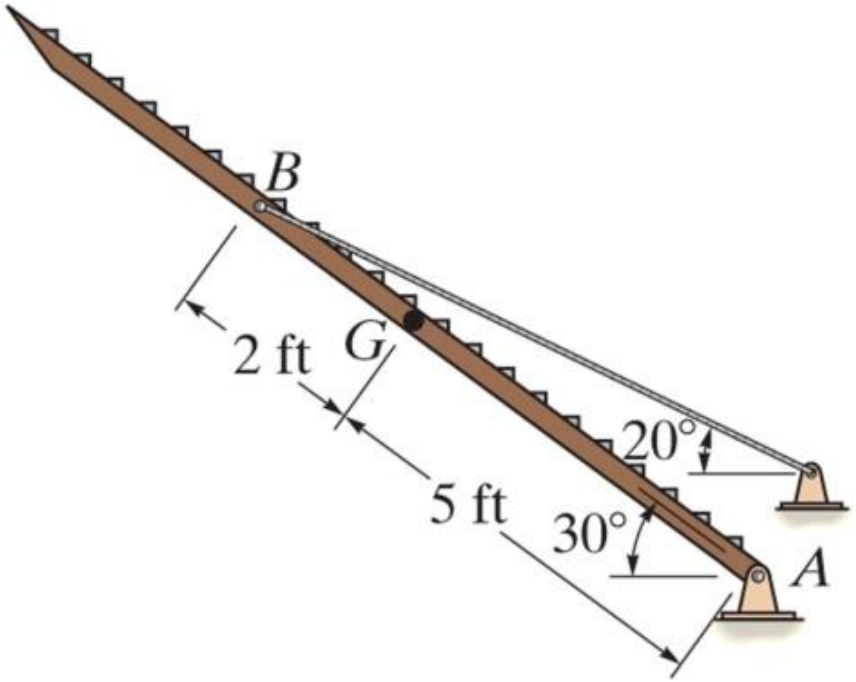
To do ...

