Answer #122

The answer is (b): in fact the spring scale will read 163 grams (well, actually closer to 153 grams), as can be seen in a slow-motion mpeg video by clicking your mouse on the photograph below.

Two equations for the motion of this system are:

\[(M+m)a = mg \quad \text{and} \quad T = Ma,\]

so the tension in the string after the system is released is given by:

\[T = Mmg/(M+m), \quad \text{or} \quad T/g = Mm/(M+m).\]

Putting in the values of \(M = 875\) grams and \(m = 200\) grams, \(T = 163\) grams.