Course Code: ESC106A
Course Title: Construction Materials and Engineering Mechanics

Lecture No. 8:
Problems on Resolution of forces

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Lecture Intended Learning Outcomes

At the end of this lecture, student will be able to:

- Solve problems on resolution of forces to find the components of a force

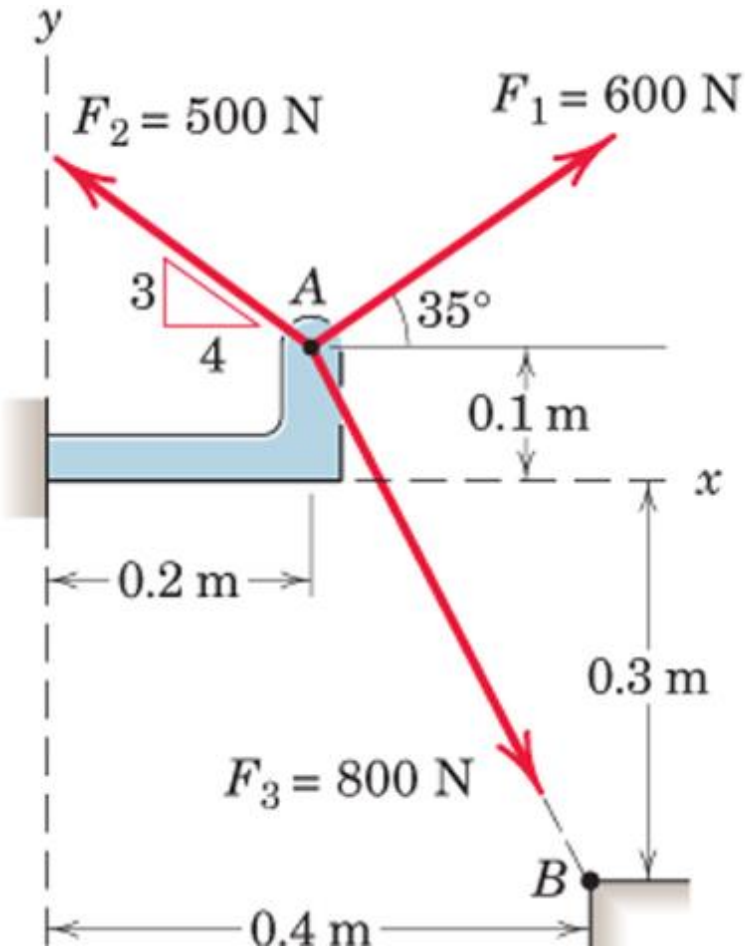
Contents

- **Engineering Mechanics**

  Resolution of forces; Numerical problems

Problems on Resolution

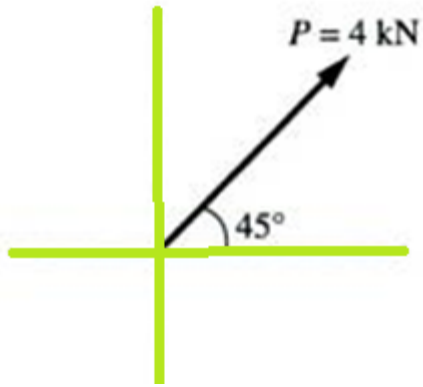
1)Resolve the forces F_1,F_2 and F_3 as shown in the figure



