# BYG140 KONSTRUKSJONSMEKANIKK 1
Assignment (2)
(Statics Ch 4: Force System Resultants , Ch 5: Equilibrium of a Rigid body & Ch 6:Structural Analysis)

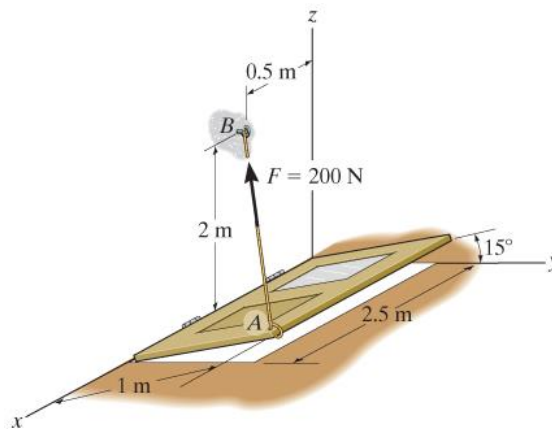### Question 1

The crane can be adjusted for any angle $0^0 \leq \theta \leq 90^0$ and any extension $0 \leq x \leq 5m$. For a suspended mass of 120kg, determine the moment developed at A as a function of x and θ. What value of both x and θ develop the maximum possible moment at A? Compute this moment. Neglect the size of the pulley at B.
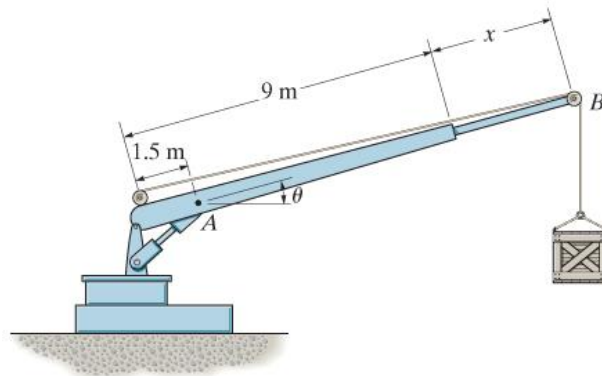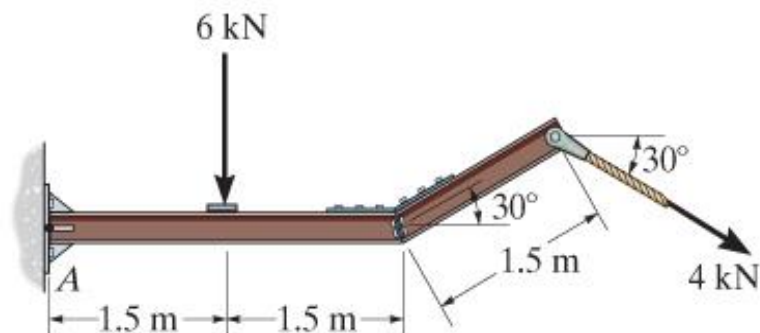

Question 2

Determine the magnitude of the moment produced by the force of F=200N about the hinged axis (the x-axis) of the door.
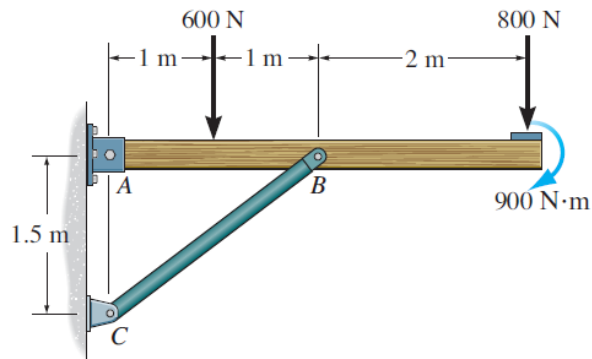

Question 3

Determine the components of the support reactions at the fixed support A on the cantilevered beam.

