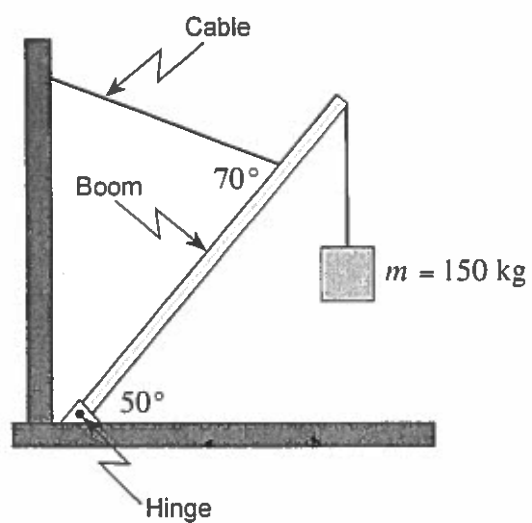
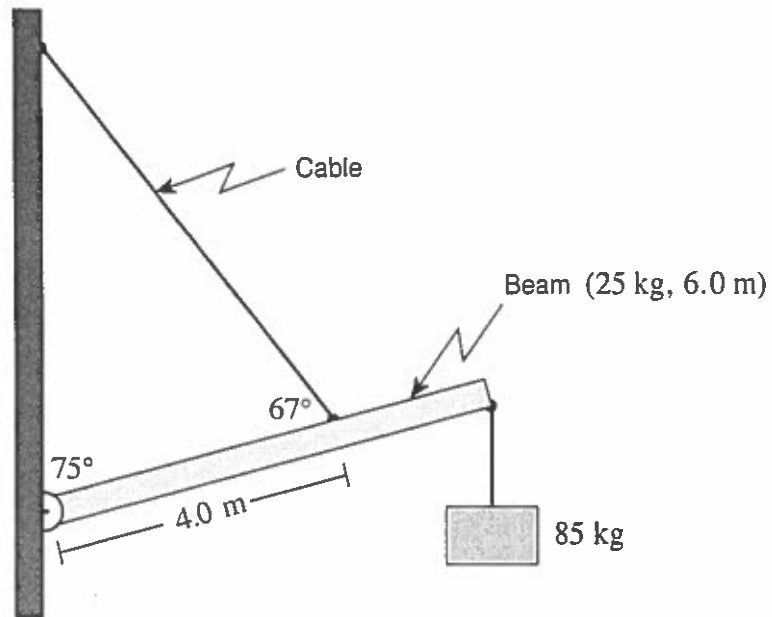


1. A uniform 6.0 m-long boom has a mass of 55 kg. It is kept in position by a restraining cable attached three-quarters of the way along the boom.



What is the tension in this cable when the boom supports a 150 kg mass as shown? (7 marks)

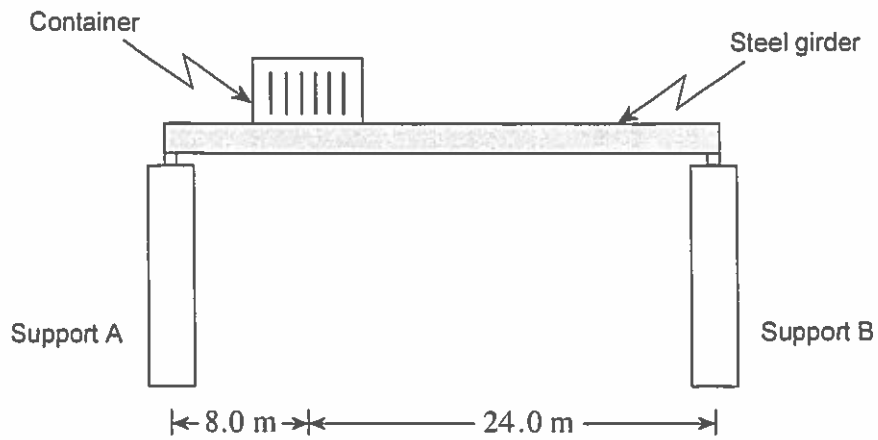
2. A 6.0 m uniform beam of mass 25 kg is suspended by a cable as shown. An 85 kg object hangs from one end.



What is the tension in the cable?

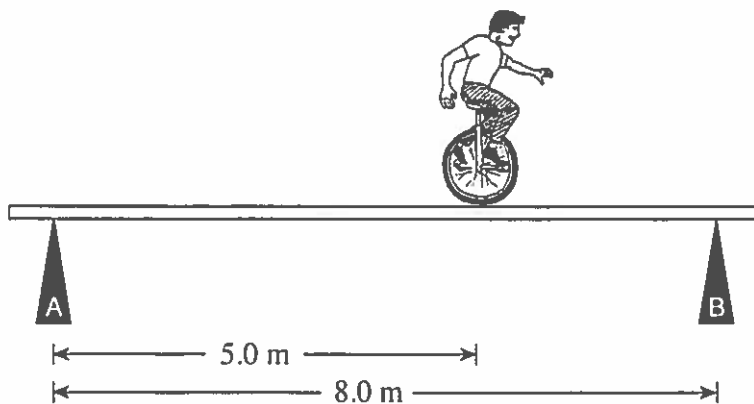
(7 marks)

3. A uniform 1 200 kg steel girder is supported horizontally at its endpoints as shown in the diagram.



What are the upward forces at the girder end points when it is bearing a 3 700 kg shipping container 8.0 m from support A? **(7 marks)**

4. A circus performer on a unicycle of total mass 55 kg rides across a uniform 30 kg beam. The supports are placed equal distances from the ends of the beam.



- a) When he is at the position shown, determine the forces exerted by the supports on the beam. (5 marks)

b) As the performer moves toward the right the force exerted by support B will

- remain the same.
- increase.
- decrease.

(Check one response.)

(1 mark)

c) Using principles of physics, explain your answer to b).

(3 marks)

ANSWER:

a) force A: _____

force B: _____