

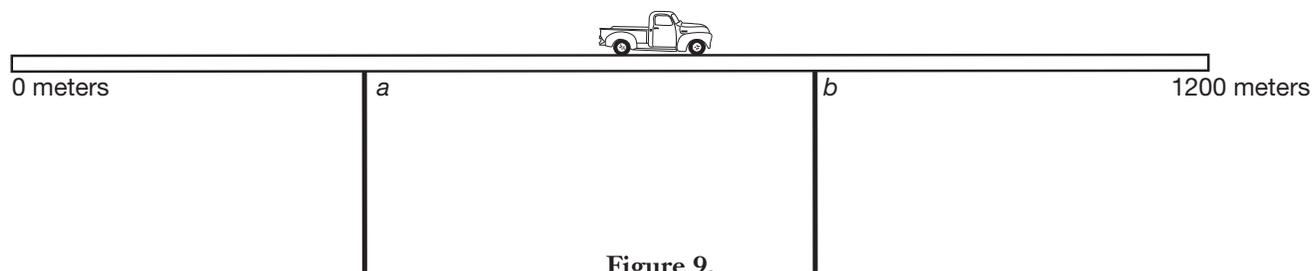
## AP Physics 1 Review Questions

### *Integrating Content, Inquiry and Reasoning*

1. A 20-meter bar has a fixed rotational point at its leftmost edge. A series of forces are exerted on the bar at various locations:
  - A 48 N force, at 10 meters, acting at a  $45^\circ$  angle above the bar
  - A 4 N force, at 12 meters, acting at a  $90^\circ$  angle above the bar
  - An 88 N force, at 15 meters, acting at a  $145^\circ$  angle above the bar
  - A 60 N force, at 8 meters, acting at a  $45^\circ$  angle below the bar
  - A 100 N force, at 10 meters, acting at a  $90^\circ$  angle below the bar

Draw the free-body diagram and calculate the resultant torque, if any, on the 20-meter bar.

2. A truck moves across a bridge. The truck has a mass of 1700 kg. The bridge is 1200 meters long, with 2 piers, each pier located 400 meters from the ends. At the point where the truck has travelled 700 meters across the bridge, what are the added forces on each pier? Draw the vector diagram.



3. A 40-gram mass is supported by 2 ropes. The angles  $\theta_1$  and  $\theta_2$  are  $60^\circ$  and  $45^\circ$ , respectively. Find the values for  $T_1$  and  $T_2$ .