Question 4

The overhanging beam is supported by a pin at A and a two-force strut BC. Determine the horizontal and vertical component of reaction at A and the reaction at B on the beam
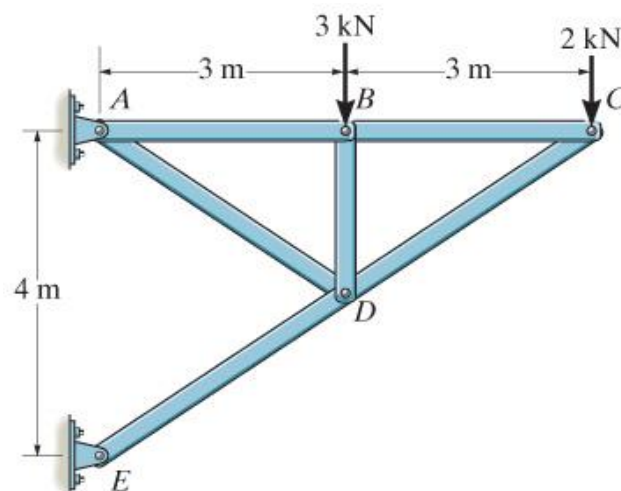

Question 5

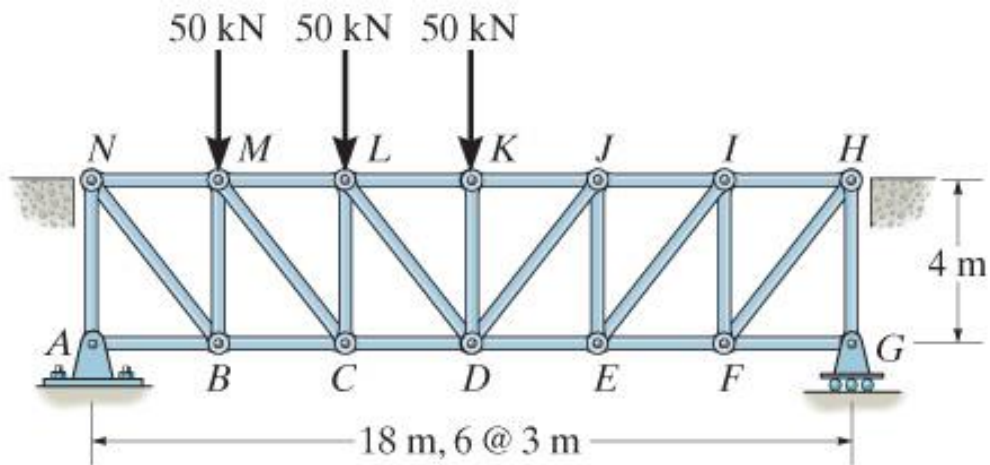Determine the force in each member of the truss and state if the members are in tension or compression.
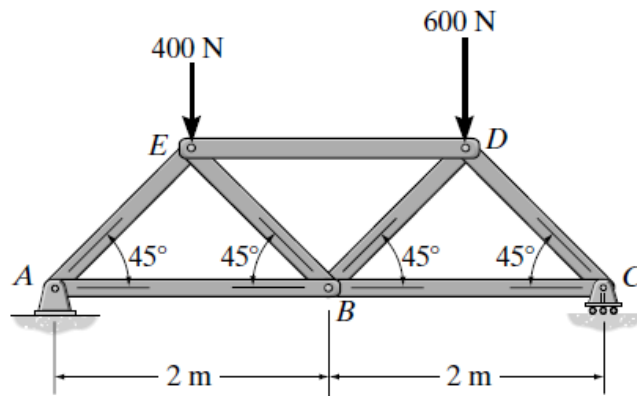
Question 6

