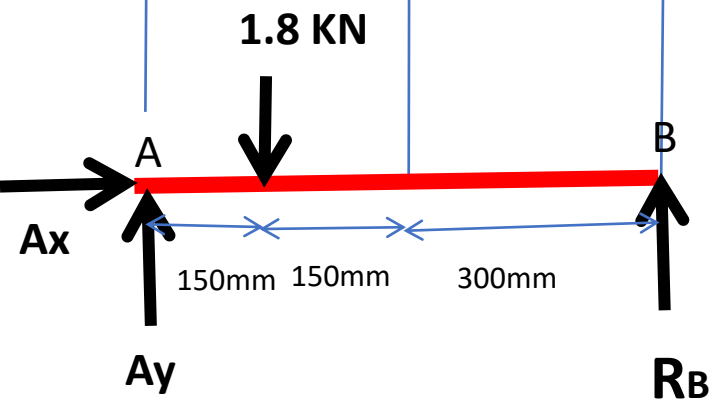
5/101 Determine the reactions at *A* and *B* for the beam subjected to the uniform load distribution.





FBD of beam AB



R= w. l

R= 6 X (300/1000)= 1.8 KN

Applying conditions of equilibrium:

$F_X = 0$ $\quad$ Ax = 0

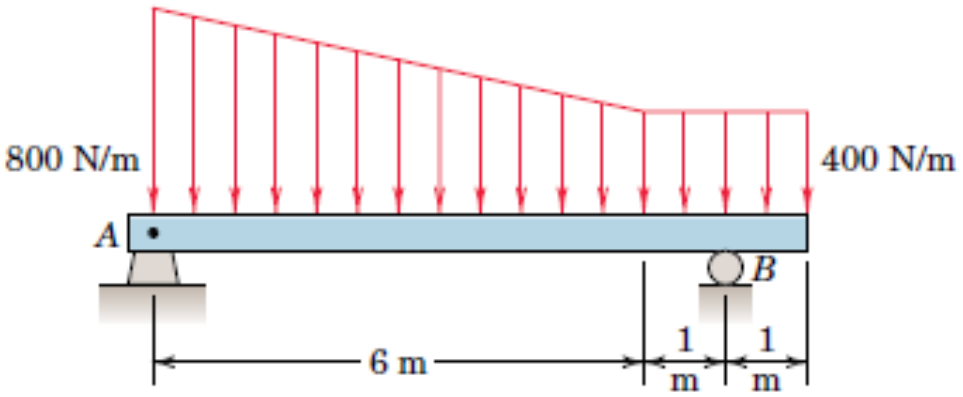
$\sum M_A = 0$ $\quad -(1.8 \text{ X } 150) + (R_B \text{ x } 600) = 0$

$R_B = 0.45$ KN (Upward)

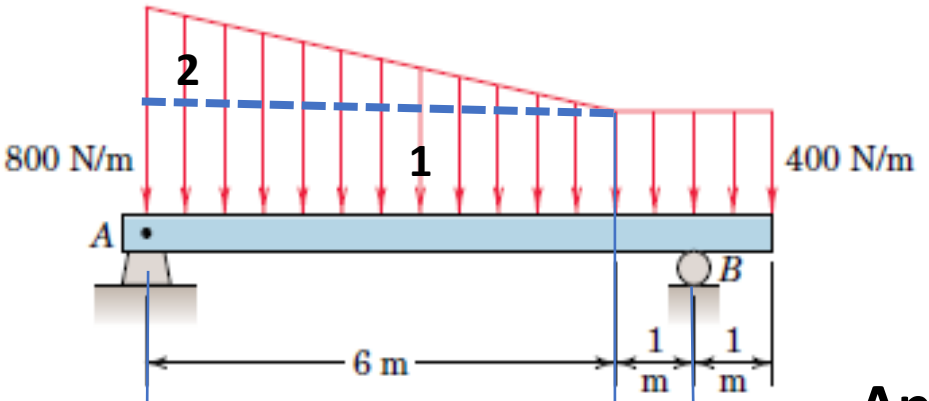
$\sum F_Y = 0$ $\quad +A_Y - 1.8 + R_B = 0$

$A_Y = 1.35$ KN (Upward)

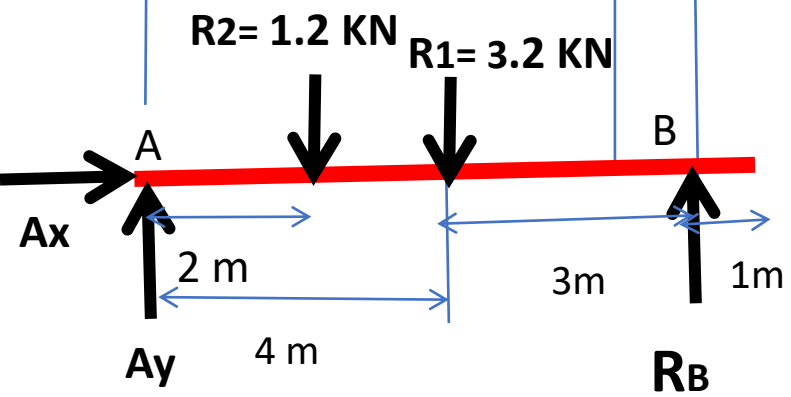
5/103. Calculate the reactions at *A* and *B* for the beam loaded as shown.



Problem 5/103



FBD of beam AB



R_1= w. l = 400 X (8)= 3.2 KN

l/2 w.r.t A= 8/2 = 4m

R_2 = w. l/2 = 400 X (6)/2= 1.2 KN

l/3 w.r.t A = 6/2= 2m

Applying conditions of equilibrium:

$F_X = 0$ $\quad$ Ax = 0

$\sum M_A = 0$ $\quad -(1.2 \text{ X } 2) - (3.2 \text{ X } 4) + (R_B \text{ x } 7) = 0$

$R_B = 2.17$ KN (Upward)

$\sum F_Y = 0$ $\quad +A_Y - 1.2 - 3.2 + R_B = 0$

$A_Y = 2.23$ KN (Upward)

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THANK YOU

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