F_{1X}=491.5N
F_{1Y}=344.15N
F_{2X}=-400N
F_{2Y}=300N
F_{3X}=358N
F_{3Y}=-716N

Problems on Resolution

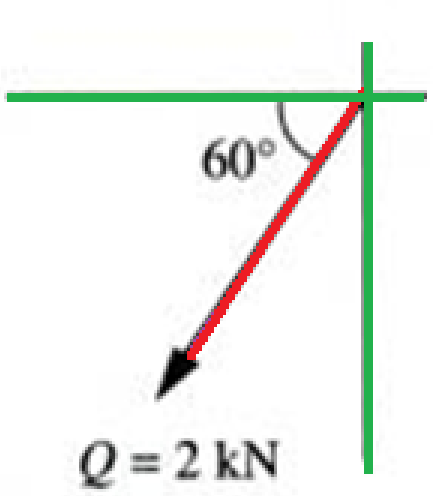
2) Resolve the forces P along x-y axis



P_X=2.82kN
P_Y=2.82kN

Problems on Resolution of Forces

3) Resolve the forces Q along x-y axis

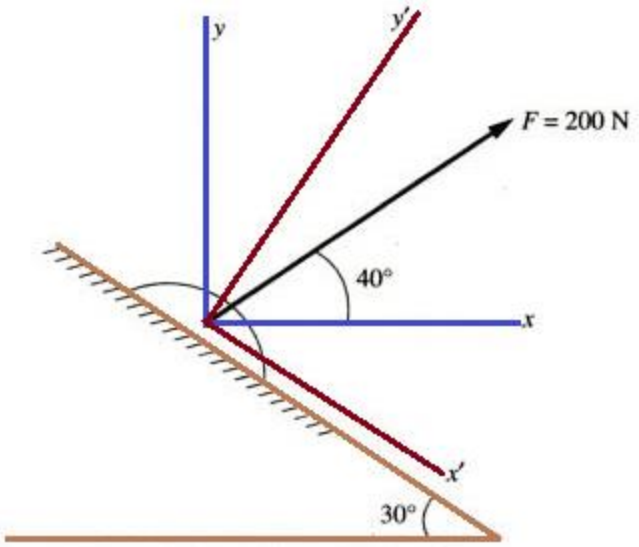


Q_x=-1kN

Q_y=-1.73kN

Problems on Resolution of Forces

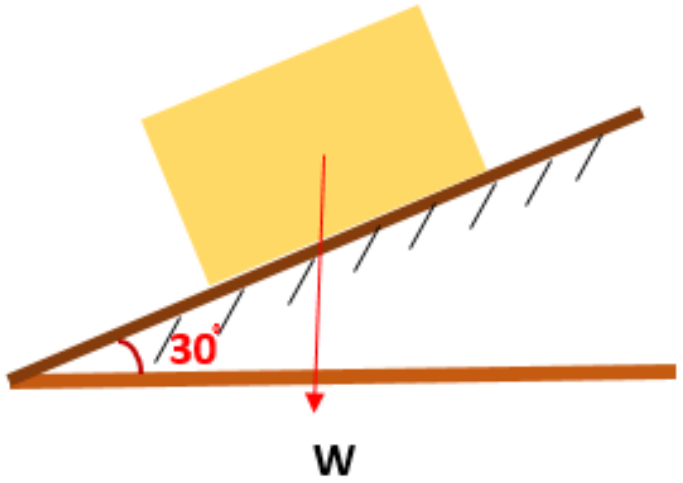
4) Resolve the given force along x-y and x'-y' axes.



Along x-y axis,
F_x=153.2N
F_y=128.5N
Along x'-y' axis,
F_x=68.4N
F_y=187.9N

Problems on Resolution of Forces

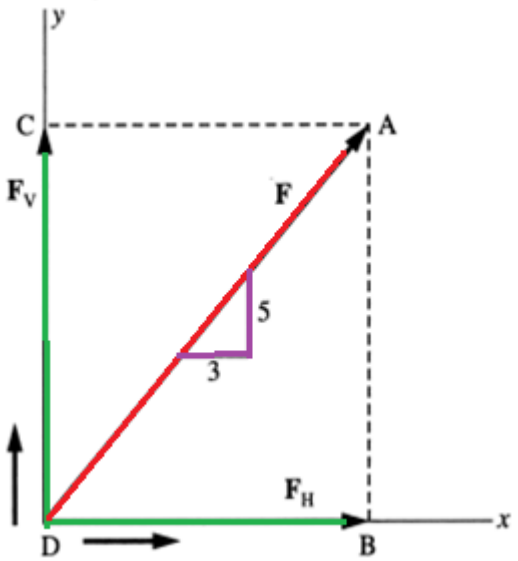
5)Resolve the self weight of the block into x and y components W=50kN



