71. We mention that the textbook treats this particular arrangement of blocks and pulleys in extensive detail in Sample Problem 5-5. Using the usual coordinate system ($right = +x$ and $up = +y$) for both blocks has the important consequence that for the 3.0 kg block to have a positive acceleration ($a > 0$), block $M$ must have a negative acceleration of the same magnitude ($-a$). Thus, applying Newton's second law to the two blocks, we have

$$\begin{aligned} T &= (3.0 \text{ kg})\left(1.0 \text{ m/s}^2\right) \qquad \text{along } x \text{ axis} \\ T - Mg &= M\left(-1.0 \text{ m/s}^2\right) \qquad \text{along } y \text{ axis .} \end{aligned}$$

(a) The first equation yields the tension $T = 3.0$ N.

(b) The second equation yields the mass $M = 3.0/8.8 = 0.34$ kg.