40. Referring to Fig. 5-10(c) is helpful. In this case, viewing the man-rope-sandbag as a system means that we should be careful to choose a consistent positive direction of motion (though there are other ways to proceed – say, starting with individual application of Newton's law to each mass). We take *down* as positive for the man's motion and *up* as positive for the sandbag's motion and, without ambiguity, denote their acceleration as a. The net force on the system is the difference between the weight of the man and that of the sandbag. The system mass is $m_{\text{sys}} = 85 + 65 = 150$ kg. Thus, Eq. 5-1 leads to

$$(85)(9.8) - (65)(9.8) = m_{\text{sys}}\, a$$

which yields $a = 1.3$ m/s^2. Since the system starts from rest, Eq. 2-16 determines the speed (after traveling $\Delta y = 10$ m) as follows:

$$v = \sqrt{2a\Delta y} = \sqrt{2(1.3)(10)} = 5.1 \text{ m/s} .$$