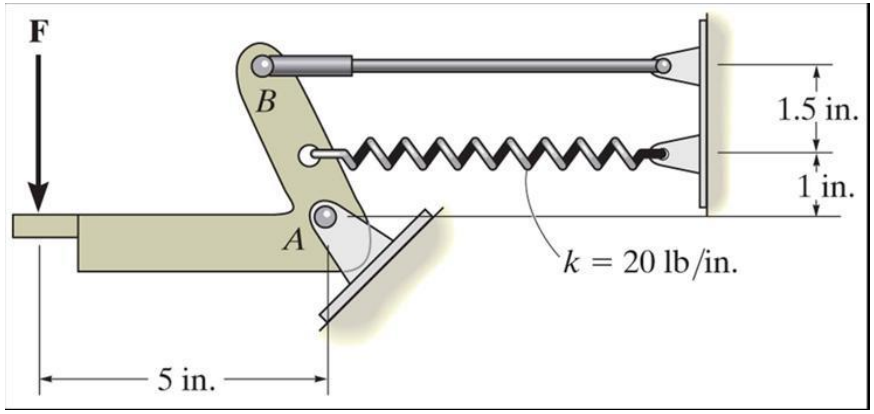
- Quiz 3 – in class – next Monday Oct 2

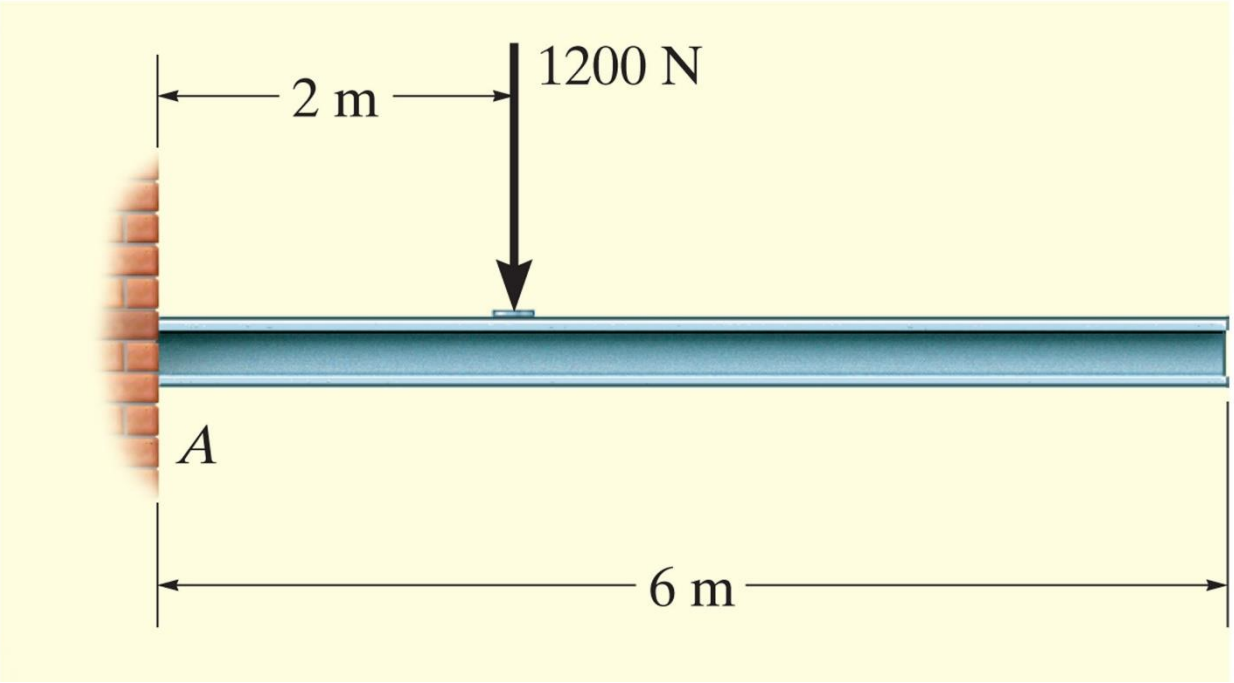
- HW 9 ME due **Thurs**
- HW 10 PL due **Tues**

The uniform truck ramp has weight 400 lb and is pinned to the body of the truck at each side and held in the position shown by the two side cables. Determine the reaction forces at the pins and the tension in the cables.



The operator applies a vertical force to the pedal so that the spring is stretched 1.5 in. and the force in the short link at B is 20 lb. Determine the vertical force applied to the pedal.

