24. Treating the two boxes as a single system of total mass $1.0 + 3.0 = 4.0$ kg, subject to a total (leftward) friction of magnitude $2.0 + 4.0 = 6.0$ N, we apply Newton's second law (with $+x$ rightward):

$$\begin{aligned} F - f_{\text{total}} &= m_{\text{total}}\, a \\ 12.0 - 6.0 &= (4.0)a \end{aligned}$$

which yields the acceleration $a = 1.5$ m/s^2. We have treated F as if it were known to the nearest tenth of a Newton so that our acceleration is "good" to two significant figures. Turning our attention to the larger box (the Wheaties box of mass 3.0 kg) we apply Newton's second law to find the contact force F' exerted by the smaller box on it.

$$\begin{aligned} F' - f_{\text{W}} &= m_{\text{W}}\, a \\ F' - 4.0 &= (3.0)(1.5) \end{aligned}$$

This yields the contact force $F' = 8.5$ N.