Determine the force in each member of the truss and state if the members are in tension or compression. *Hint: the resultant force at the pin E acts along member ED. Why?*
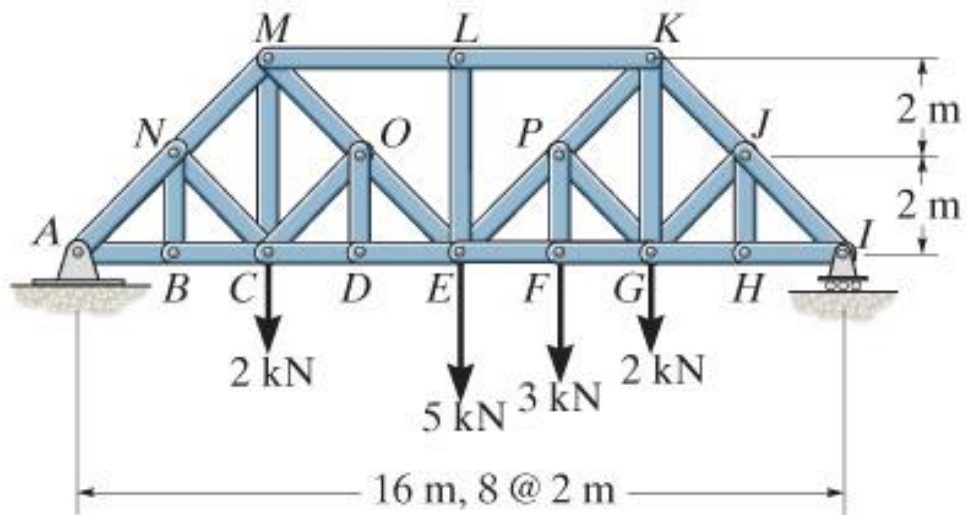
Question 7

The *Pratt bridge truss* is subjected to the loading shown. Determine the force in members *JI*, *JE* and *DE*, and state if the members are in tension or compression.
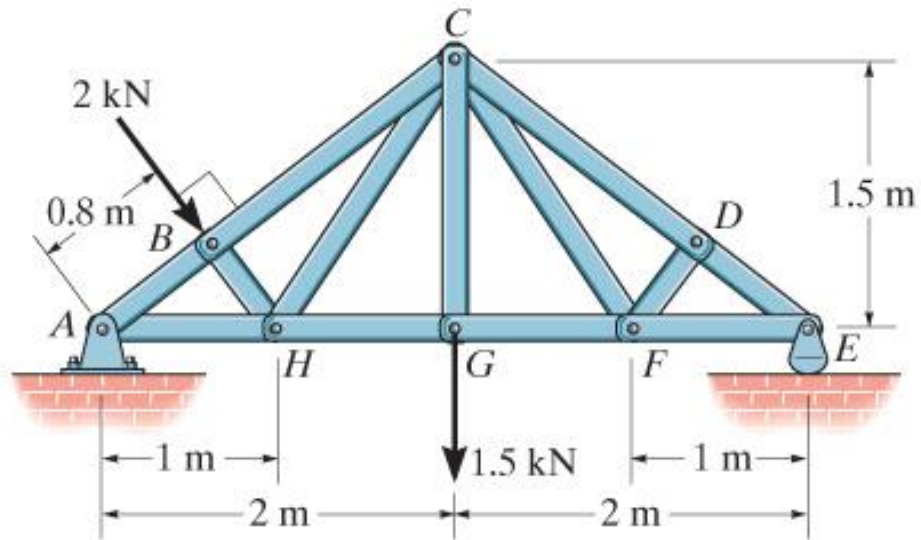

Question 8

Indicate all Zero-force members. Determine the force in members *CD* and *CM* of the *Baltimore bridge* truss and state if the members are in tension or compression.

Question 9

Determine the force in members *CD* and *GF* of the truss and state the members are in tension or compression. Also, indicate all zero force-members.

Question 10

Determine the force in each member of the space truss and state if the members are in tension or compression. *Hint: the support reaction at E acts along member EB. Why?*