F_X=25kN
F_Y=43.3kN

Problems on Resolution of Forces

6)Resolve the force F=400kN shown in the figure

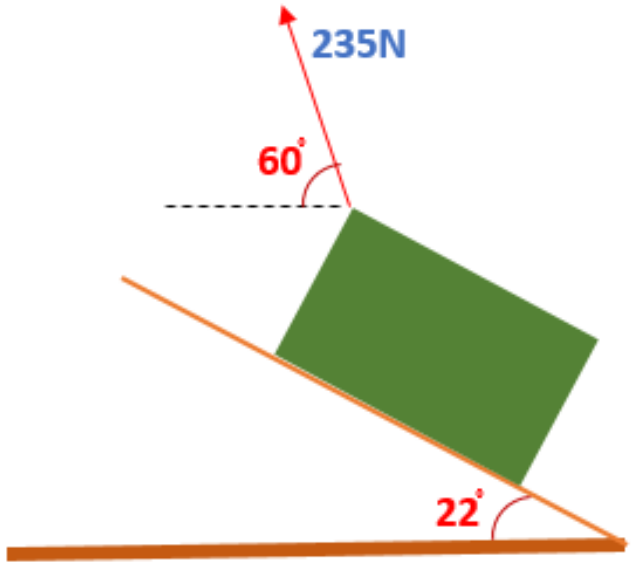


F_X=205.79kN

F_Y=342.99kN

Problems on Resolution of Forces

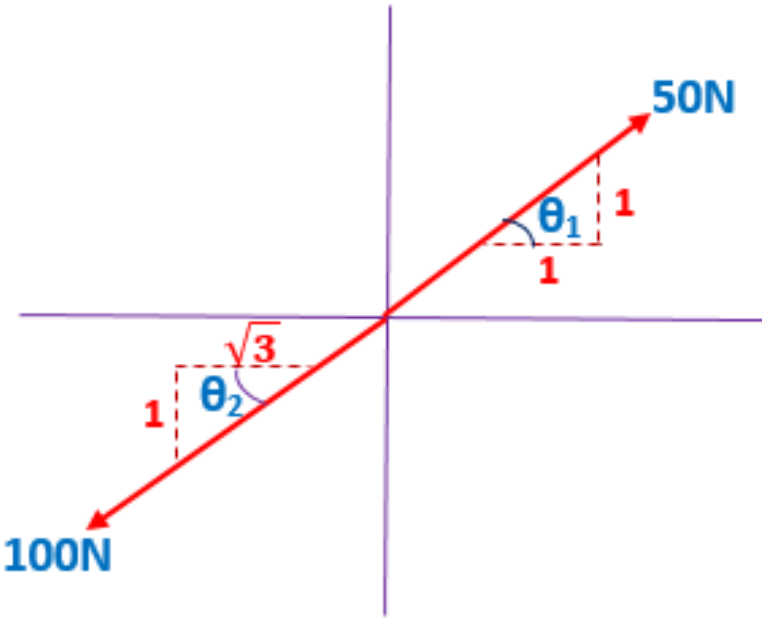
7)Resolve the forces shown in the figure into horizontal and vertical components



F_X=117.5N
F_Y=203.51N

Problems on Resolution of Forces

8)Resolve the forces shown in the figure into horizontal and vertical components if F_1=50N and F_2=100N



F_{1X}=35.35N
F_{1Y}=35.35N
F_{2X}=-86.6N
F_{2Y}=-50N

Summary

- The technique of finding the components of a force along any direction is called resolution of force

- The effect of a force along any specified direction is called component of a force