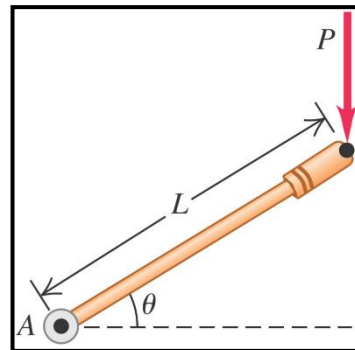
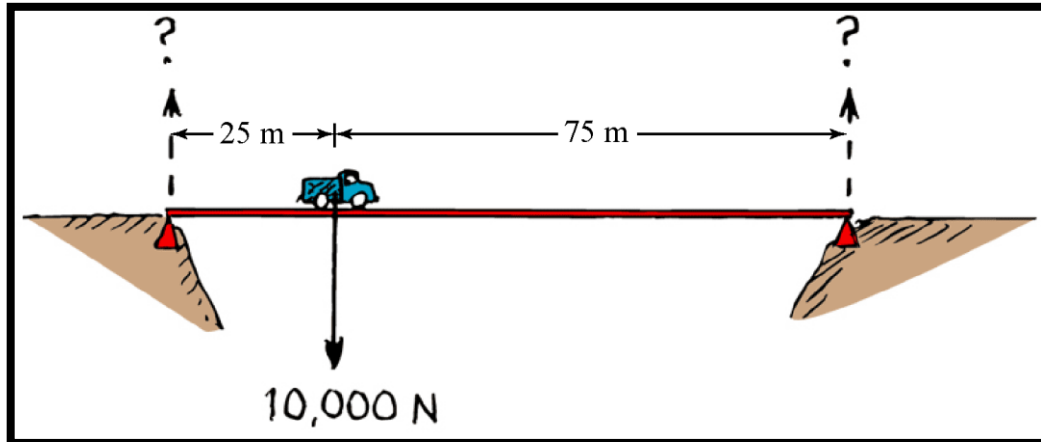

Worksheet 17: Torque

1. A 3.00-kg box hangs from a massless cord that winds around a solid cylinder of mass 5.00 kg and radius 40 cm. The cylinder is mounted on an axle so that it can rotate freely. If the box is released from rest, find its speed after it has fallen 1.5 m.

2. A downward force \vec{P} is applied to the end of a lever of length L that is oriented at angle θ above the horizontal. What is the magnitude of the torque that this force applies about the fulcrum of the lever at point A ?



3. A 10,000-N truck is stalled $\frac{1}{4}$ of the way across a 100-m bridge.



- What torque does the weight of the truck exert about the support at the right end of the bridge?
- What upward force must the support at the left end of the bridge exert to cancel the torque from the truck's weight?
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- What upward force must the support at the right end of the bridge exert to cancel the torque from the truck's weight?