

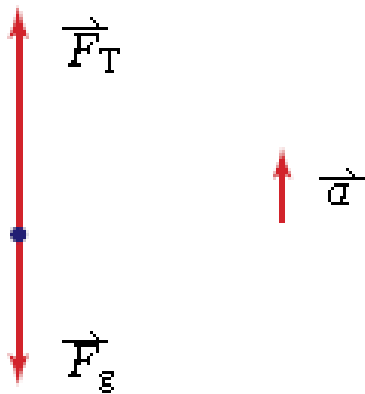
10.2

Multiple Masses

MODEL PROBLEM

Tension in a Cable

An elevator filled with people has a total mass of 2245 kg. As the elevator begins to rise, the acceleration is 0.55 m/s^2 . What is the tension in the cable that is lifting the elevator?



$$F_{\text{net}} = ma \quad a = 0.55$$

$$m = 2245 \text{ kg}$$

$$F_{\text{net}} = F_T - F_g$$

$$F_T = F_{\text{net}} + F_g$$

$$F_T = ma + mg$$

$$= (2245)(0.55) + (2245)g$$

$$= 1234.8 \text{ N} + 22001.8$$

$$= \underline{\underline{23235.8 \text{ N}}}$$