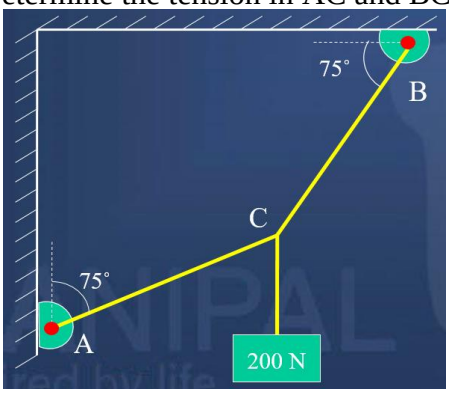
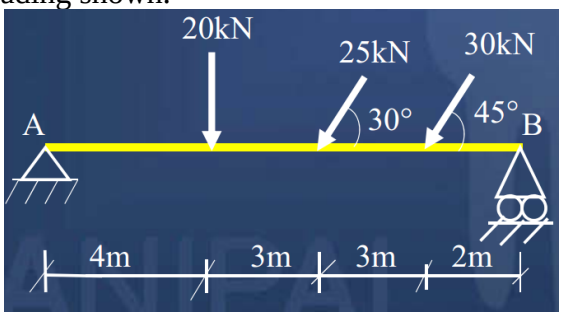
1. Two cables tied at C and loaded as shown. Determine the tension in AC and BC.



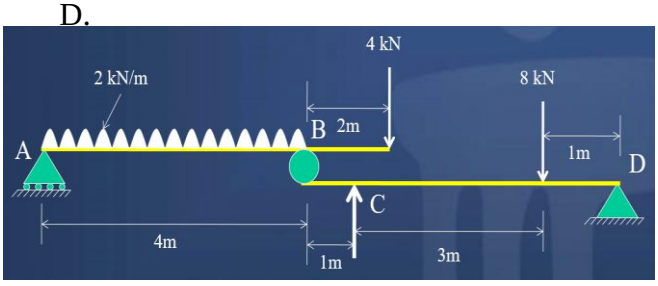
Ans: F_{CA} = 59.8 N; F_{CB} = 223.07 N

2. A beam AB of span 12m shown in the figure is hinged at A and is on rollers at B. Determine the reactions at A and B for the loading shown.



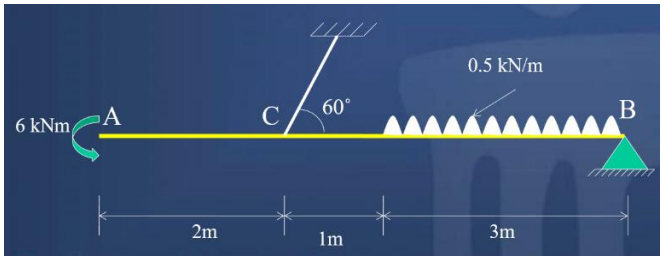
Ans: H_A = 42.86kN; V_A = 22.07kN; V_B = 31.64kN

3. Determine the support reactions at A, C and D.



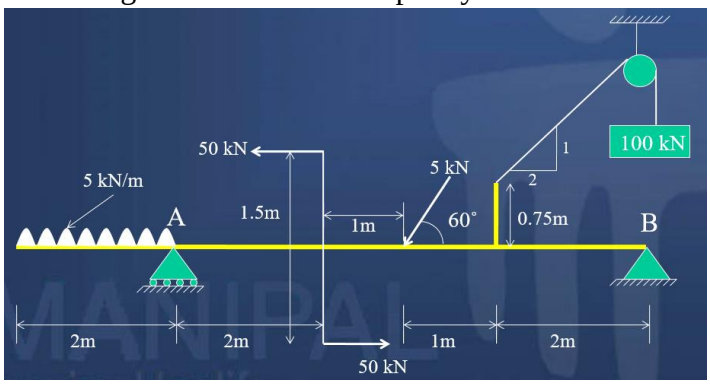
Ans: V_A = 2 kN; V_B = 10 kN; V_C = 14.5 kN; V_D = 3.5 kN

4. Find the tension in the rope and reaction at B.



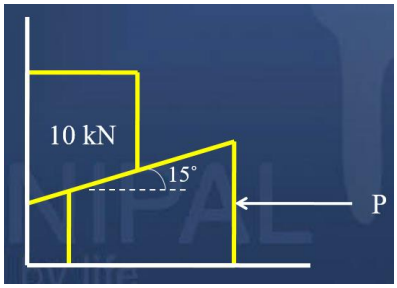
Ans: H_B = 1.19 kN (←); T = 2.38 kN; V_B = - 0.56 kN

5. Find the support reactions at A and B for the figure shown. Assume pulley to be smooth.



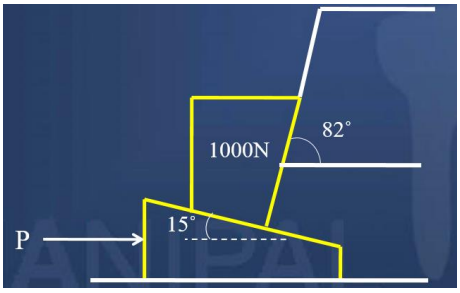
Ans : H_B =84.44kN (←); V_A =0.44kN; V_B = 29.95 kN

6. Find the value of the horizontal force P to raise the block of 10 kN by a 15˚wedge. Take μ=0.25 for all rubbing surfaces.



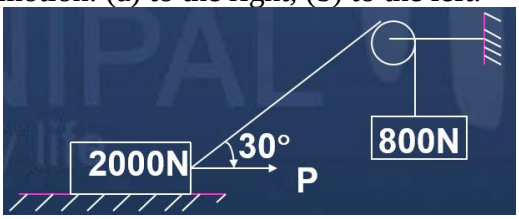
Ans: P = 9.36 kN

7. Find the value of horizontal force P when the motion of the wedge towards right is impending. Take Φ=12˚ and the angle of wedge=15˚.



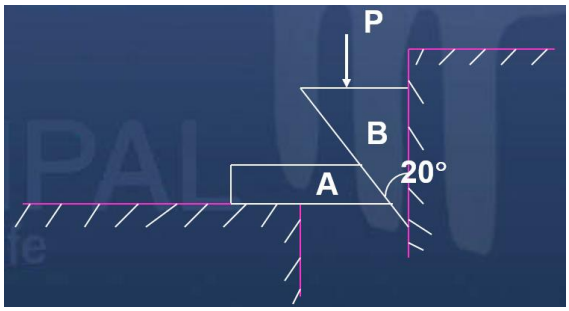
Ans: P = 748.77 kN

8. A block of weight 2000 N is attached to a cord passing over a frictionless pulley and supporting a weight of 800N as shown in fig. If μ between the block and the plane is 0.35, determine the unknown force P for impending motion: (a) to the right, (b) to the left.



Ans: (a) P = 132.8 N, (b) P = 1252 N

9. Determine the vertical force P required to drive the wedge B downwards in the arrangements shown in fig. Angle of friction for all contact surfaces is 12o.Weight of block A= 1600 N.



Ans: P = 328.42 N

10. A uniform ladder of length 7m rests against a vertical wall with which it makes an angle of 45o. Coefficient of friction between the ladder and the wall is 1/3 and between ladder and the floor is 1/2. If a person whose weight is half that of the ladder ascends it, how high will he be when the ladder just slips?

Ans: 2 m from the top