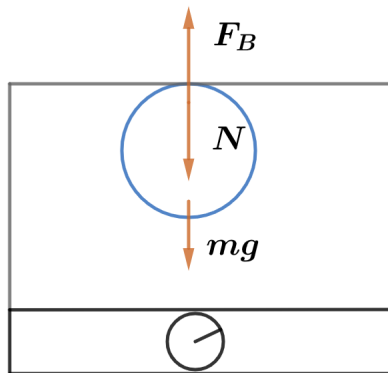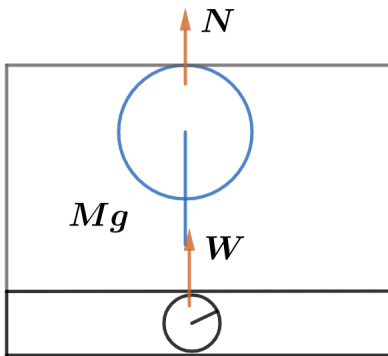# 2020B F=ma Exam: Problem 20

Kevin S. Huang

First, let's consider the balloon as our system. Since it's at rest, we have

$$F_B = N + mg$$

Next, let's consider the box as our system. Since it's at rest, we have

$$Mg = N + W$$

Thus, the scale reads

$$W = Mg - N = Mg - (F_B - mg) = (M + m)g - F_B$$

so none of the choices are necessarily true and the answer is $\boxed{\text{E}}$.