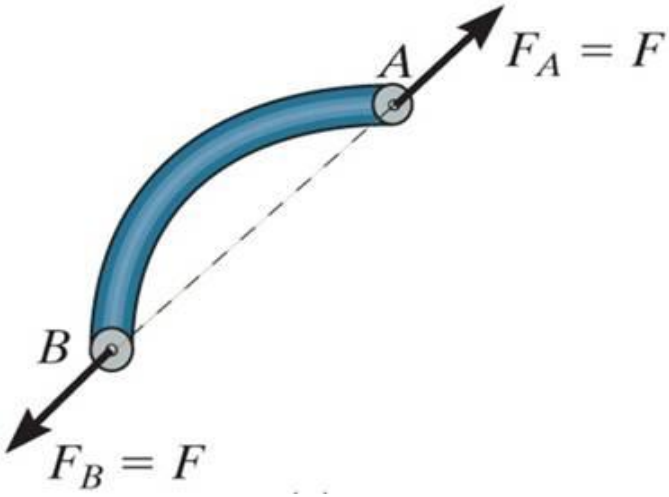


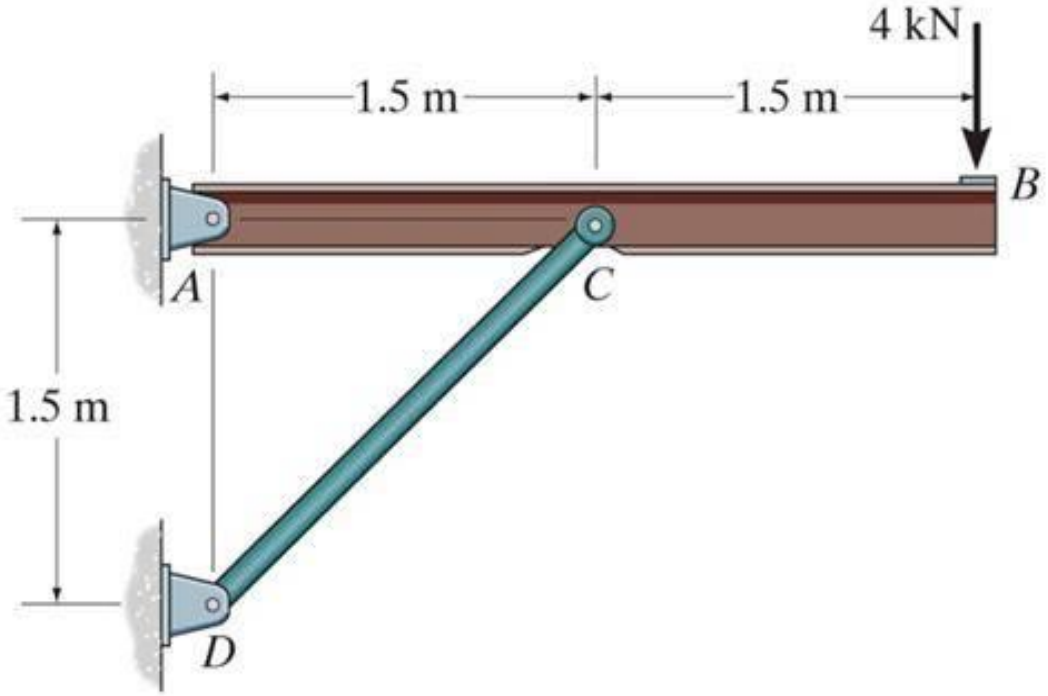


The beam has a mass of 100 kg and experiences a load of 1200 N. Find the support reactions at A.

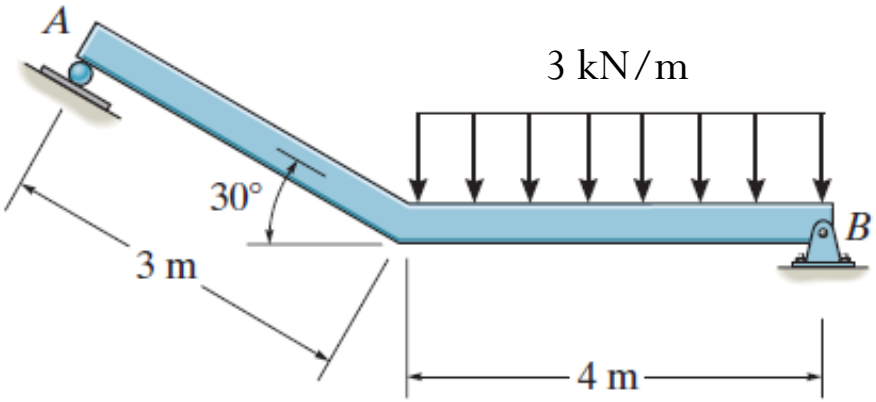
Two-force members

In the cases above, members AB can be considered as two-force members, provided that their weight is neglected.

