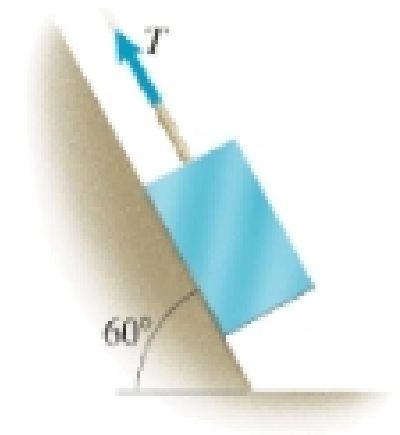


**3.11** The inclined surface is smooth. The 100-kg crate is held stationary by a force  $T$  applied to the cable.

(a) Draw the free-body diagram of the crate.

(b) Determine the force  $T$ .

(c) If the cable tension  $T$  is increased by 50% from the static value, find the acceleration of the block.

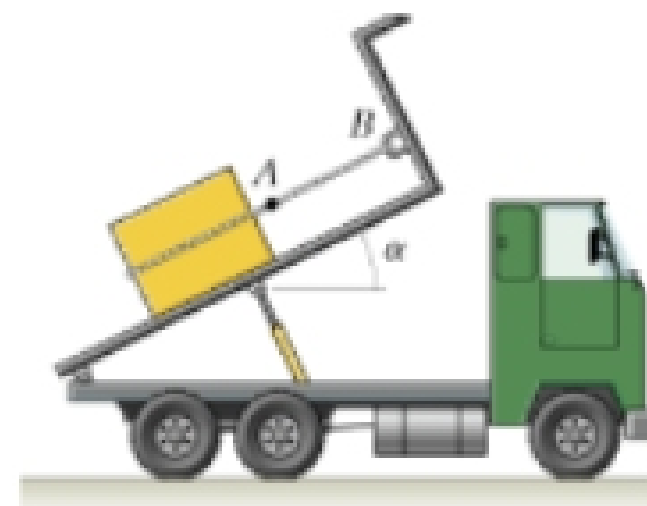


3.14 The 600-lb box is held in place on the smooth bed of the dump truck by the rope  $AB$ .

(a) If  $\alpha = 25^\circ$  what is the tension in the rope?

(b) If the rope will safely support a tension of 400 lb, what is the maximum allowable value of  $\alpha$ ?

(c) If the truck accelerates horizontally at  $10 \text{ ft/sec}^2$ , and  $\alpha = 25^\circ$ , find the cable tension assuming the cable does not break.



3.17 Each box weighs 40 lb. The angles are measured relative to the horizontal. The surfaces are smooth. Determine the tension in the rope  $A$  and the normal force exerted on box  $B$  by the inclined surface.