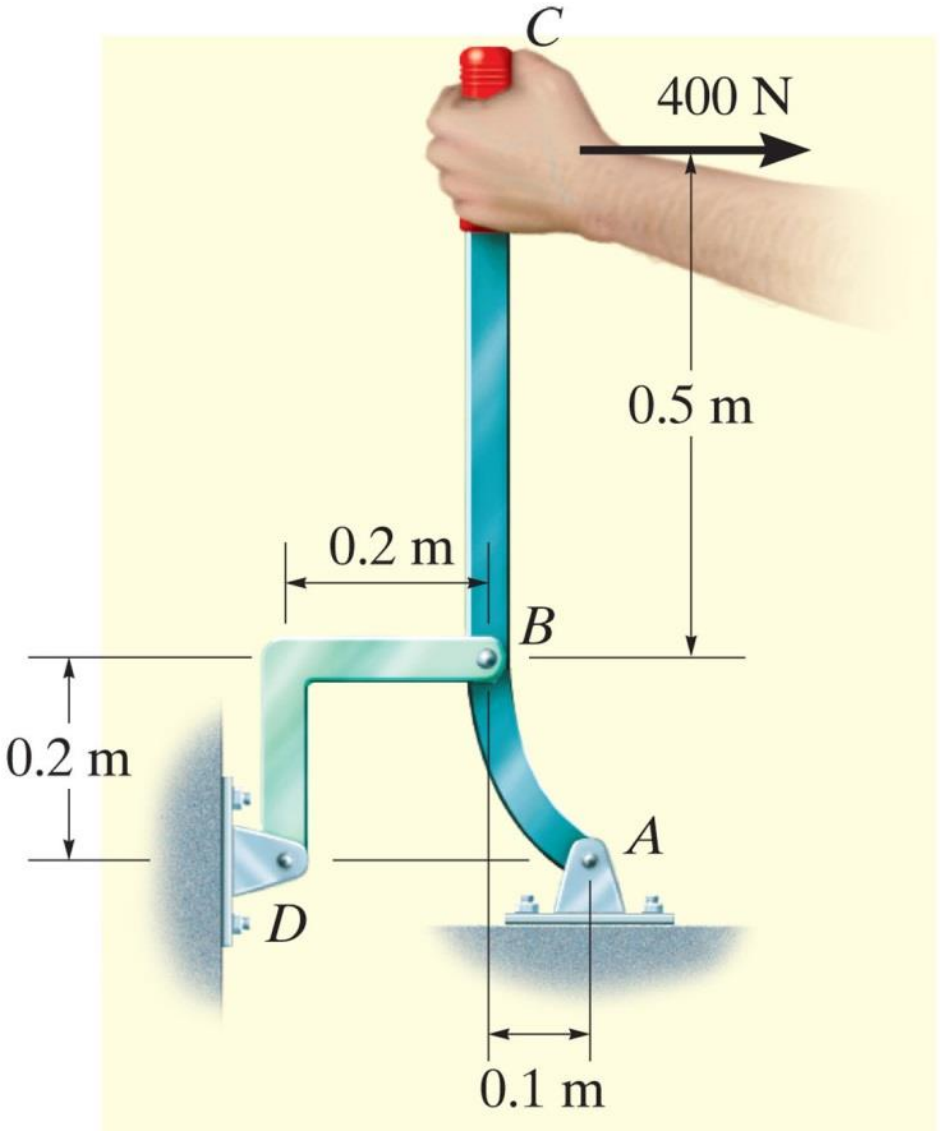




Given the 4kN load at B of the beam is supported by pins at A and C. Find the support reactions at A and C.



The beam is supported by the roller at A and the pin at B. Find the reactions at points A and B on the beam.

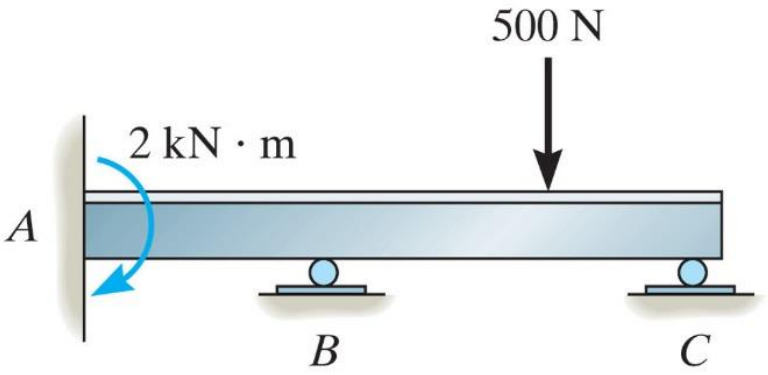


The lever *ABC* is pin supported at *A* and connected to a short link *BD*. If the weight of the members is negligible, determine the reaction forces at pins *D* and *A*.

Constraints

To ensure equilibrium of a rigid body, it is not only necessary to satisfy equations of equilibrium, but the body must also be properly constrained by its supports

- **Redundant constraints**: the body has more supports than necessary to hold it in equilibrium; the problem is STATICALLY INDERTERMINATE and cannot be solved with statics alone



- **Improper constraints:** In some cases, there may be as many unknown reactions as there are equations of equilibrium. However, if the supports are not properly constrained, the body may become unstable for some loading cases.